

ACHIEVING ‘APPEAL’ THROUGH KANSEI APPROACH

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ABSTRACT

The design of animation character design depends on the principle of ‘Appeal.’ However, to define this important principle is difficult as it is a perplexing principle as it is based on personal opinion. To ‘achieve’ and understand ‘appeal’ need a systematic way, and this project proposes ‘Kansei Engineering’ approach. The project adopts Kansei Engineering method to achieve ‘appeal’ by selecting a popular animation domain and use qualitative method to analyze the appeal factor through the adaptation of Kansei Words in which, this projects renamed to Viewer’s Impression Word (VIW). Through VIW, the project managed to identify ‘appeal’ factors through multivariate analysis such as factor analysis, Partial Least Squares and PCA, it managed to propose systematic loose principles. The loose principle is called Animation Character Design Appeal Principles (ACDAP) that may assist animators and designers in understanding and achieving ‘appeal’ in their designs.

Keywords: Kansei approach, animation, character design, appeal, folktales.

INTRODUCTION

In animation character design, ‘appeal’ played an important role. To make an animation character to attract viewers, most research points to this principle of animation (Thomas & Johnston, 1995; Williams, 2002; Punsvik, n.d.). In the local animation industry, one big-budget animated production called Oh La La failed to attract viewers because of the lack of quality in design aesthetics (Arshad, Kim & Manaf, 2018). To make animation character attractive, Thomas and Johnston (1995) suggested that animators should follow the 12 principles

of animation. According to Surtees (2019), the secret to having a successful character is to make it believable, and many processes are involved in achieving 'appeal.' To create an animation character design that incorporated 'appeal' in its design, we need a thorough understanding of the meaning of the word. The in-depth understanding of 'appeal' will help designers to create more believable characters. To understand the whole process of animation and study its whole traits would require much time ("Traditional animation," 2019). Hence, this project will investigate the animation character's principle of 'appeal,' to understand 'appeal' in animation character design and to achieve 'appeal' in designing new animation characters.

To achieve 'appeal' in animation character design, it needs systematical ways. The project proposed that it requires a method that can translate the viewer's impressions to understand 'appeal.' The nearest method is Kansei Engineering, that has been formulated in Japan by Emeritus Professor Dr Mitsuo Nagamachi. It is used to incorporate the feelings and impressions of the audience in the making of products. By using folktale-based animation character domain (following Kansei Engineering), through the Kansei approach, this project also tries to understand how folktales-based animation character design to achieve 'appeal' and enhance their interest in watching this kind of animation. It is also to identify 'appeal' embedded in selected popular folktales-based animation. The hidden 'appeal' factor from existing popular animation could be the answer in understanding and achieving the desired factors of the principle of 'appeal.'

Problem Statement

The 12 animation principles state that 'appeal' is one of the most important principles (Thomas & Johnston, 1995). The word always misinterpreted to propose cuddly and cute animals. To designers and animators, it meant whatever that people love to see; it contains charm quality, simplicity, communication, allure and pleasing design (Williams, 2002). For animation character to achieve decent viewership, it should have the principle of 'appeal' (Punsvik, n.d.). The 'appeal' in animation character could be the 'attraction' factor in getting more viewers and fans to relate to the animation character (K stuff, 2008). Designers and animators often face a problem when it comes to the principle of 'appeal.' 'Appeal' is a perplexing principle to define as it is based on a personal character attractiveness (Walker, 2013). Walker also said that it is subjective and depends on the viewer's personal opinion as to what makes it visually pleasing. He further adds that it is the character's visual qualities that get the viewer's attention during

storytelling, and characters that are generalized and dull in terms of design are less attractive. With its ambiguity and subjectivity, it can be quite a challenge, especially for beginners to design a memorable and suitable character. When it comes to the early process of designing a character, a lot of mixed information and ideas from cultural background, media, trends that are currently popular and effort to add original style to a character will come into mind (Yuen, Tarique Azam & Ang, 2015). By assisting in understanding the principle of ‘appeal’ through ‘Kansei’ approach and presents a systematic approach to reach ‘appeal’ in designing animation characters, it may present positive results in this study.

