

EFFECTS OF GLOVE PUPPETRY FANS' PREFERENCES FOR PRODUCT CHARACTERISTICS ON THEIR PURCHASE INTENTION

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ABSTRACT

The study explores the effects of glove puppetry fans' preferences for product characteristics on their purchase intention. Focusing on the product characteristics of glove puppetry, such as "narrative plot," "audio and visual effects," "characterization," "dialog dubbing" and "peripheral products," the study investigates their effects on the purchase intention of glove puppetry fans. STATISTICA 10 is used to make analysis. Through multiple regression analysis, polynomial regression analysis and response surface analysis, integrated research is made. Analysis results show that the narrative plot of glove puppetry has partly positive significant effects on the purchase intention of fans; the audio and visual effects of glove puppetry has positive significant effects on the purchase intention of fans; the characterization of glove puppetry has positive significant effects, on the purchase intention of fans; the dialog dubbing of glove puppetry has partly positive significant effects on the purchase intention of fans; and the peripheral products of glove puppetry have partly positive significant effects on the purchase intention of fans. The study suggests that glove puppetry manufacturers should increase channels to broadcast their products on the media to develop new markets, mold perfect characters of glove puppetry to attract glove puppetry fans' attention, manufacture diversified products through packaging of role images to be idolized products, and increase new consumption channels. Furthermore, they should increase the profits of peripheral products to help enhance the overall profit-making of their companies. In addition, as the behaviors of glove puppetry fan groups change with the social environment, different production behaviors are derived accordingly. And fan groups of different areas have different degrees of effects on their respective areas and also on their fan groups' consumption power. The study suggests that subsequent researchers can make more in-depth exploration of the behaviors of glove puppetry fans.

Key words: *Glove puppetry, Fan groups, Preferences, Purchase intention*

1. INTRODUCTION

In the early agricultural period, glove puppetry was a major and representative item of opera culture, and provided for people as an entertaining activity. Ever since Pili International Multimedia Co., Ltd. was established in 1980 to develop glove puppetry business, Pili has been standing fast in today's glove puppetry industry, and still takes the lead in the industry. Pili even has diversified business development of glove puppetry, and produced video games, films and other peripheral products relating to glove puppetry. In 2006 Golden Rays Multimedia Company, established by Huang Li-Gang, launched golden ray glove puppetry. And Pili's glove puppetry, once monopolizing the market in glove puppetry industry, was added with golden ray series and increased its competitiveness.

With the change of the times, glove puppetry not only had its television series shown to the public, but also stepped out into film industry. Taking Pili glove puppetry for example, in 2000 the first glove puppetry film, *The Legend of the Sacred Stone* set a milestone of glove puppetry film. In 2015 Pili glove puppetry launched another glove puppetry film, *The Arti: The Adventure Begins*. Employing a brand new marketing way, the glove puppetry film has Mandarin dubbing and very new plot to attract a completely new group of consumers. However, after the film was launched, it did not have satisfactory box office income, mainly because its poor Mandarin dubbing failed to attract the audiences. Furthermore, the contents of its plot were too weak and lacked tension.

Glove puppetry actively keeps on transforming and expanding into new markets. But in the process of transformation, how could glove puppetry both stabilize the existing glove puppetry fans and attract new consumers? The study explores the effects of glove puppetry fans' preferences for product characteristics on their purchase intention of glove puppetry products, analyzes the research results, and gives suggestions for manufacturers and subsequent researchers.

2. LITERATURE REVIEW

The study aims to analyze the effects of glove puppetry fans' preferences for product characteristics on their purchase intention of glove puppetry products. According to consumers' preferences for glove puppetry, the study divides product characteristics of glove puppetry into five factors, namely narrative plot, characterization, dialog dubbing, audio and visual effects, and peripheral products. Finally, based on the related references, the study infers some research hypotheses.

2.1. *Definition of glove puppetry fan group*

"Fans" have worshipping behaviors towards and high degree of involvement in a certain person, thing or object they are obsessed in; and a group of people having the same target they are obsessed in is called a fan group (Bertha and Lori, 2013). Different fan groups may have different performances of loyalty towards the same target. Speaking of internal behaviors, fan groups appear to have identifying performance toward a target, and have clear distinction from non-fans. Speaking of external behaviors, fan groups have stable consumption behavior, e.g. glove puppetry fan groups would go to specific selling spots of glove puppetry products punctually at the announced selling time, showing their loyalty to the products. Another external behavior is that fan groups have production behavior, which refers that the derived behavior of fan groups is not led by enterprises, or is simply authorized or agreed by enterprises. This behavior has positive promotion effects on enterprise image and products (Wu Zi-Xian, 2011; Zhang Kai-Hua, 2011; Bertha and Lori, 2013).

2.2. Preferences

Preference is a subjective attitude of consumers, and a performance of purchase decision to consumers. Taking purchase of glove puppetry products for example, consumers would have passionate preference for glove puppetry products, and then have habitual consumption behaviors. For example, glove puppetry fans are used to go to convenient stores every week to buy the latest episode of the glove-puppet drama series. When consumers have higher preferences for the characteristics of glove puppetry products, their appraisal of glove puppetry products will be higher, and their purchase intention of glove puppetry products will also be increased (Zhang Kai-Hua, 2011; Zhang Jun-Kai, 2013).

