

# Analysis of Visual Communication Design of E-Commerce Platform Based on Internet Technology

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## ABSTRACT

The development speed of the Internet in my country has been increasing in recent years, and the number and scale of Internet users have also been increasing and expanding. The development momentum of the e-commerce industry based on the rise of Internet platforms is also very rapid. In the Internet era, the dissemination of visual information on e-commerce platforms will be affected by the dual factors of the form of dissemination and the change of media forms. This article mainly studies and analyzes the visual communication design strategies of e-commerce platforms in the Internet era. Based on the related theories of design and psychology, this paper conducts a systematic and in-depth study of the visual communication design strategies of e-commerce platforms from the two dimensions of visual design and communication methods. This paper obtains real and effective data through the survey of e-commerce platforms and consumers, and conducts a quantitative analysis on this, trying to explore the impact of visual communication design strategies on consumers' purchase intentions. Through research and analysis, it is found that users in the e-commerce platform market will pay more attention to the quality of the product when purchasing. 79% of the respondents who choose this factor; the return of interface design, packaging design, advertising design and communication methods Significance is less than 0.05, indicating that each dimension has a significant positive impact on purchase intention.

**Keywords:** E-commerce Platform, Visual Communication Design, Strategy Analysis, Internet Era

## 1. INTRODUCTION

With the rapid development of network information, the world has gradually entered the Internet era, and more and more people use the Internet in their daily lives to improve their living standards [1-2]. Network information has promoted the formation of our country's Internet economy, especially in e-commerce [3]. Nowadays, people's online shopping life has become more and more common, and various e-commerce platforms have been widely known [4]. Currently, major e-commerce platforms are facing fierce market competition, and the interface design of e-commerce platforms has also become a part of the comparison of major e-commerce platforms [5-6]. It is necessary for us to study and discuss how to apply various visual information transmission methods in traditional and modern interfaces, conform to the technological development trend of the trend of the times, and absorb practical visual design techniques.

Tian Zhiyong explores the framing of dynamic visual communication images for graphic design based on virtual reality algorithms, defines corresponding feature representations by describing pixels, elements, relationships, planes and application layers, and studies how to quantify geometric features, perceptual features and styles Features [7]. Fan Mingming and Li Yunsong,

in order to give designers more inspiration and improve the author's creative ability, take information in the field of graphic visual communication as the research object, and study the characteristics of graphic information, development process and related visual communication design [8]. At the same time, they also analyzed computer graphics as a cost-effective way of information transmission, and the significance of interface design to mobile media.

This article applies the theory of visual communication to e-commerce platforms, and further sorts out the theories of communication, marketing, and visual psychology contained in visual communication. Based on the development trend of communication media in the Internet era, this article discusses the visual communication design strategies of e-commerce platforms based on industry interviews and survey data of e-commerce platform users. In order to create a high-quality e-commerce platform with cultural connotation and high purchase conversion rate, this article puts forward some opinions and suggestions.

## 2. ANALYSIS AND RESEARCH ON THE VISUAL COMMUNICATION DESIGN STRATEGY OF E-COMMERCE PLATFORM IN THE INTERNET ERA

### 2.1. Related Basic Theories

#### (1) Cognitive psychology

Cognitive psychology is a development trend of modern psychology, a new discipline developed by the integration of psychology and adjacent disciplines [9-10]. It pays attention to and studies people's psychological structure and the process of cognitive development. Cognitive psychology initially resisted behaviorism, but in recent years it has been affected by behaviorism. It not only deeply studied people's psychological structure, but also deeply studied their behavior patterns [11-12]. Cognitive psychology regards people as the subject of processing information, and people can simply regard achievement as the process of processing information for the cognitive process of the outside world. In short, cognitive psychology is the analysis of human behavior and the investigation and study of human psychological structure.

