

# Video Commercial Image Preference Study Through The Web Analytical Tool

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## Abstract

In the web Kansei image survey, one single perspective view, instead of multiple views for detailed product information, is often used for evaluation. Moreover, on-line video commercials are rarely seen in marketing survey. To solve the insufficient product information problem, this study integrates the eye tracking system to offer more precise data in addition to the multiple perspective views in the 2-dimensional web analytical system. For commercial image test, video files are added in the web analytical system. The web technique and quantitative analytical method are expected to help enterprises in their consumer attitude and image evaluation through video commercials. Through the web analytical system, the image and target user group preference analysis can be conducted for the references of marketing. In this study, four motorbike brands, SYM, KYMCO, YAMAHA, PGO, are used for the image preference survey. Through such a web analytical system, the coordinate values for the video commercials can be obtained for product positioning analysis in real time to select a proper video commercial with better image perceptions for further development. The survey verifies the suitability and feasibility of integrating video files with multiple views in the web analytical system. This will upgrade the total function and service of the web analytical system in new product design and marketing commercial development.

**Keywords:** Website Technique, Commercial Analysis.

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## 1. INTRODUCTION

Video commercials can educate consumers, touch their hearts, and finally lead to the purchasing behavior. Consumers' cognition toward video commercials also affects the formation of their perceptions of enterprise's brand images. However, web analytical systems for the evaluation of video commercials are still rarely seen, most of which only deal with the wording and single graphics. In addition, single perspective views are often used in the Kansei semantic studies. The dynamic video commercials are rarely seen in Kansei studies; therefore, video commercial files are added in the web 2-dimensional analytical system in the study.

The use of web 2-dimensional analytical tools for product form image and marketing survey features the advantages of high return rate, interactivity, and avoids repeated surveys. More importantly, the adoption of interactive animated web software (Adobe Flash), dynamic Active Server Pages (ASP) programs for database retrieval and data calculation makes it possible to offer lively multi-angle interactive web pages. Furthermore, the integration of eye tracking system will generate precise data regarding product form features. Subject's personal data and coordinates of product evaluation can be directly stored in the database for objective quantitative analysis and instantly turned into output diagrams for references in new product design and marketing[1]. The purpose of this study is to make a breakthrough by adding dynamic video commercials for in-time viewing and evaluation.

To achieve the above evaluation and analytical functions in the web tool, dynamic video commercial files are added for references in new product development and marketing. In addition

to the positioning analysis of major competitors and target user group preference survey, the efficiency and functions in the web 2-dimensional analytical system are enhanced.

## **2. LITERATURE REVIEW**

This section covers the overview of related studies regarding web surveys, product presentation in image survey, development of web image survey system, and basic theoretical research about commercials.

### **2.1 Web survey**

Thanks to the popularity of Internet, there are more ways of information transmission and reception, and so are the interpersonal communication patterns. Such changes have encouraged more social science researchers to use Internet for investigating and collecting data [2,3]. The web surveys feature lower cost and faster speed in collecting the questionnaire [4]. More importantly, the subjects will feel lower sense of threat in answering sensitive questions [5]. These are the advantages and convenience brought forth by the Internet. Huang pointed out that the web survey has the following advantages: (1) sending large amounts of questionnaire immediately, (2) reducing costs, (3) individual design without interference of others, (4) encouraging the participation of the respondents, convenient in the interaction in user interface of graphics or video files for all times, (5) able to access people hard to reach such as doctors and superior executives [6]. According to Couper, the use and inference of results from the survey should be clearly defined and limited in the population [7]. Furthermore, web surveys need to pay attention to the following principles: (1) based on considerations of error, the survey content should be consistently relevant to the target user group; (2) the percentage of effective return should be maximized; (3) enhance the heterogeneity and representativeness of samples under the premise that the survey content is consistent with the target user population; (4) the subject's attitude level should be paid attention to in addition to the demographic variables in adjusting the web survey data [7,8,9]. In addition to the typical questionnaire form, the static graphics are mainly used in traditional web surveys. In advanced survey, the video files are used for consumer's attitude and preference evaluation. It is not often used in current web survey, which is one of the reasons why the dynamic video files are used in the 2-dimensional analytical system.

### **2.2 Product Presentation in Image Survey**

Hsu, et. al, made a study to compare the image perception of real and photographic product samples and found no significant differences in most product samples and image perceptions [10]. The website analytical system proposed in this study solved the shortage of insufficient information from single perspective views in general image survey systems. Instead, multiple perspective views are presented (SWF files). Moreover, the eye tracking system was combined for the product form preference investigation in this study so as to enhance the validity of product form image survey [1]. This study intends to transform animated video files (AVI, WMV, MOV, MP4, RM, etc.) into FLASH FLV files in the web analytical system. The operation scenario and preferences for video commercials are evaluated, which enhances the functions for Kansei measurement in video files in the analytical system.

### **2.3 Development of Web Image Survey System**

The frequently used image scale analysis was proposed by Kobayashi in Nippon Color & Design Research Institute (NCD). It uses visualized and systematic diagrams to help design team members focus and stay on the track of the previously set direction during design procedure. Since then, it has been used in product form image, graphic design and color analysis by the industry and design houses [11]. According to Chen, the image scale analysis (X-Y axes) is the most popular method used in the design houses in Taiwan, up to 54.5% of the companies he interviewed. This indicates the importance and practical value of the image scale technique in the design analysis in industry [12].