Theoretical Framework

The theoretical framework for ‘appeal’ in folktale-based animation character design begins with the adoption of Kansei Engineering methodology. Previous research had proven that the ability of Kansei Engineering is beyond doubt in quantifying and measuring audience feelings in a lot of different design-based studies. The quest to understand and achieve ‘appeal’ in folktale-based animation character design started by referring to the animation principles, the theory of perception, character design principles and principles of design. These principles are used by designers as a set of loose rules to help achieve effective designs. In this study, these principles and theories also are used to identify and understand ‘appeal’ embedded in popular folktale-based animation character. Kansei Engineering provides a systematic method to identify and quantify audience emotion. The traits of Kansei Engineering methodology offered this study a possibility to combine it with art principles and to answer all the objectives stated in this study. The study tried a different approach by combining art principles and use viewers and experts’ impressions without directly measuring emotion. As Lévy (2013) put it, the approach, specificities and challenges of Kansei Engineering are well described even without a clear definition of Kansei, and KE can be used without the need to directly measuring Kansei. He further adds, Kansei Engineering also remains consistently spatial; however, the tools and the procedures used in Kansei Engineering are progressing. The method in this study is adopted from product design research by Nagamachi (1999), in which, consumer satisfaction were determined with the product design that matches their preferences, which links to their affective emotions and impressions. Nagamachi further adds that physical characteristic existed in most products, and they coincide the consumer’s implicit needs and emotion. It is supposed to be the factors to make products successful.

LITERATURE REVIEW

Animation character design ‘appeal’ factors is rather a vague subject, unstructured and indeterminate. The possibility to measure it directly remains vague. A study by Lokman (2010b), stated that *“we need to devise indirect measurement methods by considering an alternative form of expression.”* Kansei Engineering methods also appears to be supporting this study as it is rather ambiguous and it may not directly quantify Kansei in animation character design.

To directly measure viewer’s impressions on folktale based animation character would render ambitious, by pre-selection of existing popular Japanese folktale animation character to identify ‘appeal’ factors, are in line with what Kansei Engineering methodology characteristics as (Schütte *, Eklund, Axelsson & Nagamachi, 2004), put it, *“KE does not develop new theories or tools in the different areas at all. Rather, it is an all-embracing methodology containing rules for how different tools can interact with each other to quantify the impact a certain product trait has on the users’ perception”* (p. 216).

Kansei Engineering started with product design research. It is formulated to enable the evaluation of how consumers feel towards a product, situation to its surrounding, and how impressions and feelings of consumers triggered by the aspect of design (Nagamachi, 2010b). With many animation products on the market nowadays, audience satisfaction and entertainment on watching an animation product are what producer and animators want to achieve. ‘Appeal’ factors on an animation character are what makes an animation character attractive, draw a positive response, thus making an animation successful.

‘Appeal’ in designs contribute to a sense of emotional engagement and considered to influence the visuals and its intended goal to the viewers (Arshad et al., 2018). The factors involved in ‘appeal’ in folktale-based animation characters have to be identified to produce a loose principle that aims to achieve ‘appeal’ that can assist folktale based animation character designers in creating a new local folktales based animation character.

