

A STUDY OF FORM FEATURE ON MEGA MOTOR YACHTS

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ABSTRACT

The Manufacturing technique of Taiwan yacht industry has been kept pace with that of Europe and American for a long time, but nowadays the yacht industry is facing the problem of self-developed yacht entertainment industry along with shortage of yacht designers. Therefore, this research is based on the relationship of between emotion and actual form features.

The objectives of this research is surrounded by three elements, which includes real form features, adjective images, as well as preference. As a result, the positive influence is derived from significant to insignificant, such as elegant, sporty, energetic and steady, and the negative influence—casual and tasted. When the hull length is longer, it comes to elegant, tasted, energetic and casual. When it comes to shorter, the outcome is steady and sporty. When the position of the hull comes to the middle, it brings to the feeling of elegant. When it comes to the stern, the result will present feeling of elegant. On the aspect of front window slope, it brings the tasted feeling when the angle goes big, and it brings the feeling of elegant and sporty when the angle is 45°, and it brings the feeling of energetic, steady and casual when the angle goes small. Regarding the aspect of FRP hard top, when the altitude goes bigger, it brings the feeling of elegant and casual, and lower brings the feeling of steady and tasted. When the length is longer, it brings the feeling of energetic, steady and casual. When it's shorter, it brings the feeling of tasted. On the basis of the FRP hard top angle, When the angle comes big, it will bring most of feelings. When the window shape looks like a pod, it

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brings the feeling of energetic and casual, the square goes to the feeling of steady, and parallelogram brings the feeling of elegant, sporty and tasted. Finally, the arrangement of windows follow the normal type brings the most feelings, and when it comes to the arrangement of two windows below and one window above and lean against to the right brings the feeling of steady.

Keywords: *Form feature, Motor yacht, Kansei Engineering, Image, Conjoint analysis Layout instruction*

1 INTRODUCTION

Kansei Engineering was invented in the 1970s by Professor Mitsuo Nagamachi. It's a consumer oriented technic which uses some instruments or some quantity method to get the data of people's feeling and such quantitative data could be used into actual design. The customer research says : When we mention to feeling, the customer tends to choose products by their feeling. Veblen had considered that conspicuous consumption usually be seen as the symbolization of wealth and power. Belk had considered that someone would like to prove their position of achievement by conspicuous consumption. Netemeyer pointed out that people who pay attention to their own appearance also lay stress on the products outward appearance.

Taiwan's yacht building industry in Taiwan had a great awareness in the early days by its delicate and cheap yachts. Nowadays, Taiwan's yacht building industry has already received orders to build 44 yachts in 2005, placing it in fifth place worldwide behind Italy, the United States, the Netherlands and England, according to figures published in the US yachting magazine Show Boats International.

The research was aim to enforce the design abilities of Taiwan's yacht building industry that is our own branding and manufacturing to promote our position of international yacht building industry. For this purpose, the research discussed the form features and people's images by evaluating people's feeling. The purpose of this research are listed below :

- (1) The relationship between mega motor yacht and adjective images.
- (2) The preference of the form feature of mega motor yacht.
- (3) The preference of adjective images of mega motor yacht.

2 EXPERIMENTAL

2.1 Experimental Framework

The research focus on the form feature of yachts, and separated the experiment into two parts. The pretest includes adjective choosing, sample model choosing, and factor choosing. The mega yacht pictures and related adjective words were

prepared for the pretest. The resources of the mega yacht pictures and adjective words were collected from the mega yacht website all around the world. The subjects are people who major in industrial design for over 4 years. Once got the sample model and factors , we created a new models by using Orthogonal Design Method. Finally, we went through the main experiment—Kansei Engineering experiment with the adjective words and new models.

2.2 Data Gathering

According to the research restrictions, the study searched the side view of mega yachts from the yacht companies all around the world. The size was limited between 80 to 120 feet. The study has to control the interior layout because the yacht exterior cause by the interior layout in some way. Finally, we gathered 19 yachts, remove the background and remove the unnecessary equipment. At the same time, we collected the 40 adjective words which could be used to describe yachts.

2.3 Adjective Chosen

The purpose of adjective chosen experiment was to eliminate unnecessary or too similar adjective words and put to use in the Kansei experiment. The adjective chosen experiment has two section. At first, the subjects should choose 8~15 from 40 adjective words. The result of the first section picked out 14 adjective words. Then, the second section picked out 6 final adjective words by KJ method , they are : steady, tasted, sporty, elegant and casual.

2.4 Sample Model Chosen

The purpose of sample model chosen experiment was to find out the yacht that do not have any kind of image in order to be a template of 3d modeling. The experiment asked subjects to score the 19 mega yacht sample by 6 final adjective words. The yacht template was showed as **Figure 1**.