Though it is popular and easy for designers to comprehend 2-dimensional image scale in industries and design houses, how to generate an objective data has been a problem bothering

designers all the time. To solve such a problem, in a study of mineral water bottle images, Huang offered a 2-dimensional image analytical tool where coordinates subjects placed product samples were calculated for final gravitation centers were provided for a new objective quantitative analytical model [13].

However, how to further meet the requirements of researchers and subjects in the operation of web-based 2-dimensional image analytical system, namely, how to construct an objective and efficient system for the image scale analysis is still an issue worth investigation. In the web era, designers tend to share their concepts on line. More importantly, a cooperative design environment can be built up through the web technique so that designers in different environments can work together and share their design concepts through the Internet. In terms of web-based image survey, Roy and Kodkani integrated database and WWW and made it possible for each designer in a team to access the survey data through authorized password [14]. Huang, Lee and Mak efficiently integrated designers on line for the decision making in design procedure [15]. It is necessary for us to build up a web-based 2-dimensional image analytical system for product design analysis. In a study of the production of Multi-dimensional Scaling questionnaire, Tu adopted the world-wide web platform to construct the survey. From the WWW platform, it is possible for designers to generate website questionnaire and conduct the survey on line and automatically collect the data they need [16]. In addition, in a study of the measurement tool of visual image, Ikudame and Harada proposed a survey system to gather image data for references [17].

In terms of the development of image survey system, it is often limited to a single computer in the lab or to the input and output of the data subjects enter. Therefore, with multiple perspective views of product features (SWF) and video files (FLV) for survey mode, visual charts and diagrams can be offered for follow-up computation analysis and interpretation. This is one of the important features of the current study.

#### **2.4 Commercial Design**

Wells, Burnett, and Moriarty claimed that advertising is “a distinct sponsor” that attempts to persuade or influence people’s inhuman communication through the mass media [18]. Laviage suggested the stages of awareness, understanding, liking, preference, conviction, and buying stages before a potential consumer’s purchasing action, which is the effect of commercial communication [19]. Kotler divided the appeals of advertisements into three kinds: (1) Rational Appeals for the consumer’s self-interest, (2) Emotional Appeal that triggers a positive or negative motive to stimulate consumers to buy products, and (3) Moral Appeal mainly for public interest advertisements. In addition, advertisements can help enterprises uplift their corporate images through the improvement of customer’s trust and impressions of the enterprise [20]. Sandage pointed out that advertising could inform the members of a community about the products, services and concepts, making the whole society prosperous [21]. In addition, advertising can increase consumer’s judgment in making decisions of purchasing action. Wang defined advertising as an information communication technology to let people know the goods or services, and convince them to purchase these products [22]. According to these concepts, the author made a survey for the consumer’s preferences toward video commercials based upon Kotler’s three appeals. Narrowly speaking, the consumer’s attitude toward an advertisement can be referred to as the degree of preference consumers have toward the advertisement. Advertising effectiveness emphasizes the change of consumer’s attitudes. In the definition of broadcasting, convincing is a kind of attitude change. In general, a good attitude is likely to result in a positive behavior to purchase commodity. According to Mitchell & Olsen and Shimp, the attitudes customers have for advertisement (good, bad, like it or not), cause the formation of consumer’s attitudes to a brand [23,24]. Lutz considered that such kind of attitude can be referred to as the tendency whether a specific advertisement can stimulate consumer’s preference under certain exposures [25]. Lutz, MacKenzie & Belch claimed that consumer’s attitude of an advertisement can be measured by cognitive and affective aspects. Consumer’s awareness and the extent of the evaluation for advertising can be measured from cognitive point of view while the degree of preference consumers have toward the advertisement can be measured from the affective side

[26]. Measurements from these two dimensions are better than the direct overall attitude. According to these studies, the author made a survey of consumer's preferences toward enterprise's brand from affective dimension and attraction of advertisement from the cognitive dimension in the 2-dimensional analytical system.

Generally speaking; three categories of messages are expected to deliver in video commercials. One is the overall corporate image of the enterprise; the other is product advertising informing new product or introducing the product features; another is the promotional advertising announcing the discounts, lower prices or bonus gift giving. In this study, the video commercials appeal for the overall corporate image and product advertising, in which consumer's preferences are explored.

In terms of advertising spokesperson, Hovland, Janis and Kelley pinpoint two parts of convincing communication: (1) persuading ability of the message itself, (2) persuading ability of the information sources (the advertising spokesperson) [27]. When consumers do not trust the source of the message, even if the message itself is very reasonable and credible, consumers may ignore the message and have low comprehension of the commercial. Therefore, the credibility of the message source (Source Credibility) is one of the most important factors affecting advertising effectiveness. What the advertising spokesperson conveys to consumers is a kind of product message. Kahle and Pamela considered the credibility of spokesperson comes from his or her expertise, trustworthiness, and attractiveness [28]. The expertise refers to the fact that the spokesperson has demonstrated proficiency in product presentation, indicating that he or she is considered to be the source of correct knowledge. Trustworthiness refers to the need to have an honest spokesperson, competent and other features so that consumers will believe that the information provided is objective and honest. Attractiveness refers to that fact that the spokesperson is attractive and able to draw the attention of consumers. In general, there are three kinds of product spokesperson: (1) celebrity: a well-known figure that has outstanding performance in some certain fields other than the products and that has high reputation to the general public such as entertainers and athletes; (2) professional experts: those who have professional knowledge on the product category they promote because of their experience or learning; (3) the typical consumer: the average consumer that has no particular reputation or expertise [29]. In this study, the product spokesperson of SYM belongs to the professional expert (General Manager); the one for KYMCO is also a professional expert (Deputy General Manager). These two brands were endorsed by professional experts while YAMAHA PGO is endorsed by a typical consumer, an interim prime young actor for the endorsement plot.