Research Methodology

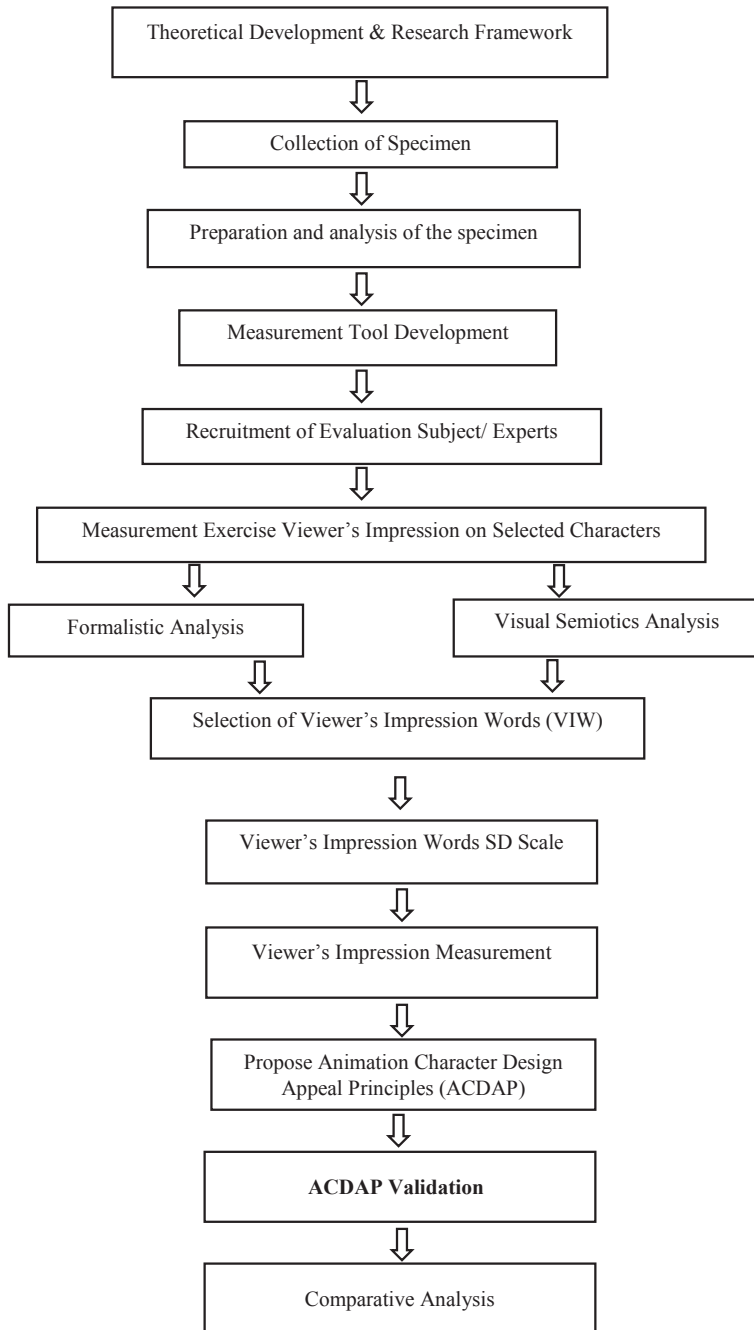


Figure 1 The research process

The research aims to investigate the factor of ‘appeal’ through popular animation character designs. The ‘appeal’ information obtained from the popular animation character design is used to provide supporting methodology and literature to the animation character design domain. The research aims to develop loose principles of design to achieve ‘appeal’ that provide understanding, assistance and knowledge to design new folktale-based animation character design. The research framework adopts the Kansei Engineering (K.E) method with the addition of art and design theories to further enhance the artistic effort. Firstly, the research utilizes QCA to select seven folktales based Japanese animation specimen from hundreds of animations from 1990–2015 significant with folktales traits. The Japanese animation was chosen on its popularity ground through empirical research by thoroughly viewing each of the animations. The popularity of Japanese animation was determined through literature review. 36 animation characters determined by using the QCA and matrix system. This system had been designed systematically by adapting earlier research such as (Lokman A. M., 2010). Table 2 shows the QCA matrix system. The 36 selected animation characters present folktales traits that are crucial in determining the ‘appeal’ concept based on ‘Kansei’ approach. The final selected characters can be referred to in Table 3. The research produces 25 design elements and utilizes the design elements in the QCA matrix system to select 36 animation characters from the seven popular Japanese animations also, through QCA. 60 Viewer’s Impression Words (VIW) determined through the use of formalistic and visual semiotic analysis (FVSA) through ten expert’s impressions. Table 4 shows the sample of the selected 60 VIW. The FVSA questionnaires can be referred to in Figure 2. From the FVSA analysis, a measurement tool consists of the 60 VIW Semantic Differential (SD) scale questionnaires were distributed to 100 evaluation subjects from the researcher university. The results from the measurement activity were analyzed using multivariate analysis to understand the ‘appeal’ factor. The loose principles called Animation Character Design Appeal Principles (ACDAP) were then proposed from the measurement. ACDAP was used as a loose rule of design to create new Sabah’s folktales-based animation character by selected animators, and the new animation character designs were compared with existing Sabah’s animation characters design to justify the proposed ACDAP.

