

Research on Consumer Acceptance of AI and Human Design in Bag Industry

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Abstract: This study investigates the impact of AI and human designers on consumer acceptance of different categories of bags (luxury, mass-branded, and unbranded). The research proposes that consumers have more favorable feelings and purchase attitudes towards bags designed by AI, especially in the luxury category. The study also explores the interaction between designer type and bag category on consumer acceptance. The research design includes hypothesis design, experiment design, and questionnaire design. The results indicate that female consumers show higher favorability and purchase attitudes towards AI-designed bags across all bag categories. However, the interaction between designer type and bag category was not significant. Age was found to be an influencing factor, with different age groups showing significant differences in favorability and purchase attitudes.

Keywords: AI Designers, Human Designers, consumer acceptance, Purchase Attitudes

1. Introduction

The advent of artificial intelligence (AI) has brought about significant changes in various industries, including fashion and design. AI has been utilized in creating designs for various products, including bags, which are a significant part of the fashion industry. However, the acceptance of these AI-designed products by consumers, especially in different categories such as luxury bags, mass branded bags, and unbranded bags, remains an area that needs further exploration.

Research by Duan et al. [1] has shown that AI can significantly influence the design process, leading to innovative and creative outcomes. However, the acceptance of these AI-designed products by consumers is influenced by various factors, including the type of product and the category it falls under. Similarly, studies by Liu et al. [2] have shown that consumer acceptance of AI-designed products varies across different product categories.

In the context of bags, different categories such as luxury bags, mass branded bags, and unbranded bags, designed by AI or human designers, may elicit different reactions from consumers. This study aims to examine the impact of these different categories of bags designed by different types of designers on consumer acceptance, specifically focusing on favorability and purchase attitudes.

The study builds upon previous research [1-2] and introduces new elements to the study of the impact of AI and human designers on consumer acceptance of different categories of bags. This research will contribute to the existing body of knowledge by providing insights into the synergistic effects of AI and human designers on consumer acceptance of different categories of bags, thereby enhancing our understanding of modern consumer behavior in the fashion industry.

Furthermore, this study will also consider the interaction between different types of designers and different categories of bags on consumer acceptance, an area that has been less explored in previous research. Studies by Li et al. [3] and Huang and Rust [4] have shown that the interaction between product design and product category can significantly influence consumer acceptance, but these studies did not specifically focus on the impact of AI and human designers.

The study will also consider the impact of age on consumer acceptance, as research by Venkatesh et al. [5] has shown that age can significantly influence the acceptance of new technologies. This study will extend this line of research by examining the impact of age on the acceptance of bags designed by AI and human designers.

Finally, the study will also consider the potential limitations and future research directions in this

area. As suggested by Brynjolfsson and McAfee [6], the impact of AI on various industries, including fashion and design, is a rapidly evolving area that requires continuous research and exploration.

2. Methodology

2.1. Hypothesis Design

The purpose of this study is to examine the impact of different categories of bags (luxury bags, mass branded bags and unbranded bags) designed by different types of designers (AI designers and human designers) on consumer acceptance (favorability and purchase attitudes). With the further development of AI technology, more and more bag companies will try to incorporate AI design into their products. However, people's attitude towards AI is not the same. And the application of AI in different bag categories people's attitudes also vary. To address this issue, the following three sets of hypotheses were designed.

2.1.1. The impact of different types of designers on consumer acceptance

This set of hypotheses controls for the variable of bag type to explore whether different types of designers would have an impact on consumer acceptance. That is, to explore whether AI designers or human designers would have an impact on consumer favorability and purchase attitudes. Based on this, the following research hypotheses are proposed.

H1a: There is a significant difference in favorability of female consumers in the designer category. Which means that consumers have more favorable feelings towards AI designers' bags compared to that of human designers'.

H1b: There is a significant difference in purchase attitudes among female consumers in the designer category. Which means that consumers are more willing to buy AI designers' bags compared to that of human designers'.