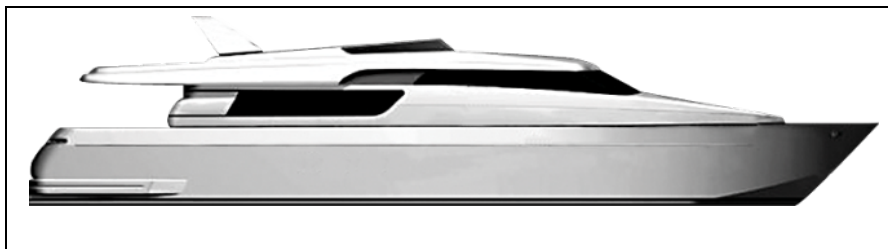






Figure 1: Sample model

2.5 Factor Chosen

The purpose of factor chosen experiment was to decompose yachts into more elements that we can find out more combinations. The factors decompose by the method of interview and there are 4 items they could choose. Final factors were collected by the result they chosen and the professional reference. The conclusion of the experiment was separated into three parts which are vertical proportion,

horizontal proportion and sheer line above. The exact table was listed as “Table 1” below.

Table 1: Final factors

Proportion	Vertical propotion	FRP hard top/Tall	0.29
			0.20
			0.16
		Hull/Tall	0.52
			0.37
			0.22
	Horizontal propotion	FRP hard top/Length	0.38
			0.28
			0.18
		Hull/Length	0.81
			0.68
			0.55
		Hull forward to bow – Stern to Hull backward	0.86
			0.22
			-0.42
Sheer line above	Window shapes	Round like	
		Parallelogram	
		Rectangle	
	Window arrangement		
			
	FRP Hard Top (Angle)	150°	
		120°	
		90°	
		60°	
		30°	

	The slope of front window	30°
		45°
		60°

2.6 Kansei Engineering Experiment

The Kansei Engineering experiment had gone through with 6 adjective words and 32 mega yacht models which were created by Orthogonal Design Method. The average age of the subjects is 25 years old, range is 20~32 years, std. deviation is 2.18. The continuous Likert scale was used to measure the point each yachts got. At beginning, the subjects should scale the 6 adjective words and a preference of a model at the same time“**Figure2**”, that is to compare the all the aspects of a model. Second, the subjects should scale all the 32 models of adjectives words at a time“**Figure3**”, that is to see the scale points of all yachts of an adjective word. Finally, all the scales will show on the screen to check if the subjects would like to change it or not. To avoid the scale range diverse caused by individual differences, the scale points had been standardized.

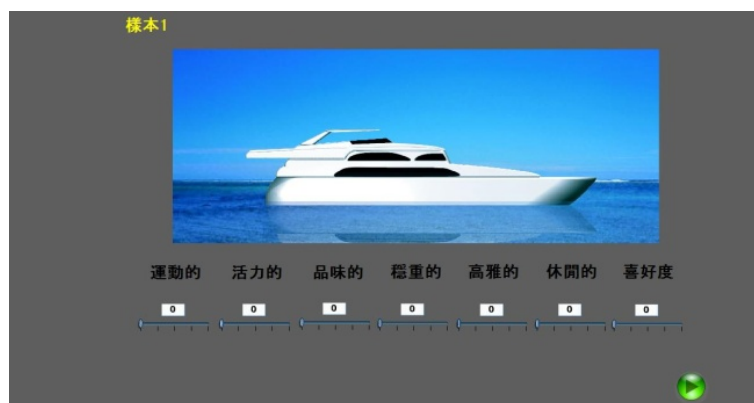


Figure 2: Single model to all adjective words

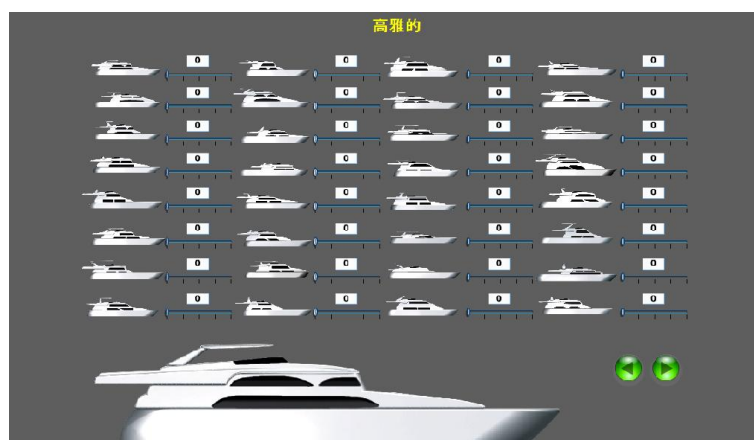


Figure 3: Single adjective word to all models

3 EXPERIMENTAL RESULTS

The research discuss the relationship between three issues, they are yacht form features, preference and adjective words by scaling people's feeling of form feature and adjective words. The analysis methods used multiple regression and conjoint analysis. The results tends to find out if people have certain preference of mega yacht, and to figure out whether yacht form features and adjective words have certain relationship or not.

3.1 Yacht Form Features and Preference

The purpose of this issue looked into what people really prefer about the form feature. The result of this analysis could separate into two sections to discuss. First of all, as we separated it by the vertical ratio, horizontal ratio and sheer line above, the most influence factor of preference is the height of hull. The lower the hull is, the better people prefer. In the aspect of window arrangement, the window should align in vertical and horizontal ways that people prefer most.