Table 1 Qualitatives content analysis on design elements

	Design Elements	Item/ Category	Definition	Coding Rule
1	Hair Style	Long Short Yaoi	Any form of hairstyle worn by the character in the animation. Culture could be suggested.	The style must be related to Japanese folktale and oral tradition.
2	Face Shape	Oblong Round Square	The appearance of the character face shape consistent with Japanese characteristics and for the face attributes of characters in relation to the Japanese folktales.	Facial appearance of characters, i.e., human, animal or mystical creature which is unique to Japanese culture, folklore and mythology.
3	Eyes	Slanted Big Small	Eyes design and appearance attributes similar to Japanese characteristics and for the eye design of characters from mystical folklore and oral tradition related to the Japanese folktales.	Eye design appearance of the characters, i.e., human, animal or mystical creature which is unique to Japanese culture, folktales and mythology.

Table 2 Animation characters matrix sample and score

		Hair Style		Facial Appearance			Body									Skin	Clothing Appearance					Accessories					Score
		1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20	21	22	23	24	
		Hair Style	Ears	Face Shape	Eyes	Nose	Mouth	Neck	Chest	Abdomen	Waist	Arm	Hand	Legs	Feet	Skin	Head Gear	Shirt	Pants/skirt	Socks	Shoes	Earrings	Necklace	Cape	Belt	Gloves	
1	Pp1 (shoukichi)	/	x	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	x	x	x	x	x	19
2	Pp2 (Bunta)	/	x	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	x	x	x	x	x	19
3	Pp3 (Gonta)	/	x	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	x	x	x	x	x	19
4	Pp4 (Fireball Oraku)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	x	x	x	x	x	/	x	19

Table 3 Final selected characters sample

	Animation Title		Character's Name	Character Classification
1	Pom Poko	1	Shoukichi	Mystical creature
		2	Gonta	Mystical creature
		3	Fireball Oraku	Mystical creature
2	Spirited Away	4	Chihiro Ogino (Sen)	Human (female)
		5	Haku	Human (male)
		6	Yu-Baba	Mystical creature
		7	Zeniiba	Mystical creature
		8	Rin (Lin)	Human (female)
		9	Kaonashi	Mystical creature
		10	Kamajii	Mystical creature
		11	Bandai-Geru	Mystical creature
		12	Yu-Bird	Mystical creature
		13	Chibi-Yaku	Mystical creature
		14	Ani-Yaku	Human (male)
		15	Susuwatari	Mystical creature
		16	Kawa-no-Kami (River-God)	Mystical creature
		17	Yunas	
3	Ponyo	18	Gramamare	Mystical creature
4	My Neighbour Totoro	19	Totoro	Mystical creature
		20	Grandma	Human (female)
		21	Kantas-Mother	Human (female)
		22	Cat-Bus	Mystical creature