2.1.2. The impact of different categories of bags on consumer acceptance

This set of hypotheses controls for the variable of designer type to explore whether different categories of bags have an effect on consumer acceptance. That is, to explore whether luxury bags, mass branded bags or unbranded bags will have an impact on consumer favorability and purchase attitudes. Based on this, the following research hypothesis is proposed.

H2a:

1) There is a significant difference in the favorability of female consumers in the bag category. Which means that consumers have more favorable feeling towards luxury bags compared to that of mass brands.

2) There is a significant difference in the favorability of female consumers in the bag category. Which means that consumers are more willing to buy bags of luxury goods compared to that of mass brands.

H2b:

1) There is a significant difference in the favorability of female consumers in the bag category. Which means that consumers have more favorable feeling towards luxury bags compared to that of unbranded bags.

2) There is a significant difference in purchase attitudes among female consumers in the designer category. Which means that consumers are more willing to buy bags of luxury goods compared to that of unbranded bags.

2.1.3. The interaction between different types of designers and different categories of bags on consumer acceptance

This set of hypotheses explores the interaction of these different types of designers with different categories of bags for acceptance.

H3a: There is an interaction between the designer category and the bag category on the favorability of female consumers.

H3b: There is an interactive effect of designer category and bag category on the purchase attitude of

female consumers.

2.2. Experiment Design

The design idea of this research experiment was mainly grouped according to the type of designer and the category of the bag. The experiment was divided into six groups according to the type of designer and the category of the bag to be conducted table 1.

Table 1 Experimental Stimulus Group

Experimental group	Designer Type	Bag category
A	AI Designer	Luxury
B	Human Designer	Luxury
C	AI Designer	No brand
D	Human Designer	No brand
E	AI Designer	Mass Brand
F	Human Designer	Mass Brand

The data collection for this experiment was in the form of a questionnaire. Different posters were shown to the subjects who participated in the experiment. The posters for the same bag category was the same. All three posters were designed with the help of AI generation software mid journey.

The experimental population for this study was conducted for the female population, with each experimental group containing 15 women. The demographic composition was three students (college and graduate students) aged 18-25, six working women aged 26-40, and six mothers with families aged 40-60. There are two main reasons for this:

- (1) The main consumer group of bags is still dominated by women.
- (2) Different age groups of women do not have the same point of interest and consumption concept when it comes to purchasing behavior.

2.3. Questionnaire Design

In the colophon section, the brand of each experimental pair is specified, and the brand signal is emphasized by the slip-up in price. It will also state the identity of their designers as AI designers or human designers.

The second part of the questionnaire is the consumer acceptance survey. Acceptance is divided into consumer's favorability and consumer's buying attitude. The good feeling aspect investigates whether the consumer looks good, whether it is creative and whether it is attractive.

The purchase attitude aspect first directly consulted consumers whether they were willing to buy the bag, and then laterally consulted whether they were willing to wait in line for the bag.

Personal information was collected for data screening. As the experimental subjects were designed, the experiment was conducted on a group of women. And we prefer that the group participating in the experiment has the experience of buying the corresponding style of bags. Therefore, the data of some men and those who have never filled out the questionnaire with the corresponding style of bags will be screened out.

The age group can be used to measure the demographic structure of each group, i.e. 3 students aged 18-25, 6 working women aged 26-40 and 6 mothers aged 40-60. On the other hand it is thought that the age structure also has an impact on consumer acceptance.

3. Results and discussion

3.1. Descriptive Statistical Analysis

This research includes three experiments, each experiment set up an experimental group and a control group, each sample size is 15 people, and the total number of samples is 90 people. Before carrying out specific data analysis, this study used SPSS 22.0 data analysis software to summarize the basic information of the experimental subjects to reflect whether the selected samples meet the requirements and whether they are representative.

3.1.1. Whether the sample meets requirement

In this study, when collecting personal information in the questionnaire, two questions of gender and the number of bags were set to clarify the answers of samples that did not meet the requirements, leaving only the answers of women and samples with bags. We selected 90 samples all meet the standards of women and there is no case of never having a bag, which shows that this study meets the basic requirements at the level of sample selection.