2.3. Purchase intention

Purchase intention refers to a consumption act of a customer when the customer psychologically has a sense of identity towards the product upon collection of the product's information (Chen Liang-Jin, Chen Jun-Shuo and Zhou Cheng-Wei, 2006; Chen Yu-Ting, 2009). Speaking of glove puppetry, in order to increase the purchase intention of customers and attract new consumption groups, today's glove puppetry not only makes improvement and innovation continuously in its audio and visual effects, but also conducts idolized packaging of glove puppetry characters to launch different kinds of peripheral products, and even actively holds and co-organizes the related activities to increase exposure of glove puppetry. Besides, intending to expand the overseas markets, attract new consumption groups and arouse their purchase intention, glove puppetry also launch Mandarin dubbing and diversified plots. Glove puppetry products, not only available in physical channels, but also takes shopping website as one of the major distribution channels. Taking Pili glove puppetry for example, the television series marketed in Mainland China has a version dubbed in Mandarin, and is available on the local video platforms like Youku, Tudou, etc. (Hong Wei-Cheng and Ling Xin-Yuan, 2015).

2.4. Product characteristics

All the glove puppetry products produced by enterprises possess a characteristic that the basic functions of products can be supplemented or strengthened, including the products' appearance design, physical functions, brand image and service ... etc. The product characteristics of enterprises are indispensable competitive tools. Through differentiated characteristics (e.g. plot of a different style), a product competes with homogeneous competitors in the market (Wu Deng-Dai, 2010). Glove puppetry products usually have several characteristics: creative plot with unconstrained imagination, characters with changeable styles, shocking and dazzling audio and visual special effects, and dubbing with clear articulation. In addition to these characteristics, different glove puppetry brands have significant difference in their characteristics, and own different fan groups of their own in the market (Liu Shi-Yong, Liu Yi-Jin, Liu Hui-Hua and Zhuang Xiu-Tian, 2009; Liao Shu-Rong, 2014).

The study divides the characteristics of glove puppetry products into five factors, namely narrative plot, audio and visual presentation, characterization, dialog dubbing and peripheral products.

2.5. Narrative plot

Narrative plot is just the contents of the story. Greatly different from the narrative structure of conventional drama, glove puppetry relies on plot arrangement to increase foreshadowing of the later development of the story, and increases characters' mysterious qualities in the story, leaving to the audiences much more imagination room of the plot (Liu Cai-Xian, 2009).

The characters of glove puppetry run through the plot of the entire story. The contents of the story merge different elements together, including mythology, martial arts, affection, science ... etc. The plot

of glove puppetry also follows the current times and trend, and is added with modern wordings. As to presentation of the plot, elements of different times are added in, making the characters receive a lot of discussions from the public (Huang Qiang-Hua, 2003; Ling Xin-Yuan and Hong Wei-Cheng, 2015).

As explored in the above literature, fan groups like to have extensive discussion of the narrative plot of glove puppetry, thus increasing consumers' purchase intention of glove puppetry products. Here, hypothesis H1 is developed:

H1: Narrative plot of glove puppetry has positive effects on the fan groups' purchase intention of glove puppetry products.

2.6. *Audio and visual effects*

Audio and visual effects refer to the auditory and visual effects presented in glove-puppet drama. Through application of three-dimensional (3D) animation and computerized sound mixing effects to glove puppets and scenes, figurative presentation of background narrative is made to become a real effect. In fact glove-puppet dramas have exclusive soundtrack so as for glove puppetry fans to straight away think of the contents or characters of the episode upon hearing the music.

Gorgeous special effects and wonderful soundtrack perfectly matching with the situation of a glove puppetry can deeply impress consumers. Therefore, remarkable audio and visual effects can effectively help increase the reputation of the glove puppetry and its characters (Huang Qiang-Hua and Huang Wen-Ze, 2003; Qiu Zheng-Sheng and Zheng Qiu-Shuang, 2015).

As explored in the above references, audio and visual effects of glove puppetry are attractive to the fan groups, and can thus increase consumers purchase intention of glove puppetry products. Here, hypothesis H2 is proposed:

H2: Audio and visual effects of glove puppetry have positive effects on the fan groups' purchase intention of glove puppetry products.

2.7. *Characterization*

For setting of characters in glove puppetry, the establishment of external images of characters is based on several elements of characters, such as their statuses, positions, personalities ... etc. The external images of characters (e.g. costumes and accessories) can best highlight the positions of different characters. Setting of characters can clearly differentiate the good guys from the evil guys. But complicated personalities of characters are often created for characters of glove puppetry to achieve extensive discussion of the characters among consumers (Qiu Zheng-Sheng and Zheng Qiu-Shuang, 2015).

Scriptwriters of glove puppetry do not write its plots in an established pattern, and usually arranged diversified story lines in a plot. Focusing on individually designed characters, a scriptwriter carries out characterization, and then arranges interlocking development of well-connected story lines according to the plot development. Each glove-puppet drama is designed to have a star-grade character. The more popular the established character, the more extensive the character discussion among audiences, and the more lengthened the character's story. In addition, when a character achieves more extensive discussion, it brings higher expectation to consumers, promotes the fans' consumption power of the glove puppet, and also influences the behaviors of fan groups (Huang Qiang-Hua, 2003).

As explored in the above reference, fan groups have a sense of expectation from characterization of glove puppetry, thus increasing consumers' purchase intention of glove puppetry products. Here, hypothesis H3 is developed:

H3: Characterization of glove puppetry has positive effects on the fan groups' purchase intention of glove puppetry products.