As far as the consumer involvement is concerned, it is referred to as the degree consumer spending time and effort in collecting and evaluating data in the consumer decision-making process. In the study of consumer behavior, the involvement concept has been playing an important role. Consumer involvement of products is an important variable in executing advertising strategies [30]. Under situations of different consumer involvements of products, the degree of consumer involvement will determine whether the consumer will actively or passively receive the advertising messages. More importantly, it will influence consumer's purchasing decisions and gathering of associated product information, thus limiting or extending the self-communication process. Early scholars explored the concept of involvement from different views of application and generate different definitions and measurement methods for involvement. The concept was first proposed in the advertising domain by Krugman, who considers involvement as the frequency of the combination of the advertising messages and personal life experiences [31]. Bloch and Richin argue that involvement is the degree of importance consumers place on products or personal subjective significance consumers give to a specific product [32]. Zaichkowsky defined involvement as personal attachment perceived from a specific thing based upon one's inherent needs, values and interests, and summarized three factors for the sources of involvement, including personal, product, and situational factors [33]. Personal factors include internal values, self-concept, interests and needs, product knowledge and past experience. Product factors refer to the characteristics of the product or service causing consumers to get involved, including product price, product feature, durability, importance, product symbolic

significance, and so on product attributes. Situational factors are elements to increase consumer's concern or interests in specific things, including the purchase situation, the use scenarios, purchase time pressures, product promotion environment, and so on. While there are various definitions for involvement, there are some parts in common. Lee and Mittal defined involvement as personal perceived value of the goal-object, representing one's interest in the target subject [34]. Such a target subject can be either the product itself (product involvement) or purchase decision (brand decision involvement). The reason why consumers are interested in a particular product category lies in that fact that the product meets important personal values and consciousness of goals. And purchase involvement or brand decision involvement indicates that consumers are interested in making decisions to buy a product or to select a brand. Therefore, through the web 2-dimensional analytical system, this study explores the contents of different motorbike video commercials and consumer's involvement so as to understand consumer's preferences towards different brands and products.

### **3. ADD VIDEO FILES OF COMMERCIALS IN WEB ANALYTICAL TOOL**

In this study, through a combination of Internet technology and database, video files were added in the analytical system. Researchers can set up the initial specifications for survey and conduct a pilot test through the test page. The user interface can be revised for formal survey. After the web survey is completed, the investigator can obtain the coordinates from the accumulated entry data through the ASP server program. At last, charts and diagrams can be downloaded immediately for further analysis. The needs for different stages are discussed as follows:

#### **(1) Set up project data by the researcher**

The operation interface for a project can be set up by the researcher. Following the steps and upload the test samples, a research project can be established for subjects to fill in.

##### **a. Project data set up:**

The basic data of the web analytical system include first page (Project title, Purpose of research, Survey unit and title) as well as the demographic variables like gender, age, and profession.

##### **b. Test sample file format and upload:**

Select Adobe Flash for product samples to test. Acceptable formats are .jpg for static images, .swf for dynamic images, and .flv for video files. The Persits Software ASPUPLOAD in current ActiveX Server can be used for uploading.

##### **c. Set up key words for the web analytical system:**

In addition to Soft-Hard and Warm-Cool of NCD, researchers can enter key words for project survey. Ways for setting up image words include:

(a) Semantic survey of multiple image word pairs from which factor analysis can be performed to choose two major words (X, Y axes) [35].

(b) Choose image words proposed by related product form studies. For example, preference and purchase intention along axes of the 2-dimensional analytical system are usually adopted to investigate the differences among different user groups for market segmentation [36,37].

(c) Collect image words from product catalog or use the image words from the client.

After group discussions with enterprise delegators, brand preference was adopted for the affective dimension and commercial attractiveness was used for the cognitive dimension, according to the study of Lutz, MacKenzie and Belch, for further survey in the study [26].

#### **(2) Project survey**

After subjects received notice of investigation by the system, they can access the system and enter their basic data to conduct the survey on line.