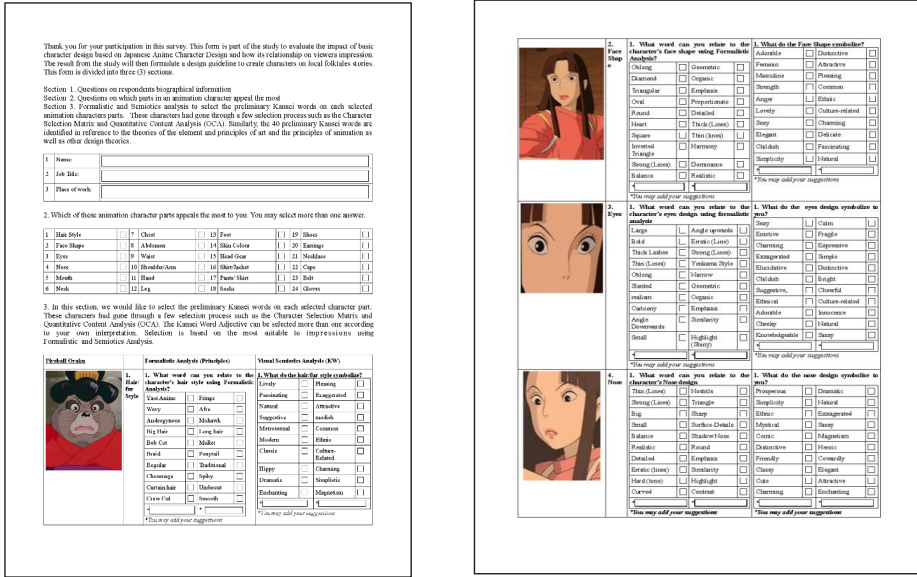


Figure 2 Formalistic and Visual Semiotics Analysis (FVSA) questionnaire sample

Table 4 Selected viewer’s impressions words (adjectives, nouns and verbs from the FVSA questionnaires and interview)

No	Characters	Design Elements	Selected 60 Kansei Words from FVSA
1	Shoukichi	Hair Style	Yaoi Anime
		Face Shape	Small
		Eyes	Big
		Nose	Erratic (lines)
		Mouth	Cool
		Body	Highlight
		Hand	Emotive
		Legs	Exaggerated
			Soft

The Concept of ‘Appeal’ in Animation Characters Design

This research proposed that ‘appeal’ concept in the design of animation characters can be reached or made possible through the use of Factor Analysis (FA) following and referring to other Kansei Engineering research such as (Lokman, 2010a; Nagamachi, Tachikawa, Imanishi, Ishizawa & Yano, 2008; Mamaghani, Rahimian & Mortezaei, 2014). The ‘appeal’ concept discovery was from a significant factor in factor analysis (FA). The FA analysis used Varimax rotation, where the simplification of the interpretation of the variables

can be achieved. Henry Felix Kaiser suggested varimax Rotation in 1958. This research used Factor Analysis in SPSS version 22.

In Table 5 Total Variance Explained, a total of six significant factors were obtained from a total of 60 variables. Six factors scored eigenvalue of more than 1.00 following Kaiser stopping rule that states only the number of factors with eigenvalue of over 1.00 should be considered in the analysis. With the help of the FVSA analysis, which was performed in choosing the Viewer’s Impression Words (VI-W) consisted not only adjectives but also nouns and verbs has significantly assisted the research in choosing the suitable Viewer’s Impression Words (VIW) thus providing high factors for ‘appeal’ animation characters design elements. 12.34% was explained from the first factor. The second factor explains 10.96 %, and the third factor explains 8.195 %. While three factors present a low 31.50% and are seen as not strong but stand as a majority. Hence, the other three factors are included in the data. The rest of the factors produce low cumulative percentage and are probably can be considered as not significant to be included. In the sample below, only one design elements were added in the write up as samples because of the huge amount of data, which is Human Male: Eyes.

Table 5 Total Variance Explained for Human Male: Eyes

Total Variance Explained			
Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	7.407	12.345	12.345
2	6.578	10.963	23.308
3	4.917	8.195	31.503
4	3.787	6.312	37.815
5	2.518	4.197	42.012
6	2.319	3.865	45.877
Extraction Method: Principal Component Analysis.			