2.8. *Dialog dubbing*

The production project of glove puppetry is completely different from general television series that dubbing is made first, and then glove puppets make performance according to the dubbing. The dubbing of the characters of a glove puppetry is completed by one person only. In this way of dubbing, the audiences are deeply impressed not only by the characters of the glove-puppet drama, but also by the dubbing specialist (Qiu Zheng-Sheng and Zheng Qiu-Shuang, 2015).

The dialog dubbing for glove puppetry performance has to completely present the emotional expression of voice, and give glove puppet characters very distinct personalities. Each character's unique tone of can effectively increase the character's recognizability, enabling glove puppetry fans to directly think of their impression on the character once hearing the specific voice (Wu Li-Ping, Dong Yi-Hua and Cai Ya-Lun, 2006; Chen Jun-An, 2009).

As explored in the above references, fan groups' deep impression of glove puppetry's dialog dubbing can increase consumers' purchase intention of glove puppetry products. Here, hypothesis 4 is proposed:

H4: Dialog dubbing of glove puppetry has positive effects on the fan groups' purchase intention of glove puppetry products.

2.9. *Peripheral products*

In film and television industries the most important elements are characters and stories. Peripheral products derived from popular stories and characters, such as comics, animation, films, toys, etc. can promote the overall output of film and television production companies. Speaking of glove puppetry, rental of its television episodes is the main source of income. Nevertheless, there is rampant piracy of DVD today, so the main income of glove puppetry is seriously affected. However, the peripheral income of glove puppetry has been increasing contrarily. The reason for this is that piracy increases the chance for higher exposure of glove puppetry. Taking advantage of such opportunity, enterprises offer a great variety of peripheral products to attract consumers' attention. Furthermore, enterprises stress the styling of glove puppets and idolize them in order to attract consumers' first impression of the glove puppets. This way overthrows the conventional marketing model, which attracts consumers' attention through the plot (Hong Wei-Cheng and Ling Xin-Yuan, 2015).

In order to make glove puppetry more well-known, enterprises employ the ways of joint presentation, authorization and invitation of spokespersons to continuously increase the peripheral products of glove puppetry characters. Because of different marketing ways, such as physical channels, networks, exhibitions, etc., consumers can easily buy glove puppetry products through different channels (Qiu Zheng-Sheng and Zheng Qiu-Shuang, 2015).

As explored from the above reference, fan groups grow interested in the peripheral products of glove puppetry, thus increasing consumers' purchase intention of glove puppetry products. Here, hypothesis H5 is proposed:

H5: Peripheral products of glove puppetry have positive effects on the fan groups' purchase intention of glove puppetry products.

3. RESEARCH METHOD

3.1. Research structure

Synthesizing the references of the previous chapter, the study divides the product characteristics of glove puppetry into narrative plot, audio and visual effects, characterization, dialog dubbing, and peripheral products. These five facets, according to the related references, are established as the structure of the study.

3.2. Sampling method and questionnaire design

The sampling way of the study is distribution of questionnaires online. The sampling period was from September 2015 to December 2015. Through social networks and emails, questionnaires were sent out. The targets receiving the questionnaires were the audiences of glove puppetry. The study expected to collect 550 questionnaires, but in the end there were 539 valid questionnaires received.

Regarding the contents of the questionnaire, the first part of the questionnaire employs 5-point Likert scale. For Questions 1~30, testees give 5, 4, 3, 2 and 1 scores to show their degree of satisfaction, divided into "Strongly agree," "Agree," "Neutral," "Disagree" and "Strongly disagree" respectively, with product characteristics of glove puppetry. These 30 questions are mainly for program analysis.

Questions 31~36 are cognitive tests. Question 31 tests the overall liking of testees. Testees' degree of liking is divided into "Strongly like," "Like," "Neutral," "Dislike" and "Strongly dislike."

Question 32 tests the testees' degree of understanding of glove puppetry. Testees' degree of understanding is divided into "Fully understand," "Understand," "Neutral," "Not understand" and "Completely not understand." This question does not give too much explanation to testees, with the purpose to test testees' degree of understanding as realized by themselves.

Questions 33~36 test testees' willingness to promote glove puppetry, and their willingness is divided into "Very possible," "Possible," "Neutral," "Impossible" and "Very impossible."

The second part is basic information of testees, which is designed to include sex, age, monthly income, monthly expenses relating to glove puppetry, main watching channel of glove puppetry, preferences for characteristics of glove puppetry products, occupation and first language.

3.3. Reliability analysis

The study adopts reliability analysis, and refers to Cronbach's alpha (α) to review the reliability on the relativity of questions of the questionnaire. If Cronbach's α of a question is greater than 0.7, it refers that the question result has high reliability. The study makes in-depth analysis of the results with high reliability.

3.4. Factor analysis

Regarding the handling procedure of the questionnaires, upon collection of the completed questionnaires, the study manually checked the testees' answers of the questionnaires. After screening and eliminating the invalid questionnaires with incomplete answers, the study carried out coding of the valid questionnaires. Finally, the study carried out data analysis, and used Statistica 10.0 to conduct research analysis.