#### (2) Design theory

##### 1) Principles of Semiotics

Semiotics is a discipline that studies symbol systems. In the design of e-commerce website interface, symbols are equivalent to the main body of thinking. People's consciousness and thinking are nothing more than a process of screening, transforming, and reorganizing symbols. So when facing the interface of an e-commerce platform, people often think through symbols.

##### 2) Principles of aesthetics

E-commerce platform interface design mainly includes dynamic and static in the visual manifestation of aesthetics. Compared with the traditional interface, its aesthetic principle is not only the splicing of graphics, text and color blocks and other plane visual elements, but also the unprecedented dynamic attraction, the interactive visual impact of the novel dynamic and static combination, in order to break away from the old. The basic rules of visual form beauty are: Principal and subordinate and key points make the artistic experience have unity, which is a recognized artistic principle; symmetry and balance, balance refers to the visual balance between the various elements of form in a specific space; contrast and harmony reflect the two states of contradiction, contrast tends to "different" and harmony tends to "same".

##### 3) Gestalt Psychology

Human vision is a whole, the result of the joint action of the eyes and the brain. If human vision

contains too many irrelevant parts, the eyes and brain will try to distinguish each part and pursue structural integrity or the integrity of things. Gestalt psychology puts forward six basic principles based on the level of perceptual judgment based on people's mental models: proximity principle; similarity principle; continuity principle; closedness principle; simplified symmetry principle; subject and background principle.

### 2.2. The Turn of Visual Communication in the Internet Age

#### (1) Real-time sharing and interconnection of brand information

In the Internet age, the carrier of information dissemination has undergone a transformation from plane to space, from static to dynamic. Information dissemination carriers based on the Internet and digital technology have become the current development trend of information dissemination carriers. Digital media technology has promoted interpersonal communication to a height of immediacy, interaction and globality. In the future, the key to brand integrated communication lies in making the communication three-dimensional, creating a good experience and interaction for consumers. Among them, visual social interaction is promising as an effective communication method, which can effectively use the extension of time and space to make brand information flow more fully.

#### (2) Brand communication between subject and object

In the Internet age, the disseminators of visual information tend to be diversified. Everyone can become a creator, disseminator and receiver of information. This makes the communication media of the Internet era more accurate and effective than traditional communication media in terms of information dissemination.

#### (3) From static to dynamic, from two-dimensional to multi-dimensional

The emergence of dynamic images is inseparable from the development of image communication technology, image processing technology and digital synthesis technology. To a certain extent, the innovation of Internet-related technologies is a prerequisite for promoting visual transformation. The development of Internet technology has promoted the emergence of dynamic multi-dimensional images, greatly promoted the transformation of information dissemination from static to dynamic, and expanded new modes and new contents of information dissemination.

#### (4) Cross-media integrated communication shifts from vision to synesthesia

The so-called synesthesia refers to the comprehensive sensation felt by two or more sensory

organs working together. The rise of new media has transformed traditional visual strategies from purely visual information transmission to multi-sensory experiences such as hearing and touch. Although vision occupies an absolute advantage in all human senses, the cooperation of other sense organs brings a more humanized comprehensive experience to the audience.

### 2.3. Personalized strategy in the Internet age

With the arrival of the Internet wave, the main audience of the media is people who admire self and individuality. They have the typical characteristics of openness and individuation, love products with spiritual and cultural connotations, and pay more attention to the participation between themselves and products. It is precisely based on such audience characteristics that in the future, brand visual marketing will be closer to their characteristics and tend to be more personalized.

## 3. E-COMMERCE PLATFORM VISUAL COMMUNICATION DESIGN STRATEGY ANALYSIS EXPERIMENT IN THE INTERNET ERA

### 3.1. User Survey of e-Commerce Platform Market

#### (1) Questionnaire

This article conducts a network user survey on the e-commerce platform market. The questionnaire mainly asked and surveyed the three major aspects of the user's basic information, the user's consumption on the e-commerce platform, and the interviewed user's cognition of the e-commerce website. Among them, the user's basic information includes gender, age, education, and monthly income; consumption status includes monthly consumption times and annual consumption amount; cognitive status includes e-commerce platform selection, purchase type of goods, and factors considered when choosing a consumption platform. Among them, the user's basic information and the user's consumption status on the e-commerce platform are single options, and the user's knowledge of the e-commerce website is a multiple option.