Table 6 Rotated component matrix for human-male: Eyes sample

Rotated Component Matrix						
	Component					
	1	2	3	4	5	6
Yaoi	-0.003	-0.010	0.610	0.195	0.068	0.016
Wavy	-0.077	0.425	-0.270	0.142	-0.082	0.143
Traditional	0.026	0.068	0.527	0.735	-0.085	0.020
Warm	0.331	-0.119	-0.117	-0.025	0.110	-0.082
Lively	-0.008	0.017	0.757	0.075	0.505	-0.038
Pleasing	0.023	0.007	0.476	0.772	-0.089	0.047
Attractive	0.042	-0.037	0.525	0.781	0.075	0.019
Culture	0.076	-0.011	0.013	0.080	0.591	0.045
Charming	0.026	0.440	-0.356	0.168	0.079	0.002

The variables are arranged according to the results of the factor analysis. The results of the Total Variance Explained expended six significance factors. Moreover, after calculation of the 60 variables, it can be observed in ‘rotated component matrix’ that related variables to the viewer impression produce results that can be interpreted as significant to the ‘appeal’ impression of the viewers. Further, the significant factors were labeled in reference to the principles of character design. The first factor consists of variables ‘Warm,’ ‘Balance,’ ‘Bold,’ ‘Yonkama,’ ‘Organic,’ ‘realism,’ ‘Soft,’ ‘Calm,’ ‘Heroic,’ ‘Mystery,’ ‘Smooth-texture,’ ‘Powerful’. The research labels its Significance in reference to the variables in the factor such as “Powerful” and ‘Heroic.’ Factor 2 consist of ‘Charming,’ ‘Distinctive,’ ‘Elegant,’ ‘Sexy,’ and ‘Sharp’. The research labeled it as stimulating because of the variables included in it, such as ‘Sexy’ and ‘Elegant.’ Factor 3 shows ‘Yaoi,’ ‘Traditional,’ ‘Lively,’ ‘Natural,’ and ‘Sharp’, and it was labeled as Personality. Table 7 shows the details on each factor.

In the practice of naming the factors according to A. G. Yong and Pearce (2013), in labeling the factors, there are no rules to be followed, and the label is given to represent the variables located in the factors. Also, labeling each factor group was in practice, followed in Kansei Engineering approach to select the best representative word to describe the factor group (Nagamachi, 2010a).

The large datasets from this research that consist of variables can be reduced by only observing groups of variables. Factor Analysis gathers mutual variables into descriptives categories. The item from the questionnaires can be decreased to a set that is smaller to get concealed concept and to facilitate interpretations. Key factors are focused on avoiding trivial variables and placing variables in meaningful categories (Rummel, 1970).

By using Factor Analysis, as suggested by Kansei Engineering it can be seen that the appealing factors in animation character design were consists by six factors which are Significance, Attractiveness, Personality, Charismatic, Aesthetic and Expressive.

Table 7 Factors and variables for human-male: Eyes

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Label	Significance	Stimulating	Personality	Charismatic	Aesthetic	Expressive
1	Warm	Charming	Yaoi	Pleasing Design	Culture-related	Feminine
2	Balance	Distinctive	Traditional	Attractive	Magnetism	Cool
3	Bold	Elegant	Lively	Simplicity	Dominant	Emotive
4	Yonkama	Sexy	Natural	Round	Strong Lines	Cheerful