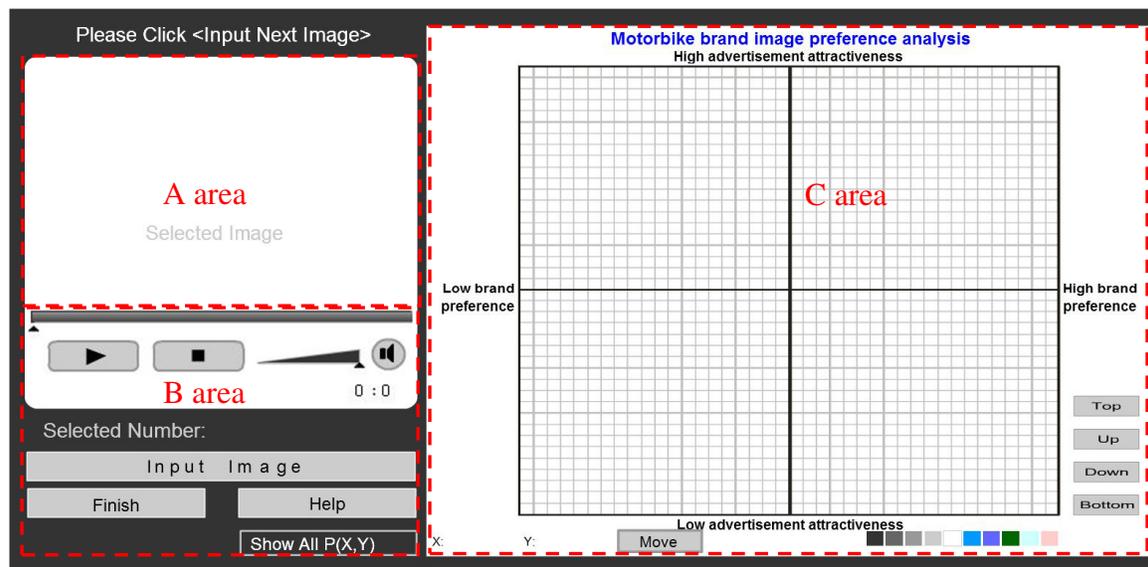
a. Enter the basic data

Subjects enter their basic data such as age, gender, profession, educational degree, and so on by key in or pull-down menu. After the subject completes the basic data, a click of the lower Finish button will lead to the test page in 2-dimensional analytical system.

b. Test in 2-dimensional analytical system

In the test page of 2-dimensional analytical system, when the subject presses down the Input Image button in B area, there will be two parts to present the dynamic contents of the test video commercial. The upper left area is the display area. Video files are presented in A area, a 300\*300 pixels window port. The evaluation area is on the right side of the 2-dimensional analytical system, a 500\*500 pixels window port in C area. The subjects follow the order to finish the evaluation in the system. All the basic data and product coordinates will be stored in the database for further calculation of the gravity centers. In the video interface, when there are video files for product operation survey on line, the video control button will be shown while a hidden SWF controls the user interface.

Figure 1 illustrates the interface of video file control in 2-dimensional analytical system. A area is the video presentation window and B area covers the control buttons (Input Image, Finish, Help, Play (▶), Pause (■), Mute and Volume control sliding button, time axis and Time display). C area shows the locations of graphics for video files.



**FIGURE 1:** The interface of video files control in 2-dimensional analytical system.

(3) Project survey output data

The output data can offer different formats of quantitative data for further statistical analysis. Through the subject data output set up interface, researchers can download subject personal data by setting up the classification of gender, age, educational degree, and profession. For the output coordinates of test video file, researchers can download all subjects' coordinates and gravity centers of all test video file. These data for specific user groups are also available. They can be downloaded by HTML or EXCEL formats for further statistical analysis.

(4) Output of diagrams and tables

In addition to the required quantitative data, researchers can download graphic charts from the Download graphic data interface. The distribution patterns of product gravity centers and coordinates of single product sample can be prompted by marking the target user group or specific product sample. Moreover, Manova can be conducted by the combination of subject's

demographic variables and coordinates of gravity centers. The graphic diagrams can be compared and contrasted with the statistical output data.

#### 4. PROCEDURE OF IMAGE SURVEY OF VIDEO COMMERCIALS

Firstly, motorbike commercials were gathered from Youtube for data collection. Four motorbike brands, including SYM (A), KYMCO (B), YAMAHA (C), and PGO (D), are chosen as the survey target. Files were selected based upon the appeal of corporate brand image. The MP4 files in Youtube were converted into .flv files through Flash for subsequent commercial image preference survey in the 2-dimensional analytical system. According to Lutz, MacKenzie and Belch, brand preference is used along affective dimension (X Axis), and advertisement attractiveness is used along cognitive dimension (Y axis) for the survey of motorbike commercial image survey [26]. Video files located in first quadrant will be better preferred and brands with high advertisement attractiveness will be the major competition companies. A total of 154 subjects were invited for the survey. It is hoped to select the most preferred motorbike commercial brands from an objective survey and analysis.

The contents of four motorbike commercials are summarized as follows: SYM is endorsed by the General Manager Huang Kwangwu to offer professional and reliable engine cylinders and honest image; KYMCO is endorsed by Vice General Manager Ko Junbin to provide vibration and noise test report for a professional, reliable, and honest image; YAMAHA is done by the typical consumer endorsement, providing the image of youth and vitality of young people; PGO is also endorsed by a young typical consumer, providing an image of friendship through fixing motorbile together. These images of motorbike video commercials are shown in Figure 2.

<p><b>SYM</b> <a href="https://www.youtube.com/watch?v=XTFrALFKEY4">https://www.youtube.com/watch?v=XTFrALFKEY4</a></p> 	<p><b>KYMCO</b> <a href="https://www.youtube.com/watch?v=YYhmemLRjIO">https://www.youtube.com/watch?v=YYhmemLRjIO</a></p> 
<p>Professional and expert endorsement, providing expertise and reliable engine, honest image.</p>	<p>Professional and expert endorsement, provide testing vibration, noise reports and professional, reliable, honest image.</p>
<p><b>YAMAHA</b> <a href="https://www.youtube.com/watch?v=XIhXhNRvWf0">https://www.youtube.com/watch?v=XIhXhNRvWf0</a></p> 	<p><b>PGO</b> <a href="https://www.youtube.com/watch?v=TILCxLGq_1A">https://www.youtube.com/watch?v=TILCxLGq_1A</a></p> 
<p>Typical consumer endorsement, providing youthful image.</p>	<p>Typical consumer endorsement, providing images of friendship and cooperation.</p>