3.1.2. Whether the sample is representative

In response to this problem, this study considers that age may affect female consumers' favorability and purchase attitude towards bags, so we fixed the age ratio when drawing samples. Further considering the representativeness issue, this research believe that the main consumers of bags are women aged 18-60, and the experiment involves bags with different positioning levels, so we further divided the age group 18-60 into three intervals. Taking a group of 15 people as an example, the composition structure is 3 people aged 18-25, 6 people aged 25-40, and 6 people aged 40-60 (1:2:2).

3.2. Hypothetical test

After confirming that the sample meets the experimental requirements, we integrated the data and further explored whether the hypothesis was established through the data analysis method of two-factor analysis of variance among subjects.

3.2.1. Test whether there is a significant difference in the acceptability of female consumers in the designer category.

When testing this hypothesis, the group of variables of the bag category is set as a fixed variable to explore consumers' acceptance of AI designers and human designers when the bag categories are the same.

1) Test whether there is a significant difference in favorability of female consumers in the category of designers.

After setting the bag category as a fixed variable, whether it is a luxury product, a mass brand or no brand, female consumers are more favorable to AI than human designers on the sample mean. After further two-factor analysis of variance between subjects, it can be found that this conclusion can be extended to the whole, and female consumers have significantly higher favorability towards AI designers than human designers (Sig 1=0.016, Sig 2=0.028), that is H1a is valid.

2) Test whether there are significant differences in the purchasing attitudes of female consumers in the designer category.

In the same way, whether it is luxury goods, mass brands or no brands, female consumers are more willing to buy AI than human designers on the sample mean. Combined with the Sig value, it is found that this phenomenon is not a special case of the sample, that is, regardless of the category of bags, female consumers have a higher willingness to buy bags designed by AI designers than human designers, that is, H1b is valid,

3.2.2. Test whether there is a significant difference in the acceptance of female consumers in the bag category.

1) Test whether there is a significant difference in the favorability of female consumers in the bag category

From the sample average, whether compared with mass brands or compared with no brands, female consumers have a higher degree of favorability for luxury goods. Going further to see whether his

difference in favorability can be generalized to the whole, that is, to see whether the difference is significant. It can be seen from the data that the difference in favorability of female consumers for luxury goods is higher than that of mass brands is significant ($\text{Sig}=0.16 < 0.05$), which means that this difference is not a special case of the sample but can be applied to the entire female consumption group, and this conclusion can explain 19.7% of the cases, which has a certain explanatory power (R square = 0.197). In addition, the difference in favorability of female consumers for luxury goods is not significant ($\text{Sig}= 0.956 > 0.05$), indicating that it is only a special case of the sample and does not have reference value. To sum up, when the brand strength is strong, the favorability of female consumers towards luxury brands is significantly higher than that of mass brands, that is, H2a is valid.

2) Test whether there is a significant difference in the purchase attitude of female consumers in the bag category

Similarly, according to data research, it is found that female consumers have no significant difference in purchasing attitude towards luxury goods, mass brands and no brands, and their Sig values are all greater than 0.05. Therefore, there is no significant difference in the purchase attitude of female consumers in the bag category, that is, H2b does not valid.

3.3. Explore whether age is an influencing factor

After completing the above hypothetical demonstration, this study will further explore whether the above results will be affected by the influencing factor of age, that is, whether there are significant differences between favorability and purchase attitudes among different age groups.

1) Favorability

Through ANOVA analysis, it can be found that there are significant differences in favorability among different age groups ($\text{Sig}=0.034 < 0.05$) . Among them, the favorability of female consumers aged 41-60 (average = 3.47) > female consumers aged 31-40 (average = 3.32) > female consumers aged 18 to 30 (average = 2.47).

To sum up, differences in age groups will affect the favorability of female consumers.