### 3.2. Research on Factors Affecting Consumers' Purchase Intention on E-commerce Platform

#### (1) Research hypothesis

When consumers consume on the e-commerce platform, they cannot directly select products, and can only conduct preliminary communication through the visual language delivered by the platform. The visual language mainly depends on the visual symbols in the process of communication, thus forming the individual's

psychological identity and physical experience of the commodity.

Combining the research results of related scholars on visual design and consumer purchase intention, this article puts forward the following hypotheses: Interface design is significantly affecting consumers' purchase intentions; packaging design is significantly affecting consumers' purchase intentions; advertising design is significantly affecting consumers' purchase intentions; the mode of communication is significantly affecting consumers' purchase intentions.

#### (2) Questionnaire

In order to explore the impact of visual communication design strategies on consumers' purchase intentions and to understand consumers' psychological needs for e-commerce visual symbols, this article retrieved 312 questionnaires online, with a total of 294 valid questionnaires, with an effective rate of 94.2%. A quantitative analysis of whether consumers will be influenced by visual communication design methods to produce purchase behavior and consumers' perception of different visual symbols is carried out to provide empirical support for the summary of visual strategies in the following article.

#### (3) Reliability test

The reliability analysis of the questionnaire is to examine the reliability of the questionnaire and refers to the degree of internal consistency of the results obtained from the questionnaire. This paper uses the Kronbach coefficient method to test whether the reliability of the questionnaire is up to standard, and to test the consistency of the content of the answers to the questions in the questionnaire. After testing, the overall reliability of the questionnaire is  $0.880 > 0.80$ , indicating that the internal reliability of the questionnaire is very good, and the internal consistency of the questionnaire is acceptable. The Cronbach coefficient formula is formula (1), where  $K$  is the number of questions in the questionnaire,  $S_i^2$  is the score variation of the  $i$ th question, and  $S_x^2$  is the variance of the total score obtained.

$$\alpha = \frac{K}{K-1} \left( 1 - \frac{\sum S_i^2}{S_x^2} \right) \quad (1)$$

#### (4) Validity test

This article uses factor analysis to test the correct classification of the questionnaire structure. Test results: The KMO value is  $0.851 > 0.70$ , which indicates the suitability of this questionnaire for factor analysis. The chi-square value of the Bartlett sphericity test is 1459.764, which is a high value, proving that the corresponding P-value is  $< 0.01$ , so the Bartlett sphericity test is of great importance. The questionnaire has a good structure of validity and is suitable for factor analysis.

For this questionnaire, principal component analysis is used, the orthogonal method is used to rotate the factors, and a total of five common factors with eigenvalues > 1 are extracted. The frequency of explanations for the total variance of the five factors is 58.976%, which is more than 50%. Therefore, the reliability of the questionnaire is considered good. The formula for calculating the KMO is expressed by the formula (2).

$$KMO = \frac{\sum \sum_{i \neq j} r_{ij}^2}{\sum \sum_{i \neq j} r_{ij}^2 + \sum \sum_{i \neq j} r_{ij \cdot 1, 2, \dots, k}^2} \quad (2)$$

#### (5) Related analysis

To examine the correlation between questionnaire size and purchase intent, SPSS was used to analyze the correlation between Pearson product and variance. Pearson's product difference correlation analysis uses the Pearson correlation coefficient to assess the strength of the correlation between two variables. A Pearson correlation coefficient less than 0.4 indicates a significant correlation with a low score, a value between 0.4 and 0.7 indicates a significant moderate correlation, and a Pearson correlation coefficient greater than 0.7 indicates a low one Score on. A significant correlation with a high degree.