3.5. Multiple regression analysis

The multiple regression analysis of Varghese and Shanker (2015) uses multiple independent variables to analyze a dependent variable, and at the same time screens the independent variables, and

reviews multiple analysis models containing different independent variables. It analyzes whether each factor produces independent effects on the dependent variable. The analysis model is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon, \quad \text{"}\varepsilon \text{ is the error"}$$

Multiple regression analysis can explain the effects of individual factors on dependent variables. Each of the various factors of its model is an independent factor. Therefore, the study adopts multiple regression analysis, and its model is as follows:

$$Y = \beta_0 + \beta_1 F_1 + \beta_2 F_2 + \beta_3 F_3 + \beta_{33} F_3^2 + \beta_4 F_4 + \beta_5 F_5 + \varepsilon$$

Through response surface methodology (RSM), the interacting results among different factors are analyzed. Furthermore, the effects and response of each pair of factors on dependent variables are explored. This method studies whether two factors are established under interaction.

3.6. Polynomial regression

The polynomial regression of Tao Zhang, Qingzhao Zhang and Qihua Wang (2014) contains over one predictor variables, each of which can have multiple and different power changes. With the increment of power, the result may be a plane or a curved surface, or even may not become graphic. The analysis model is:

$$Y = \beta_0 + \beta_1 X_i + \beta_{11} X_i^2 + \varepsilon, \quad \varepsilon \text{ is the error}$$

where β_1 is linear response coefficient; and β_{11} is secondary-effect response coefficient. Polynomial regression analysis can explain the effects of individual factors on independent variables after secondary effect. Therefore, the study adopts polynomial regression analysis, and its model is as follows:

$$Y = \beta_0 + \beta_1 F_1 + \beta_{11} F_1^2 + \beta_2 F_2 + \beta_{22} F_2^2 + \beta_3 F_3 + \beta_{33} F_3^2 + \beta_4 F_4 + \beta_{44} F_4^2 + \beta_5 F_5 + \beta_{55} F_5^2 + \varepsilon$$

Through response surface methodology (RSM), the interacting results among different factors are analyzed. Furthermore, the effects and response of each pair of factors on dependent variables are explored. This method studies whether two factors are established under interaction.

3.7. Analysis of response surface methodology (RSM)

Linyin (2015) indicates that response surface methodology (RSM) is an optimizing analysis tool. Its analysis method is to analyze optimized combination of response variable (y) and each factor. Its analysis model is:

$$Y = f(X_1, X_2, \dots, X_k) + \varepsilon, \quad \varepsilon \text{ is the error}$$

To analyze the mathematical model of relationship between independent variable and response variable, an adapted approximate function analysis and independent variables are established. The low-degree polynomial with general use of independent variable within a certain range is a one-degree regression model:

$$\hat{y} = \hat{\beta}_0 + \sum_{i=1}^k \hat{\beta}_i X_i$$

The pre-established hypotheses of a study and restricted application system can effectively acquire optimized values of variables. If the system contains curvature, high-degree polynomial has to be used

for calculation, such as a two-degree model:

$$\hat{y} = \hat{\beta}_0 \sum_{i=1}^k \hat{\beta}_i x_i + \sum_{i=1}^k \hat{\beta}_{ii} x_i^2 + \sum_{i>j} \sum_{j=1}^k \hat{\beta}_{ij} x_i x_j$$

Response surface methodology (RSM) can explain the mutual effects among different factors. Through cross-multiplication of coefficients, the interacting results among different factors are analyzed. Therefore, the study adopts two-degree regression model to calculate RSM, and its model is as follows:

$$Y = \beta_0 + \beta_1 F_1 + \beta_{11} F_1^2 + \beta_2 F_2 + \beta_{22} F_2^2 + \beta_3 F_3 + \beta_{33} F_3^2 + \beta_4 F_4 + \beta_{44} F_4^2 + \beta_5 F_5 + \beta_{55} F_5^2 + \beta_{12} F_1 F_2 + \beta_{13} F_1 F_3 + \beta_{14} F_1 F_4 + \beta_{15} F_1 F_5 + \beta_{23} F_2 F_3 + \beta_{24} F_2 F_4 + \beta_{25} F_2 F_5 + \beta_{34} F_3 F_4 + \beta_{35} F_3 F_5 + \beta_{45} F_4 F_5 + \epsilon_i$$

Through RSM, the interacting results among different factors are analyzed. Furthermore, the effects and response of each pair of factors on dependent variables are explored. This method studies whether two factors are established under interaction.

4. RESEARCH RESULTS

According to the statistical results of the collected questionnaires, for the background and situation of testees, based on the foundation of the valid questionnaires collected (total 539 questionnaires), the study analyzes the number and percentage of testees.

As known in Table 4.1, for the part of gender of testees, there are 280 males (51.9%) and 259 females (48.1%).

For the part of age, 87 testees (16.1%) are aged “below 17”; 219 testees (40.6%) are aged “18-24”; 97 testees (18.0%) are aged “25-30”; and 136 testees (5.2%) are aged “above 31” (5.2%).

For the part of watching history of glove puppetry, 57 testees (10.6%) have a watching history of “within 1 year”; 154 testees (28.6%) have a watching history of “2-5 years”; 109 testees (20.2%) have a watching history of “6-9 years”; and 219 testees (40.6%) have a watching history of “above 10 years.”

For the part of average monthly income (NT), 264 testees (49.0%) have “less than \$20,000” per month; 137 testees (25.4%) have “\$20,001-\$30,000” per month; 74 testees (13.7%) have “\$30,001-\$40,000” per month; 23 testees (4.3%) have “\$40,001-\$50,000” per month; and 41 testees (7.6%) have “over \$50,001” per month.

For the part of average monthly expenses for glove puppetry products (NT), 188 testees (34.9%) spend “less than \$200”; 135 testees (25.0%) spend “\$201-\$500”; 103 testees (19.1%) spend “\$501-\$800”; 58 testees (10.8%) spend “\$801-\$1,100”; and 55 testees (10.2%) spend “over \$1,101”.