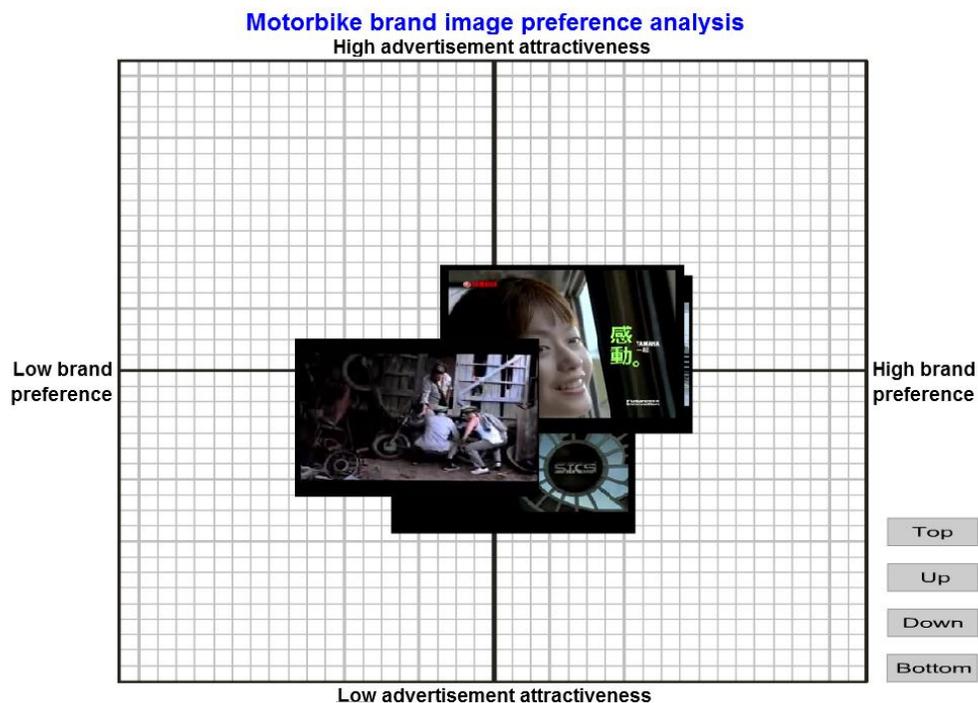
FIGURE 2: Contents of four motorbike video commercials.

## 5. MOTORBIKE BRAND IMAGES IN WEB ANALYTICAL TOOL BY VIDEO COMMERCIALS

The motorbike commercial image test was conducted through video files of SYM, KYMCO, YAMAHA, and PGO brands online. In terms of vocabulary, the brand preference (X-axis) and advertisement attractiveness (Y-axis) are adopted for brand image and target group preferences survey.

### 5.1 Image Preferences of Motorbike Video Commercials

In the web survey, 154 subjects were invited for preference evaluation. After 10 work days, the gravitation center of each video commercial was calculated. At last, the screening of four motorbike video commercials was conducted through the output position diagram. The benchmark motorbike video commercial was selected for subsequent preference check of target user group. The distribution of subject's preferences towards four motorbike video commercials is illustrated in Figure 3.



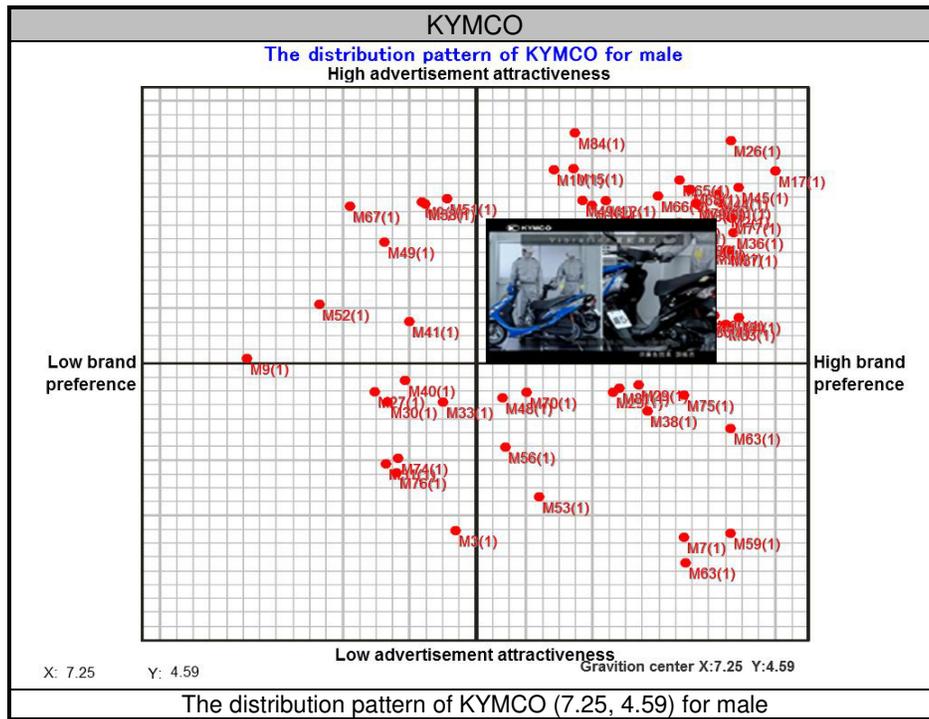
**FIGURE 3:** The distribution of subject's preferences towards four motorbike video commercials.