Second, as we separated it by the FRP hard top, hull and window, we can see that if we arrange it by the influence to the preference, they are hull, window and FRP hard top. The hull altitude is the most important part of all.

3.2 Adjective words and Preference

The purpose of this issue discussed that if people tend to prefer a certain kind of adjective images or not. The influence of people's preference to the adjective images is elegant, sporty, tasted, energetic, steady and casual. The negative effects to the preference are casual and tasted. The more images of the two adjective words goes up, the more dislike people have.

3.3 Yacht Form Features and Adjective

(1) Elegant

Compare to other adjective words, as refer to a longer hull, the bigger angle of FRP hard top and the higher altitude of FRP hard top, the mega yacht seems more elegant than others.

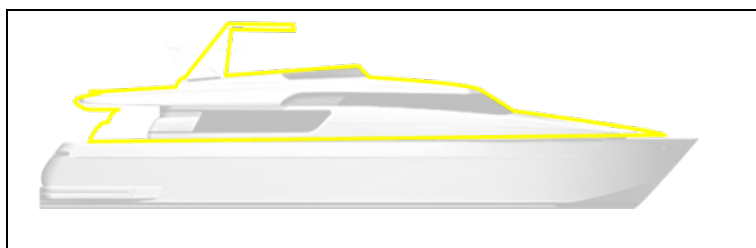


Figure 4: The form features of elegant chart

(2) Sporty

Compare to other adjective words, as refer to a shorter hull, the bigger angle of FRP hard top and the front position of the hull , the mega yacht seems more sporty than others.

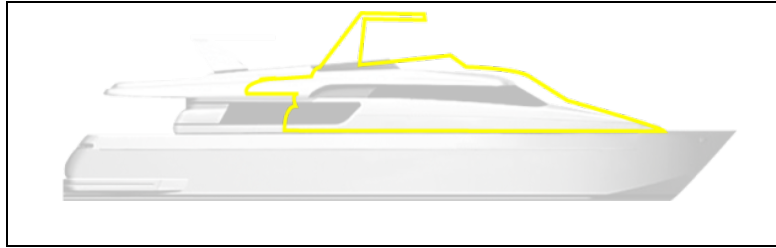


Figure 5: The form features of sporty chart

(3) Energetic

Compare to other adjective words, as refer to a round like window shape, the bigger angle of FRP hard top and the front position of the hull , the mega yacht seems more energetic than others.



Figure 6: The form features of energetic chart

(4) Steady

Compare to other adjective words, as refer to a square like window shape, a lower altitude of the hull, a longer FRP hard top, the mega yacht seems more steady than others.

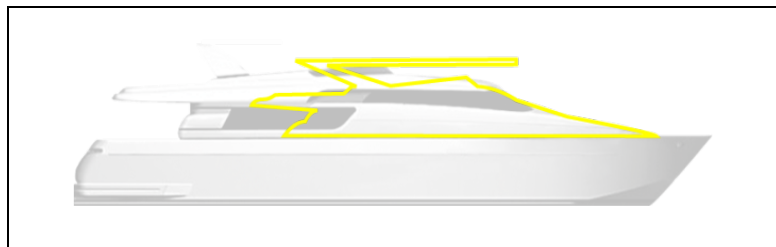


Figure 7: The form features of steady chart

(5) Casual

Compare to other adjective words, as refer to a longer FRP hard top, a lower altitude of the hull and the front position of the hull the mega yacht seems more casual than others.

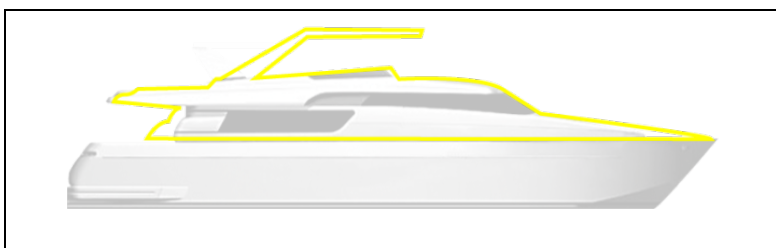


Figure 8: The form features of casual chart

(6) Tasted

Compare to other adjective words, as refer to a backward position of the hull, the shorter and lower FRP hard top and a steep slope of front window, the mega yacht seems more tasted than others.

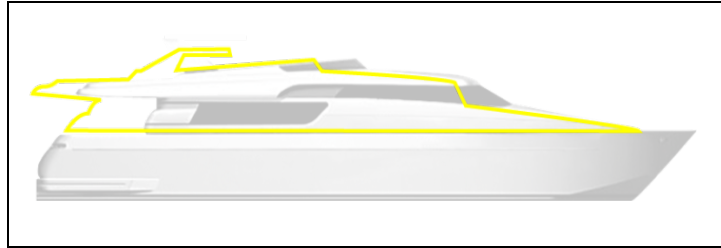


Figure 9: The form features of tasted chart

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