For the part of main watching channel of glove puppetry, 305 testees (56.6%) adopt “DVD rental at convenient store”; 148 testees (27.5%) adopt “online watching”; 69 testees (12.8%) adopt “television channel”; 8 testees (1.5%) use “Chunghwa Telecom MOD”; 2 testees (0.4%) adopt “online shopping”; and 7 testees (1.3%) adopt “borrow and share of object” as their watching channels.

For the part of characteristics of glove puppetry products, 446 testees (82.7%) are concerned about “narrative plot” most; 310 testees (57.5%) are concerned about “audio and visual effects” most, 172 testees (31.9%) are concerned about “characterization” most, 117 testees (21.7%) are concerned about “dialog dubbing” most, and 317 testees (58.8%) are concerned about “peripheral products” most.

For the part of occupation, 194 testees (36.0%) work in “industrial and commercial service industry”; 52 testees (9.6%) work in “construction or manufacturing industry”; 6 testees (1.1%) work in “agricultural, forestry, fishing or animal husbandry industry”; 35 testees (6.5%) work for the “military, government or education institution”; 9 testees (1.7%) work in “film or television media industry”; 23 testees (4.3%) work in “technical art and fine art industry”; 204 testees (37.8%) are “students”; 6 testees (1.1%) are “unemployed”; 8 testees (1.5%) work in “medical industry”; and 2 testees (0.4%) are “self-employed.”

For the part of first language, 536 testees (99.4%) mainly speak “Mandarin (general Chinese language)”; 275 testees (51.0%) mainly speak “Fujianese (Hoklo)”; 4 testees (0.7%) mainly speak “Hakka (regardless of accent)”; 0 testee speak “indigenous language”; 4 testees (0.7%) mainly speak “other language (foreign language)”; and 205 testees (38%) mainly speak both Mandarin and Fujianese.

4.2 Overall liking, degree of understanding and willingness to promote glove puppetry

For the testees’ degree of overall liking of glove puppetry, 5-point Likert scale is employed for Question 31 of the questionnaire, with items ranging from “strongly dislike” to “strongly like.” As known from the statistics on overall liking of glove puppetry made in Table 4.2, among the testees filling out the questionnaire in showing their overall liking of glove puppetry, 354 testees (65.7%) “like” glove puppetry; 107 testees (19.9%) are “neutral”; and 78 testees (14.4%) “dislike” glove puppetry. As known from here, most of the testees of the study like glove puppetry.

For the testees’ degree of overall understanding of glove puppetry, 5-point Likert scale is employed for Question 32 of the questionnaire, with items ranging from “completely not understand” to “fully understand.” As known from the statistics made in Table 4.2, among the testees filling out the questionnaire in showing their degree of overall understanding of glove puppetry, 435 testees (80.7%) “understand” glove puppetry; 93 testees (17.3%) are neutral; and 11 testees (2%) do “not understand” glove puppetry. As known from here, most of the testees of the study understand glove puppetry.

For the testees’ degree of overall promotion of glove puppetry, 5-point Likert scale is employed for Questions 33-36 of the questionnaire, with items ranging from “very impossible” to “very possible.” As known from the statistics made in Table 4.2, among the testees filling out the questionnaire in showing their degree of overall promotion of glove puppetry, 415 testees express “possible” in average; 87 testees are neutral in average; and 27 testees express “impossible” in average. As known from here, most of the testees of the study may be willing to promote glove puppetry.

4.3 Factor analysis

The questionnaire has 30 questions relating to determining factors for factor analysis of the study. When conducting factor analysis, since the item with factor load greater than 0.5 is listed as a useable factor, and the main component with characteristic value greater than 1 is preserved. Referring to the scree plot shown in Figure 4.3, five factors are extracted. Through reliability analysis based on Cronbach’s α , according to Cronbach (1951), if the proposed value of Cronbach’s α is smaller than 0.35, it signifies low reliability; if it is 0.35~0.70, it signifies fair reliability; and if it is greater than 0.70, it signifies high reliability.

The characteristic value of “narrative plot” is 1.381, and Cronbach’s α is 0.874, appearing high reliability.

The characteristic value of “audio and visual effects” is 2.425, and Cronbach’s α is 0.816, appearing high reliability.

The characteristic value of “characterization” is 8.578, and Cronbach’s α is 0.888, appearing high reliability.

The characteristic value of “dialog dubbing” is 2.645, and Cronbach’s α is 0.828, appearing high reliability.

The characteristic value of “peripheral products” is 2.053, and Cronbach’s α is 0.679, appearing fair reliability.

All the variables of the study have reliability, indicating that the question group has stable and reliable research values.

4.4 Regression analysis

The study performs multiple regression analysis, polynomial regression analysis and response surface regression analysis of all samples. According to the independent analysis and interaction analysis of independent

variables, the study analyzes the empirical results with function having significant effects on dependent variables.

Table 4.4.1 shows the effects of glove puppetry fan groups’ preferences for product characteristics on their purchase intention of glove puppetry products. After using multiple regression analysis integration table, the following is known:

The F statistic of “narrative plot” F is 19.545, and $P=0.00<0.05$. Narrative plot can really affect the fan groups’ purchase intention of glove puppetry products. Overall model R² (Multiple R²) is 0.035. After adjustment, R² (Adjusted R²) is 0.033. Independent variable has 3.5% of explained variance. According to the above analysis, hypothesis H1, in which “narrative plot of glove puppetry has positive effects on the fan groups’ purchase intention of glove puppetry products,” is proved to be established.