#### (6) Regression analysis

To test whether each parameter has a significant impact on purchase intention, interface design, packaging design, ad design and communication methods are used as explanatory variables and the purchase intention as a dependent variable. SPSS is used to perform multiple linear regression analysis on it.

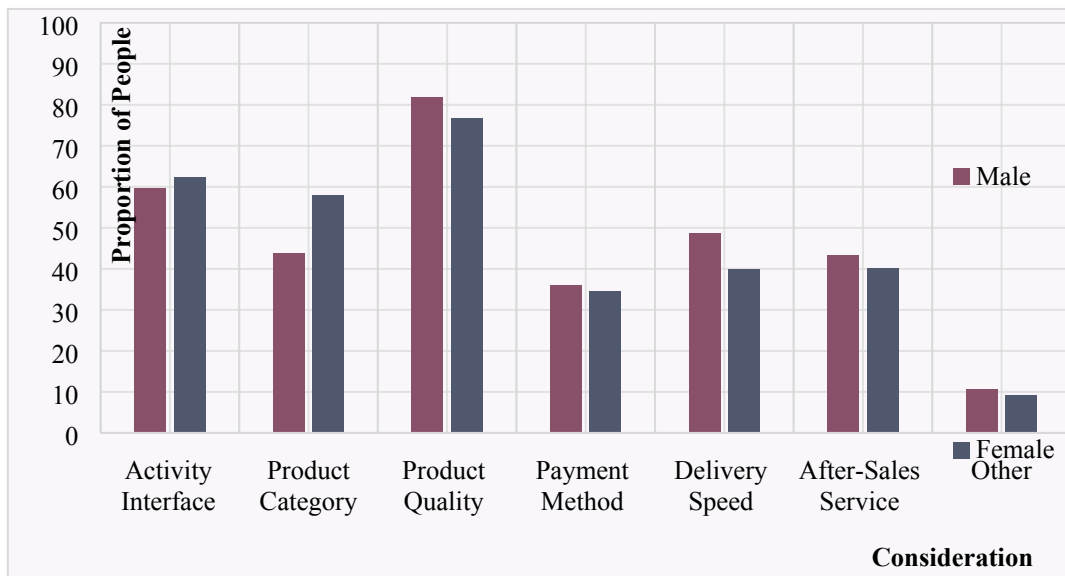
### 4. AN EXPERIMENTAL ANALYSIS OF THE VISUAL COMMUNICATION DESIGN STRATEGY OF E-COMMERCE PLATFORMS IN THE INTERNET ERA

#### 4.1. User Survey of E-commerce Platform Market-Analysis of Perception

When surveying and researching users in the e-commerce platform market, it was found that women accounted for about 62.7% of the users in the e-commerce platform market; about 80% of users are between 20-30 years old; users with a bachelor's degree or above account for about 78%; the average monthly income is mostly between 2001-3000 yuan, accounting for about 34%. This section mainly analyzes the factors that men and women consider when choosing an e-commerce platform. The analysis is shown in Table 1.

**Table 1.** Respondents' Perceptions of E-commerce Platforms

	Activity Interface	Product Category	Product Quality	Payment Method	Delivery Speed	After-Sales Service	Other
Male	59.7	43.8	81.7	35.9	48.6	43.4	10.7
Female	62.4	57.9	76.8	34.5	39.8	40.2	9.1



**Figure 1.** Respondents' Perceptions of E-commerce Platforms

As can be seen from Figure 1: Users in the e-commerce platform market will give more consideration to the quality of the product when buying, and 79% of

the respondents who choose this factor; in addition, compared with female users, male users consider more comprehensive factors and pay more attention to the