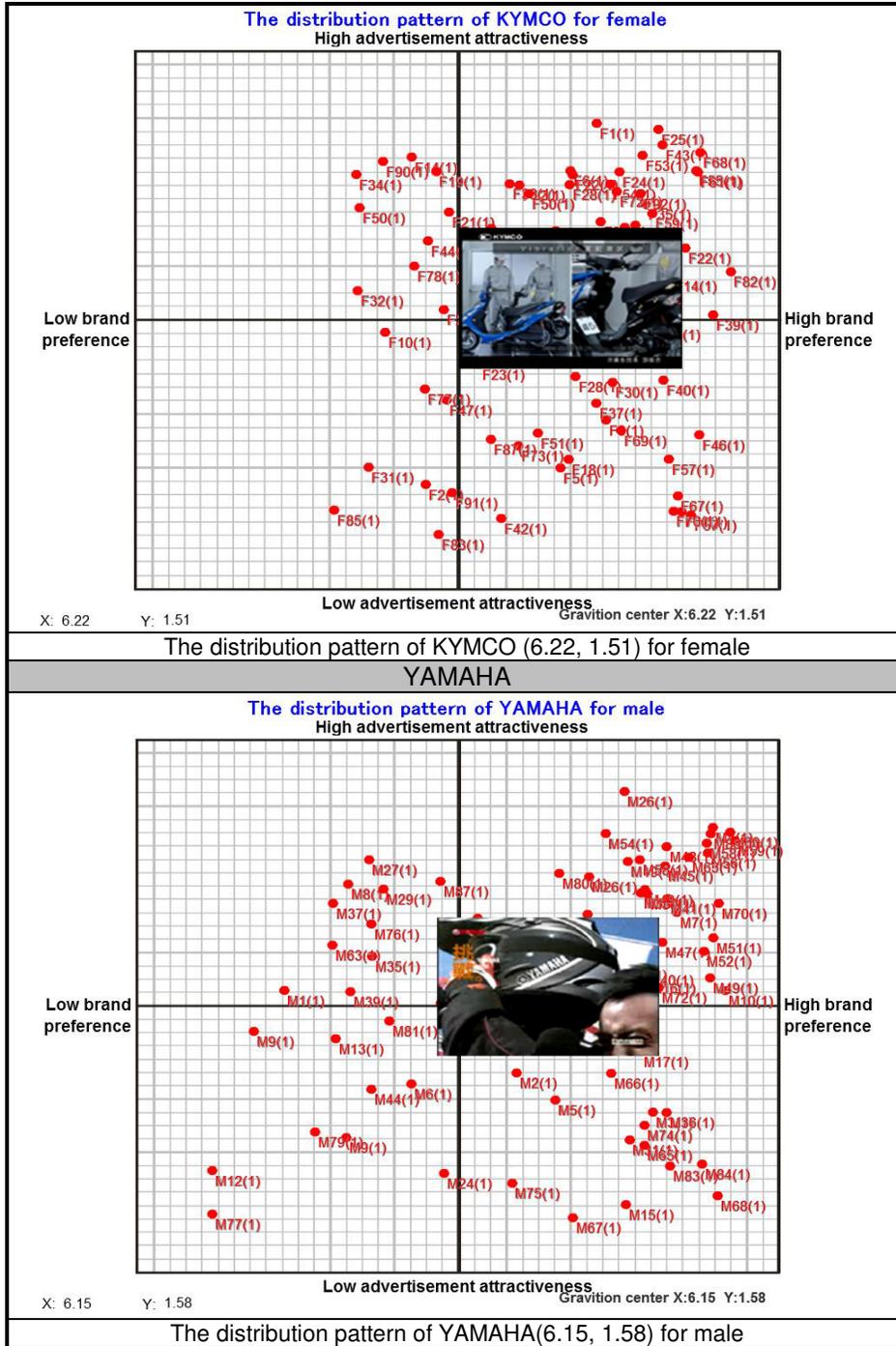
Through the positions of four motorbike video commercials, the raw data of subject's evaluation scores were adopted for multivariate statistical analysis. The result of one-way MANOVA indicates that Wilks' Lambda  $F=27.69$ ;  $p \text{ value} < 0.00 (< 0.05)$ , meaning that there exist significant differences among four motorbike video commercials. Moreover, through marginal tests, it is found that these four motorbike video commercials are significantly different along X axis ( $F=36.52$ ;  $p \text{ value} < 0.00 < 0.05$ ) and Y axis ( $F=24.26$ ;  $p \text{ value} < 0.00 < 0.05$ ). This demonstrates that these video commercials are significantly different in terms of brand preference (X axis) and advertisement attractiveness (Y axis). Furthermore, the Duncan post hoc test divides these four video commercials into several clusters. Along X axis of brand preference evaluation, KYMCO (6.71) and YAMAHA (6.27) are the highly preferred brands, and YAMAHA (3.69) and KYMCO (2.99) are much more attractive along Y axis of advertisement attractiveness. As a result, KYMCO and YAMAHA are two major competition brands; their video commercial designs are worth of design references. They are located in first quadrant in that the values of brand preference (X value) and advertisement attractiveness (Y value) are both positive and can be set as high preference area in the market. The final gravitation centers for these four motorbike video