The F statistic of “audio and visual effects” is 38.333, and $P=0.00<0.05$. Narrative plot can really affect the fan groups’ purchase intention of glove puppetry products. Overall model R² (Multiple R²) is 0.113. After adjustment, R² (Adjusted R²) is 0.111. Independent variable has 11.3% of explained variance. According to the above analysis, hypothesis H2, in which “audio and visual effects of glove puppetry have positive effects on the fan groups’ purchase intention of glove puppetry products,” is proved to be established.

The F statistic of “characterization” is 64.930, and $P=0.00<0.05$. Narrative plot can really affect the fan groups’ purchase intention of glove puppetry products. Overall model R² (Multiple R²) is 0.108. After adjustment, R² (Adjusted R²) is 0.106. Independent variable has 10.8% of explained variance. According to the above analysis, hypothesis H3, in which “characterization of glove puppetry has positive effects on the fan groups’ purchase intention of glove puppetry products,” is proved to be established.

The F statistic of “dialog dubbing” is 28.266, and $P=0.00<0.05$. Narrative plot can really affect the fan groups’ purchase intention of glove puppetry products. Overall model R² (Multiple R²) is 0.050. After adjustment, R² (Adjusted R²) is 0.048. Independent variable has 5% of explained variance. According to the above analysis, hypothesis H4, in which “dialog dubbing of glove puppetry has positive effects on the fan groups’ purchase intention of glove puppetry products,” is proved to be established.

The F statistic of “peripheral products” is 92.450, and $P=0.00<0.05$. Narrative plot can really affect the fan groups’ purchase intention of glove puppetry products. Overall model R2 (Multiple R2) is 0.147. After adjustment, R2 (Adjusted R2) is 0.145. Independent variable has 14.7% of explained variance. According to the above analysis, hypothesis H5, in which “peripheral products of glove puppetry have positive effects on the fan groups’ purchase intention of glove puppetry products,” is proved to be established.

Table 4.4.2 shows the effects of glove puppetry fan groups’ preferences for product characteristics on their purchase intention of glove puppetry products. From the regression analysis integration table, the analytical results of the effects of “narrative plot,” “audio and visual effects,” “characterization,” “dialog dubbing” and “peripheral products” on “purchase intention” are known:

The multiple regression analytical result β of “narrative plot” is 0.328, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect; the polynomial regression analytical result β is 0.350 and $P=0.00<0.05$, representing that the β value indicates a positively significant effect. And the response surface regression analytical result β is 0.369, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect.

The multiple regression analytical result β of “audio and visual effects” is 0.224, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect; the polynomial regression analytical result β is 0.221 and $P=0.00<0.05$, representing that the β value indicates a positively significant effect. And the response surface regression analytical result β is 0.230, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect.

The multiple regression analytical result β of “characterization” is 0.336, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect; the polynomial regression analytical result β is 0.427 and $P=0.00<0.05$, representing that the β value indicates a positively significant effect. And the response surface regression analytical result β is 0.424, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect.

The multiple regression analytical result β of “dialog dubbing” is 0.383, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect; the polynomial regression analytical result β is 0.163 and $P=0.00<0.05$, representing that the β value indicates a positively significant effect. And the response surface regression analytical result β is 0.166, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect.

The multiple regression analytical result β of “dialog dubbing” is 0.187, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect; the polynomial regression analytical result β is 0.270 and $P=0.00<0.05$, representing that the β value indicates a positively significant effect. And the response surface regression analytical result β is 0.241, and $P=0.00<0.05$, representing that the β value indicates a positively significant effect.

The quadratic-term polynomial regression analytical result β of “narrative plot” is 0.096, and $P=0.507>0.05$, representing that the β value indicates an insignificant effect. And the response surface regression analytical result β is 0.102, and $P=0.375>0.05$, representing that the β value indicates an insignificant effect.

The quadratic-term polynomial regression analytical result β of “audio and visual effects” is 0.007, and $P=0.013<0.05$, representing that the β value indicates a positively significant effect. And the response surface regression analytical result β is 0.007, and $P=0.044<0.05$, representing that the β value indicates a positively significant effect.

The quadratic-term polynomial regression analytical result β of “characterization” is 0.108, and $P=0.01<0.05$, representing that the β value indicates a positively significant effect. And the response surface regression analytical result β is 0.126, and $P=0.01<0.05$, representing that the β value indicates a positively significant effect.

The quadratic-term polynomial regression analytical result β of “dialog dubbing” is 0.027, and $P=0.833>0.05$, representing that the β value indicates an insignificant effect. And the response surface regression analytical result β is 0.039, and $P=0.835>0.05$, representing that the β value indicates an insignificant effect.

The quadratic-term polynomial regression analytical result β of “peripheral products” is -0.119, and $P=0.005<0.05$, representing that the β value indicates a negatively significant effect. And the response surface regression analytical result β is -0.104, and $P=0.003<0.05$, representing that the β value indicates a negatively significant effect.

The response surface regression analytical result β of “characterization* dialog dubbing” is -0.032, and $P=0.330>0.05$, representing that the β value indicates an insignificant effect.

The response surface regression analytical result β of “characterization* audio and visual effects” is 0.026, and $P=0.482>0.05$, representing that the β value indicates an insignificant effect.