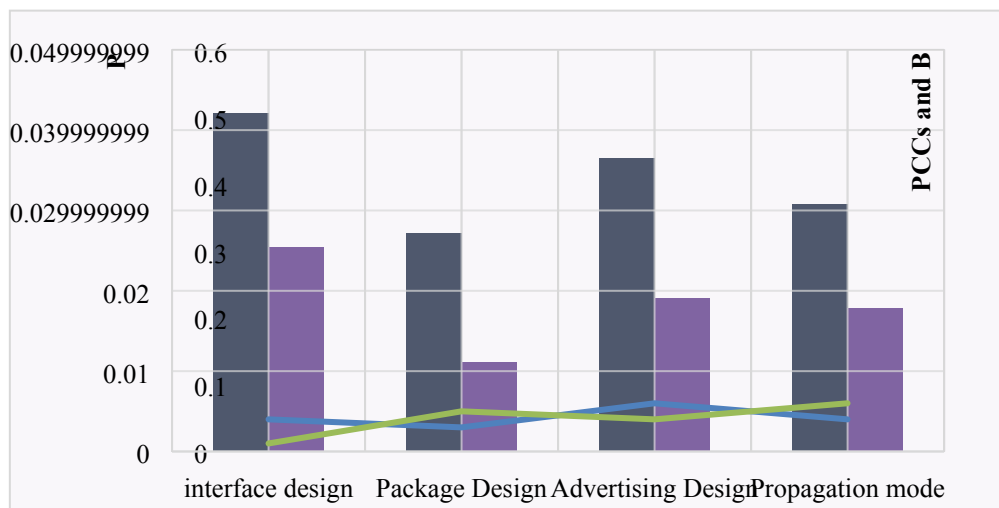
quality of goods and the convenience of purchasing goods. From the above results, it can be seen that visual communication design can only be used as an auxiliary means to enhance users' purchase intentions, and e-commerce platforms should pay more attention to the detection of product quality within the platform2.

#### 4.2. Research on Factors Affecting Consumers' Purchase Intention on E-commerce Platforms- Correlation Analysis and Regression Analysis

In this section, we mainly analyze the correlation between each dimension and purchase intention and the influence of each dimension on purchase intention. The results of the analysis are shown in Table 2.

**Table 2.** Correlation analysis and regression analysis of each dimension

	related analysis		regression analysis	
	P	PCCs	P	B
interface design	0.004	0.506	0.001	0.306
Package Design	0.003	0.326	0.005	0.134
Advertising Design	0.006	0.438	0.004	0.229
Propagation mode	0.004	0.369	0.006	0.215



**Figure 2.** Correlation analysis and regression analysis of each dimension

As shown in Figure 2: The Pearson correlation coefficient between interface design and ad design and purchase intent is on the order of [0.4, 0.7], which indicates a significant correlation and a moderately positive relationship between UI design, ad design, and purchase intent. The Pearson correlation coefficient between package design and communication and purchase intent is less than 0.4, which indicates a low positive correlation between package design and communication and purchase intent. The regression significance of each dimension is less than 0.05, which indicates that each dimension has a significant positive impact on purchase intent. Based on the above results, we should study the influence of various factors on the design of the e-commerce platform to summarize the design strategy for the visual communication of the universal e-commerce platform.

## 5. CONCLUSIONS

Based on the background of the Internet, this article uses visual design as an entry point to discuss the visual communication design strategy of e-commerce

platforms. In this article, by studying relevant theoretical works at home and abroad, we can fully understand the latest developments of relevant industry information websites, and sort out a number of industry reports from third-party data institutions. This article conducts a preliminary analysis and discussion on the visual communication design strategies of e-commerce platforms, and analyzes the impact of the current domestic new forms of visual communication on e-commerce platforms. This paper selects the form of questionnaire survey to collect first-hand information from consumers, and uses SPSS software to conduct regression analysis and correlation analysis on the survey data. This article is combined with the visual communication design strategy adopted by the current domestic e-commerce platform to design and improve the shortcomings in its strategy.

## ACKNOWLEDGMENTS

"Research on the Multiple Features and Performance of Visual Communication Design Based on Digital Media Environment"

2021 Social Science Fund Project of Jilin Province (Ph.D. and Youth Support Project) Project Number: 2021C90

Jilin e-commerce society's "14th five year plan" Research Project No.: 2021jlds24

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