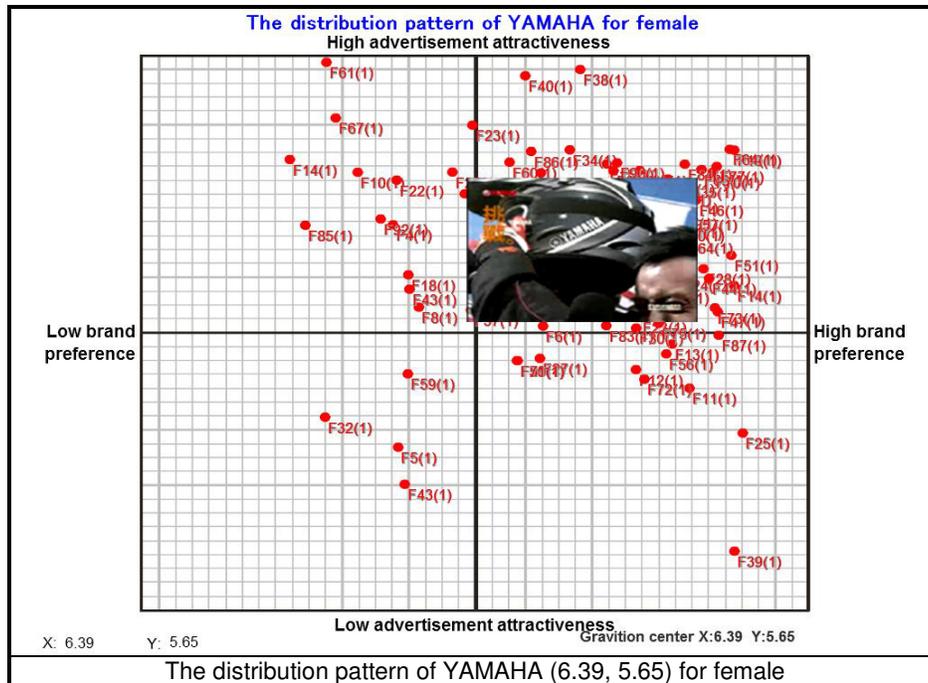
commercials are SYM (3.58, -3.41), KYMCO (6.71, 2.99), YAMAHA (6.27, 3.69), and PGO (-1.51, -1.05) respectively. Consequently, KYMCO and YAMAHA video commercials are selected for further target user group preference study.

### 5.2 Target User Group Preferences of Motorbike Video Commercials

In this study, two major competition brands, KYMCO and YAMAHA video commercials, are selected for target user group analysis in terms of genders and user groups. The data can be downloaded through the Download graphic data interface. Potential user groups are male and female consumers. To check whether there exist significant differences between male and female consumers in their preferences in KYMCO, YAMAHA video commercials, the distribution of scatter diagram and gravitation centers can be generated as can be seen in Figure 4. From the system, the gravitation centers for KYMCO video commercial are (7.25, 4.59), and (6.22, 1.51) for male and female user groups respectively. It is clear that the gravitation centers for these two user groups are located in first quadrant, meaning that KYMCO are a brand highly preferred by these two user groups. For YAMAHA video commercial, its gravitation centers are (6.15, 1.58) and (6.39, 5.65) for male and female groups respectively. It is clear that YAMAHA is also a highly preferred brand in that it is located in first quadrant. Through the 2-dimensional analytical system, it is possible to generate the potential user group's preference for one single video commercial sample in real time, which is helpful for future marketing and promotion study.







**FIGURE 4:** The distribution pattern of KYMCO and YAMAHA for male and female target user groups.

Furthermore, to explore whether there exists significant difference between these two target user groups in terms of video commercial preferences, the coordinates of the subjects of two potential user groups in terms of product brand preference and advertisement attractiveness are used for t test. The result showed that in the total test, Wilks' Lambda  $p$  value=0.016<0.05;  $F = 4.445$ , indicating that there existed significant differences among two potential user groups along product form salience and purchase intention. Moreover, marginal tests showed significant differences between two potential user groups along purchase intention axis ( $F = 8.823$ ;  $p$  value=0.004(<0.05)) but no significant difference was found between male and female user groups in product form salience axis ( $F = 0.991$ ;  $p$  value 0.324(>0.05)). Therefore, male user group whose purchase intention is higher can be selected as the target user group for Sample S16. This kind of data is helpful for marketing personnel.

For preferences of KYMCO video commercial, the average values of brand preference (X axis) for male and female user groups are 7.25 and 6.22 respectively;  $t=0.91$ ;  $p=0.37$  (>0.05), indicating no significant difference between male and female groups in brand preference. Therefore, KYMCO can be referred to as the popular brand in the mass market. In terms of advertisement attractiveness (Y axis), the average values of male and female user groups for KYMCO video commercial are 4.59 for male consumers and 1.51 for female consumers;  $t=2.32$ ;  $p=0.01$  (<0.05), demonstrating that there is significant difference between male and female user groups in the attractiveness viewpoint. Male subjects have much higher score of advertisement attractiveness than that of female group, indicating that the professional expert endorsement and performance test of motorbike are more attractive to male consumers.

For preferences of YAMAHA video commercial, the average values of brand preference (X axis) are 6.15 for male user group and 6.39 for female user group;  $t=-0.18$ ;  $p=0.43$  (>0.05), indicating no significant difference between male and female groups in brand preference. Therefore, YAMAHA can also be referred to as the popular brand in the mass market. In terms of advertisement attractiveness (Y axis), the average values of male and female user groups for YAMAHA video commercial are 1.58 for male consumers and 5.65 for female consumers;  $t=-3.18$ ;  $p=0.00$  (<0.05), demonstrating that there is significant difference between male and female user groups in terms of advertisement attractiveness. Male subjects have much higher score of

advertisement attractiveness than that of female group, indicating that the professional expert endorsement and performance test of motorbike are more attractive to male consumers. The video commercial of YAMAHA is more attractive to female user group for the reason that they use typical young female actress for a young style plot. Table 1 shows the results of t tests for these two motorbike video commercial preference and attractiveness evaluation. The result can be used for references in follow-up product marketing promotion.