The response surface regression analytical result β of “dialog dubbing* audio and visual effects” is 0.029, and $P=0.396>0.05$, representing that the β value indicates an insignificant effect.

The response surface regression analytical result β of “characterization* peripheral products” is 0.107, and $P=0.002<0.05$, representing that the β value indicates a positively significant effect.

The response surface regression analytical result β of “dialog dubbing* peripheral products” is -0.049, and $P=0.148>0.05$, representing that the β value indicates an insignificant effect.

The response surface regression analytical result β of “audio and visual effects* peripheral products” is -0.091, and $P=0.014<0.05$, representing that the β value indicates a negatively significant effect.

The response surface regression analytical result β of “characterization*narrative plot” is -0.091, and $P=0.602>0.05$, representing that the β value indicates an insignificant effect.

The response surface regression analytical result β of “dialog dubbing* narrative plot” is 0.013, and $P=0.703>0.05$, representing that the β value indicates an insignificant effect.

The response surface regression analytical result β of “audio and visual effects* narrative plot” is -0.042, and $P=0.293>0.05$, representing that the β value indicates an insignificant effect.

The response surface regression analytical result β of “peripheral products* narrative plot” is 0.034, and $P=0.373>0.05$, representing that the β value indicates an insignificant effect.

5. QUALITATIVE RESEARCH – DATA ANALYSIS RESULTS

5.1 Results

The hypothesis H1, in which narrative plot of glove puppetry has positive effects on the fan groups' purchase intention of glove puppetry products, is partly established. It represents that consumers are concerned about narrative plot, which yet appears to be insignificant after quadratic-term analysis. The study draws a conclusion that consumers are concerned about narrative plot of glove-puppet drama at the very beginning. But after a period of time if the story does not have wonderful or impressive plot, consumers will gradually forget the plot or even will not be concerned about the plot anymore, so their purchase intention of glove puppetry products will not be increased.

The hypothesis H2, in which audio and visual effects of glove puppetry have positive effects on the fan groups' purchase intention of glove puppetry products, is established. It represents that consumers are concerned about presentation of audio and visual effects. And after quadratic-term analysis, audio and visual effects still appear to have positively significant effects. This results implies that the glove-puppet drama with wonderful audio and visual effects will increase consumers' purchase intention of glove puppetry products. The study draws a conclusion that audio and visual effects are an important factor for glove puppetry to attract consumers' attention. A glove puppetry plot with strong audio and visual effects, even after a period of time, will still leave consumers deep impression, and consumers are glad to watch the glove puppetry again and again. However, film products can be used repeatedly, and will not increase consumers' purchase intention of the same product, but will make consumers continuously pay close attention to the performance and plot development of the glove-puppet drama they like.

As for the interaction between "audio and visual effects" and "peripheral products," there appears negative significance. The study draws a conclusion that audio and visual effects will not decrease consumers' purchase intention of glove puppetry products even after a period of time. But excessive use of audio-visual broadcasting of peripheral products will instead result in opposite effect. It means that at the very beginning peripheral products have the effect of information transmission through audio-visual promotion; but after broadcasting continuously for a long time, consumers may have an antipathy to the peripheral products, and their consumption intention is thus reduced.

The hypothesis H3, in which characterization of glove puppetry has positive effects on the fan groups' purchase intention of glove puppetry products, is established. It represents that in the minds of consumers, the external images of glove puppetry role characters have relatively highest effects on consumers' purchase intention of glove puppetry products. After quadratic-term analysis, characterization still appears to have highly positively significant effects. The study draws a conclusion that a successfully characterized glove puppetry character can give consumers a good impression at the first sight. Consumers expect to see the performance of this character in each episode, so that even after a period of time their purchase intention of the related glove puppetry products is not decreased, and high value may even be added to the character. As shown in the analytical result that positively significant effects appear in the interaction between "characterization" and "peripheral products," successful characterization affects the purchase intention of peripheral products accordingly, and increases the returns of peripheral products. And for fan group effect as mentioned and explored in the related literature, glove puppetry fans not only are concerned about the plot relating to the characters they like and watch, but also have consumption promptly every week, and even establish a fan club, summoning friends and other people having the same hobby to support the glove puppetry characters, thus directly or indirectly increasing the fans' consumption intention of glove puppetry products.

The hypothesis H4, in which dialog dubbing of glove puppetry has positive effects on the fan groups' purchase intention of glove puppetry products, is partly established. This result represents that in the minds of consumers, dialog dubbing of glove-puppet drama has influence on their purchase intention. But after quadratic-term analysis, dialog dubbing appears to be insignificant. The study draws a conclusion that dialog dubbing of glove puppetry would attract consumers' attention at the very beginning, but after a period of time consumers get used to the dialog dubbing, and its influence will be replaced by other factors.

The hypothesis H5, in which peripheral products of glove puppetry have positive effects on the fan groups' purchase intention of glove puppetry products, is partly established. This result represents that in the minds of consumers, peripheral products of glove-puppet drama has influence on their purchase intention of glove puppetry products. But after quadratic-term analysis, peripheral products appear to be negatively significant. The study draws a conclusion that excessive promotion of peripheral products will result in opposite effect.

Peripheral products of glove puppetry belong to periodic products. They are derived from the well-designed characters along with the plot development of a glove-puppet drama. Therefore, launching of peripheral products has to consider the hot sale period of products. Excessive marketing of peripheral products would create to consumers a bad feeling towards the products, which then might become difficult to be sold.