Partial Least Squares (PLS) Analysis

The relation between the Viewer’s Impressions Words (VIW) evaluation and design elements were analyzed with Partial Least Squares. In PLS calculation, the evaluation values on a Viewer’s Impressions Words (VIW) word are allotted to (y), or dependent variables and the design elements are put to (x) or independent variables with dummy variables. The qualitative variables, such as body colour, is called ‘item’. The variations of the item such as white, blue, or red, are called ‘categories’. Categories are expresses with dummy variables or indicator with 1/0 values (Nagamachi, Tachikawa, Imanishi, Ishizawa & Yano, 2008). This research suggested that while the theory applied to previous research on products were successful, it is facing difficulties in calculating different parts of the animation character design. Character animation designs consist of several body parts and all of them deliver distinctive ‘appeal.’ Gestalt Theory approach is proposed in this research to be applied together with PLS calculation, where every stimulus is perceived in its most simple form. Gestalt Theory or also known as the ‘Law of Simplicity’ or the ‘Law of Pragnanz’ states that the basic principle of Gestalt identify that the whole is greater than the sum of its parts. The individual parts will be made better in which; it will make the result is more than the sum of the individual parts as it offers insight into the holistic ‘bigger picture.’ In incorporating Gestalt Theory with this research, while the whole animation character altogether provides greater meaning, for the whole animation character to provide appeal or meaning, it can be divided into individual components before viewing the whole, in where the cognitive process takes place. The mind leaps comprehending the parts to realizing the whole (Enns, 2003). Table 8 presents the PLS calculation.

Table 8 Partial least squares calculation

1	Dependent variables (y)	60 sets of Kansei Words response	100 subjects
2	Specimen	36 animation Characters	
3	Independent variables (x)	25 animation drawing design elements	

The result of the relation list between the viewer’s impression words (VIW) and the design element was obtained. Table 9 shows the results. Following the Gestalt Theory approach in measuring the animation character design elements, each design elements produced different PLS scores because they were run individually. The PLS table showed that the largest positive scores indicate ‘appealing’ Kansei and should be used to develop the ‘appeal’ principles, and the largest negative score should be discarded. PLS analysis results suggest that to design the eye of the human male character, based on the ‘appeal’ concept, animators and designers can select the ‘appeal’ variables such as ‘strong lines,’ ‘adorable,’ ‘baby based’ and ‘simplistic.’ However, animators and designers still should look at the ‘eye design’ reference in the Viewer’s Impression Words (VIW) measurement to get an idea of how ‘appeal’ eyes look like but to avoid copying the design whole.

Table 9 Eye score for human male - Correlation coefficient

	Variables	Coefficient Score	Variables	Coefficient Score	Variables	Coefficient Score
1	Yaoi	0.0807	Elegant	-0.1054	Fragile	-0.0953
2	Wavy	-0.0310	Sexy	0.2060	Cheerful	0.0845
3	Traditional	0.0119	Masculine	0.0878	Innocence	-0.0412
4	Warm	0.0358	Feminine	-0.0639	Sassy	0.0063
5	Lively	0.0690	Bold	-0.0201	Sharp	-0.0463
6	Pleasing Design	0.0132	Yonkama	0.0703	Heroic	0.0510
7	Attractive	0.0747	Geometric	-0.0017	Cowardly	-0.0429
8	Culture	0.0745	Organic	0.0014	Voluptuous	-0.0155

This research suggests that to design the whole character, designers should use all the result attained from the calculation. Insights were gained on how the variables are arranged to enable designers and enthusiasts to understand and refer to the provided sample and Viewer’s Impression Words (VIW) to create their own character’s ‘appeal’ eyes according to their creativity and requirements. Partial Least Squares (PLS) analysis had enabled the identification of character ‘appeal’ by pinpointing which Viewer’s Impression Words (VIW) or variables scored high points to the selected animation character design, together with

factor analysis in reducing large datasets from this research to observe the smaller number of variables. The variables also were grouped into a common variable into categories that can be described, to get the underlying concepts of ‘appeal’ and facilitate the interpretations of this research.