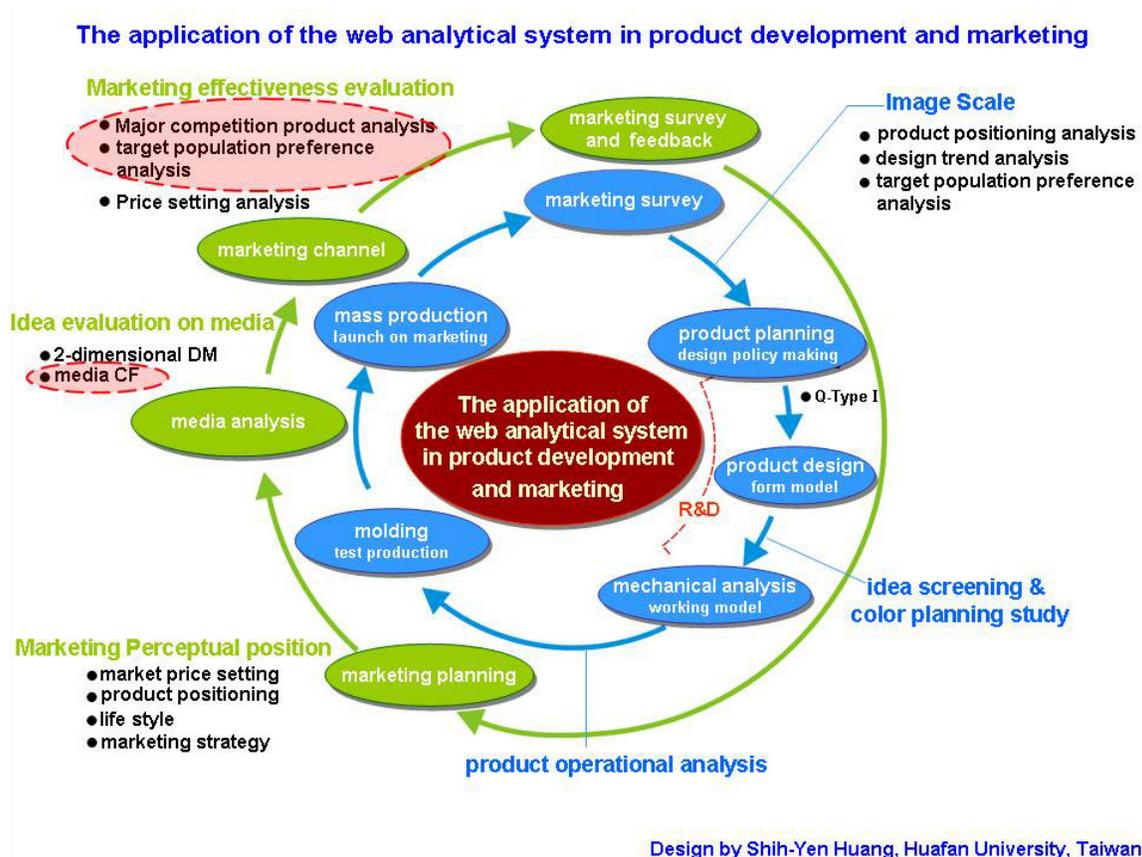
**TABLE 1:** The results of t tests for KYMCO and YAMAHA motorbike video commercial in preference and attractiveness evaluation.

t test	Numbers	Avg (male)	Avg (Female)	t	P value	Significance
KYMCO_X axis	Male 74/ Female 80	7.25	6.22	0.91	0.18	No significant difference
KYMCO_Y axis		4.59	1.51	2.32	0.01	Significant difference
YAMAHA_X axis		6.15	6.39	-0.18	0.43	No significant difference
YAMAHA_Y axis		1.58	5.65	-3.18	0.00	Significant difference

## 6. CONCLUSIONS AND SUGGESTIONS

The study results demonstrated that the interactive interface and video commercials can help subjects uplift their judgment and precision in measurement of the 2-dimensional web-based analytical system. By adding video files of four motorbike brands in the system, researchers can select major competition brands quickly from the brands whose positions are located in first quadrant. In this study, KYMCO and YAMAHA video commercials are highly preferred by the consumers. Moreover, the researcher can investigate whether there exist significant differences among major competition brands in potential target user groups in terms of their preferences. This can be done by the Download graphic data export interface in the system. The distribution patterns of coordinates and gravitation centers of major motorbike brands, KYMCO and YAMAHA in this study, show no significant differences between male and female user groups in terms of brand preference. They can be considered the popular brands in the mass market. However, in terms of advertisement attractiveness, there exist significant differences between male and female user groups for KYMCO and YAMAHA video commercials. Male consumers think KYMCO video commercial much more attractive while female consumers have a much higher opinion for YAMAHA video commercial in advertisement attractiveness. It is clearly evident that there are remarkable differences between two major competition motorbike brands in drawing the attention of potential target user groups in their advertising strategy. The provision of video files of corporate images is helpful for the design of commercials and marketing promotion in the future.

Finally, the web analytical system proved appropriate for product development and marketing application. In product development, product positioning analysis, fashionable trend analysis, target user group preference analysis, product feature analysis can be applied in the areas from market research to product planning for design references. In product design, mechanical design, mold design, and mass production, the idea screening, color preference studies, and product operational analysis are practicable. For marketing promotion, this system can offer market price analysis, commodity positioning analysis, marketing strategy analysis, life style analysis, and price acceptance analysis. For media design, marketing channel and promotion and feedback, the screening of graphic DM and CF advertisement can be adopted. At last, major competition product analysis, target user group preference analysis, and price setting analysis can be executed for the marketing effectiveness evaluation. It is suggested to apply CF videos for commercial preference and marketing effectiveness survey. The application of the web analytical system in product development and marketing is illustrated in Figure 5.



**FIGURE 5:** The application of the web analytical system in product development and marketing.

## 7. REFERENCES

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