5.2 Research suggestions

5.2.1 Suggestions for enterprisers

Due to popular circulation via networks nowadays, piracy is rampant, making rental of glove puppetry television episodes unable to become the main source of income. Increasing the channels of media broadcasting for glove puppetry is one of the ways to expand into new markets. Nevertheless, to achieve consumers' affection, perfect characterization is a key factor for glove puppetry to attract the fan groups. Successful characterization, together with wonderful contents of the story can make consumers feel the glove puppetry fascinating. Enterprisers should manufacture diversified products through packaging of role images to be idolized products, and increase new consumption channels. Furthermore, they should increase the profits of peripheral products to help enhance the overall profit-making of their companies.

5.2.2 Suggestions for subsequent researchers

The study divides the preferences for glove puppetry product characteristics into five factors, namely "narrative plot," "audio and visual effects," "characterization," "dialog dubbing" and "peripheral products," and analyzes their relativity to "purchase intention" of glove puppetry products. As found in the analytical results, "characterization" is the most significant factor. Subsequent researchers can focus on characterization and make more in-depth studies of the effects characterization on the fan groups of glove puppetry.

The study takes the fan groups' purchase intention of glove puppetry products as the research object. Nevertheless, as the production behaviors of glove puppetry fan groups change with the social environment, fan groups of different areas have different degrees of influence on their respective areas and also on the fan groups' consumption power. The study suggests that subsequent researchers can make more in-depth exploration of the behaviors of glove puppetry fan groups.

Table 1

Question	Classification	Amount	Percentage
31. overall liking of glove puppetry	Strongly dislike(1)	33	6.10%
	Dislike(2)	45	8.30%
	Neutral (3)	107	19.90%
	Like(4)	93	17.30%
	Strongly like(5)	261	48.40%
	Completelynot understand (1)	4	0.70%
32. overall understanding of glove puppetry	Not understand (2)	7	1.30%
	Neutral (3)	93	17.30%
	Understand (4)	189	35.10%
	Fully understand (5)	246	45.60%
	Very impossible(1)	9	1.70%
33. I will watch puppet shows	Impossible(2)	30	5.60%
	Neutral (3)	75	13.90%
	Possible(4)	108	20%
	Very possible(5)	317	58.80%
	Very impossible(1)	7	1.30%
34. I will buy related products puppetry	Impossible(2)	18	3.30%
	Neutral (3)	115	21.30%
	Possible(4)	135	25%
	Very possible(5)	264	49%
	Very impossible(1)	3	0.60%
35. I will pay attention to puppetry Information	Impossible(2)	14	2.60%
	Neutral (3)	61	11.30%
	Possible(4)	148	27.50%
	Very possible(5)	313	58.10%
	Very impossible(1)	5	0.90%
36. I would recommend it to others puppetry	Impossible(2)	20	3.70%
	Neutral (3)	98	18.20%
	Possible(4)	149	27.60%
	Very possible(5)	267	49.50%

Table 2

Item	characteristic value	Cronbach's α
Narrative plot	1.381	0.874
Audio and visual effects	2.425	0.816
Characterization	8.578	0.888
Dialog dubbing	2.645	0.828
Peripheral products	2.053	0.679

Table 3

Item	Multiple regression analysis				Polynomial regression				Analysis of response surface methodology			
	β	St.Err.s	t	p	β	St.Err.s	t	p	β	St.Err.s	t	p
Narrative plot	0.328	0.032	11.960	0.000*	0.350	0.036	4.110	0.000*	0.369	0.037	4.147	0.000*
Audio and visual effects	0.224	0.032	5.848	0.000*	0.221	0.033	6.088	0.000*	0.230	0.034	5.220	0.000*
Characterization	0.336	0.032	10.250	0.000*	0.427	0.039	9.598	0.000*	0.424	0.040	10.010	0.000*
Dialog dubbing	0.383	0.032	6.979	0.000*	0.163	0.040	6.604	0.000*	0.166	0.040	6.832	0.000*
Peripheral products	0.187	0.032	10.486	0.000*	0.270	0.044	10.986	0.000*	0.241	0.046	10.720	0.000*
Narrative plot ²					0.096	0.037	0.664	0.507	0.102	0.040	0.888	0.375
Audio and visual effects ²					0.007	0.034	-2.492	0.013*	0.007	0.034	-2.019	0.044*
Characterization ²					0.108	0.039	2.587	0.010*	0.126	0.043	2.576	0.010*
Dialog dubbing ²					0.027	0.041	0.211	0.833	0.039	0.044	0.208	0.835
Peripheral products ²					-0.119	0.048	2.809	0.005*	-0.104	0.051	2.966	0.003*
Characterization*Dialog dubbing									-0.032	0.032	-0.974	0.330
Characterization*Audio and visual effects									0.026	0.037	0.703	0.482
Dialog dubbing*Audio and visual effects									0.029	0.034	0.850	0.396
Characterization*Peripheral products									0.107	0.035	3.080	0.002*
Dialog dubbing*Peripheral products									-0.049	0.034	-1.449	0.148
Audio and visual effects*Peripheral products									-0.091	0.037	-2.455	0.014*
Characterization*Narrative plot									-0.019	0.037	-0.522	0.602
Dialog dubbing*Narrative plot									0.013	0.035	0.382	0.703
Audio and visual effects*Narrative plot									-0.042	0.039	-1.053	0.293
Peripheral products*Narrative plot									0.034	0.038	0.891	0.373

* : p<0.05 is significantly

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