2) Buying attitude

Through ANOVA analysis, it can be found that there are significant differences in purchasing attitudes among different age groups ($\text{Sig}=0.027 < 0.05$) . Among them, female consumers aged 41-60 (average = 3.06) > female consumers aged 31-40 (average = 2.85) > female consumers aged 18 to 30 (average = 1.79). To sum up, differences in age groups will affect the purchasing attitude of female consumers.

3.4. Summary of assumptions

After the data inspection in this chapter table 2, it can be found that both H1a and H1b have been confirmed, that is, the acceptance of AI designers by female consumers is significantly higher than that of human designers. On H2, that is, the conclusions on the bag category are relatively complicated. When the brand signal is strong (luxury and mass brands), female consumers' favorability for luxury goods is significantly higher than that of mass brands; but when the brand signal is weak (luxury brand versus no brand), female consumers have no clear preference between the two, so H2a is only partially confirmed. Regarding H2b, that is, the purchase attitude, the data did not show significance, so there is no significant difference in the purchase attitude of female consumers in the bag category, that is, H2b is not valid. In the test of H3, the study found that there is no interaction between the two variables, whether it is favorability or purchase attitude, and neither H3a nor H3b is valid . In summary, no matter what type of bags female consumers are facing, they are more accepting of AI designers, and have a higher degree of favorability for luxury bags. After the ANOVA analysis of age, the study found that age is an effective influencing factor, and female consumers between the ages of 18 and 60 have significant differences in favorability and purchase attitude.

Table 2 Summary of hypothesis results

Number	Research hypothesis	Results
H1a:	There is a significant difference in favorability of female consumers in the designer category	Valid
H1b:	There is a significant difference in purchase attitudes among female consumers in the designer category	Valid
H2a:	There is a significant difference in the favorability of female consumers in the bag category	Partly Valid
H2b:	There is a significant difference in the favorability of female consumers in the bag category	Not Valid
H3a:	There is an interaction between designer category and bag category on the favorability of female consumer	Not Valid
H3b:	There is an interactive effect of designer category and bag category on the purchase attitude of female consumers	Not Valid

4. Conclusion

When exploring whether there is an interaction between category and designer category, in the control group of no brand and luxury goods, this experiment adopted different bag styles to reflect the difference between no brand and luxury goods. Therefore, consumers may have different perceptions of the two bags due to different packaging designs, resulting in the interaction being affected by consumers' subjective evaluation of the design itself.

This experiment mainly explores the differences in consumers' perceptions of the products of AI designers and human designers in the luggage industry and different brand positioning. With the continuous development of AI technology, the ability of AI design and the scope to which it can be applied will continue to improve. In the future, we look forward to studying whether AI design is suitable to be applied to the industry range of products with higher purchase intake and the differences in consumer perception under different brand positioning. For example, AI-designed furniture and home appliances, AI-designed cars, AI-designed interior decoration, and even AI-designed architecture, whether consumers can accept it and what impact it will have on human designers and even the entire field of art design.

According to our experimental data analysis, people of different age groups have obvious differences in their willingness to buy bags and their favorability. The specific performance is that the acceptance of young people aged 18-30 is lower, and that of middle-aged and elderly people aged 30-60 is higher. The specific reason cannot be expanded due to the limitations of this experiment, and the influence of different age groups on the acceptance of different brand positioning and designer categories can also be used as a research direction in the future.

According to the questionnaire design of this experiment, in this experiment, in the comparison between human designers and AI designers, both groups of experiments used bags designed by AI, and only told the two groups of respondents that the bag was designed by AI and the human designer. Therefore, the difference in consumers' perception should be entirely due to the fact that consumers are informed that the bag is "designed by AI" and "designed by a human designer". In other words, the difference in consumers' perception comes from the concept of "AI design", which may represent the perception of the brand image brought by the use of high-end cutting-edge technology or the re-creation of the crystallization of human artistic wisdom. For advertisers, marketers, designers, and even all related industries that use AI design, we need to realize that in addition to the impact of AI design on "design" itself, consumers will also have an impact on "AI design". The concept of "design" itself generates its own perception and thus influences the behavior of its consumers.

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