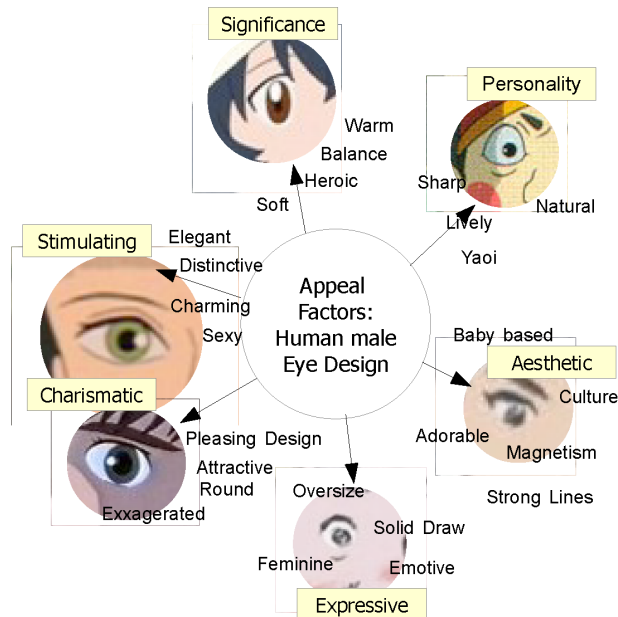


Figure 3 ACDAP Mind Mapping Easy Access: Human-Male Eyes Sample

From the calculation using the multivariate analysis, the project managed to propose a loose principle that may assist animator and enthusiast in designing their own folktales-based animation character design. This project named the loose principle as animation character design appeal principles or ACDAP. To use the ACDAP effectively, designers and animators should select the best combination from a concept of appeal or factors that may consist of one or more element of ‘appeal.’ An example of how to use the ACDAP should be as follows; for example, the designers want to design a male character’s eye, following the appealing factor: Visual Aesthetic it can be interpreted as:

The design of the eyes of the male character should be following the variables (appeal Factors);

1. Culture-related.
2. Dominant.
3. Baby based.

4. Cute.
5. Magnetism.
6. Sassy.
7. Strong lines.

Designers can also combine the ‘appeal’ factors (variables) according to their interpretations, either by selecting from only one factor or a combination of all factors. The 41-factor elements that can be chosen to define how to add ‘appeal’ to draw the new character design. However, designers can reduce the number of factor elements to ease out the designing process. Such as choosing only a few factors or variables (Viewers Impression Words) that may provide a clear understanding to the designers. The ACDAP provides hints on how a design with ‘appeal’ should look like. However, it is only a suggestion to the designers or enthusiast. As ‘appeal’ is subjective, “its theory claims that aesthetic value is a matter of the psychological effect on the attitude of the observer, and these vary from observer to observer”(Edwards, 1989). ‘Appeal’ appears as intuitive. Hence, it depends on the creativity and judgement of the designer or creator with the help of the proposed ACDAP.

CONCLUSIONS

The ACDAP provides a formalistic and visual semiotics hint on ‘appeal’ factors, and it also recommends designers to blend in with their creativity and experience. This statement supported by Nagamachi (2010c) in where, according to him, the most vital stage in Kansei Engineering is the collaboration with designer or animator depending on the project. After the data was acquired, the Kansei engineer should collaborate with the designer and explain the analyzed data and interpretation to the designer. Several ideas might be attained from the data analysis. Hence, designer and engineer should comprehend the final data interpretations and blend them with creative ideas.

Animation character design reference can be found in the form of art books and on the internet. The principles of art and design appear in a lot of drawing guide books in which, they assist the artists to understand on how to organize all of the elements within the design work by using the principles of art and design. These principles work by carefully placing elements in a design to achieve a visual tempo. Most of the books talk about how using design principles can make design easier and getting more ideas in the creative design. Design principles usually talk about using fundamental geometrical shapes for examples,

lines, circles, or cube to facilitate drawing different shapes. Design principles also can be seen as a way to organize the whole design process. The ACDAP is seen as providing a direction to achieve ‘appeal’ principles the same way on how principles of art are being used to reach a good design. It also provides an understanding of what ‘appeal’ should look like from the viewer’s impressions, and this can be achieved with the help of Kansei Engineering approach.

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