

Explore the factors that influence visual communication in the design industry

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ABSTRACT

With the continuous development of social economy and science and technology, the concept of visual communication design is constantly updated and changed. When each new product is developed, in order to bring visual impact to consumers, visual communication design bears the important mission of how to transmit product information to make it more acceptable to consumers. Visual communication art, in a fundamental sense, is a kind of behavior for designers to integrate into the society. In the design process, designers cannot avoid the regulations and constraints of various social ethics and standards. On the basis of literature review, based on design fuzzy theory and data analysis theory, this paper summarizes the demographic characteristics and types of visual communication design workers through interviews and questionnaires, and makes an in-depth analysis of the influencing factors such as market factors, historical factors and cultural factors.

KEYWORDS

visual communication; Design; Theory of ambiguity

1 Introduction

1.1 Research Background

The term visual communication design, popularized at the 1960 World Design Conference in Tokyo, Japan, includes: The expressive design of newspapers, magazines, posters and other printed propaganda materials, as well as the communication media such as movies, TV and electronic billboards, which convey the relevant content to the eyes for modeling, are collectively referred to as visual communication design. In short, visual communication design is "the design to show people, the design to inform" (Ying Pan, 2020). From the perspective of the development process of visual communication design, to a large extent, it is the expansion and extension of the European and American printing art design that arose in the mid-19th century. With the rapid development of science and technology, various technologies using radio waves and Internet as media have brought revolutionary visual experience to people. Moreover, in today's rapidly changing information society, the influence of these media is increasingly important (Diyan Xian, Zhenyi Chen & Tianxing Zhang, 2020). The content of design expression can no longer cover some new information communication media, so visual communication design comes into being.

Visual communication major started late in China, but the development speed is fast. Especially in recent years, with the rapid economic development, China has created a huge economic market, but also to the field of design art has brought unlimited business opportunities. Art colleges and universities have added new majors on the basis of the original design disciplines, and a series of professional art colleges and universities, represented by Shandong University of Art and Shandong

Institute of Arts and Crafts, have also established visual communication art majors to recruit a large number of students (Liu Ying, 2022). The traditional visual communication design major can no longer meet the needs of the market under the new situation. We should timely study and adjust the professional construction and development direction of this major, further clarify the training objectives of this major, improve the course construction and teaching model, strengthen the construction of teaching hardware and software, and train more and better new visual communication design talents for the society.

1.2 Research significance

With the continuous development of social economy and science and technology, the concept of visual communication design is constantly updated and changed. Today, with the rapid development of science and technology, the birth of new technology and new invention occurs almost all the time. When every new product is developed, in order to bring visual impact to consumers, Visual communication design is responsible for the important mission of how to convey product information to make it easier to be accepted by consumers. Therefore, in the visual communication design, scientific rational concept should be applied as the basic guidance of the design, so that the design effect presents the form of diversification, information and a variety of resources, so as to subtly apply the design concept and technology to various fields, and promote the display of visual communication design effect and the perfection of the design theory.

Over the years, visual communication design, as an important means for various industries to publicize and compete with each other, has played a pivotal role in commodity competition and publicity activities. As an important part of excellent culture, it has played a huge role in promoting the progress of social material civilization and spiritual civilization as well as the development of international competitiveness of various industries. It can be seen that, Rational visual communication design can better meet the needs of social development and people's production and life. Of course, the rational design of visual communication integrates materials related to people's health and related factors to promote the harmonious development of society, which is also an important means to improve the communication of visual communication design. It can be seen that visual communication design and the needs of social material civilization complement each other, and progress and development together.

In a fundamental sense, visual communication art is a kind of behavior for designers to integrate themselves into the society. During the design process, designers cannot avoid the regulations and constraints of various social ethics and standards, which require designers to consider not only the business interests and their own interests of enterprises, but also the interests of the collective society from being infringed, and to live in harmony with the society and nature. So as to abide by the values of sustainable development and promote the harmonious development of human, nature and society (Wang Huaili, 2021).

Therefore, designers should fully abide by the principles of rational design and basic social systems and norms when carrying out corresponding visual communication design, so as to make the design theory and product design not simply create profits for enterprises or individuals, but to meet the needs of people's production and life. Only in this way can the design fully consider the feelings of each social group.

And the social and natural environment should be protected, so as to realize the visual communication design people-oriented, good with the environment, adhere to the visual communication design concept of personalized design and green design, so as to meet the needs of consumers at the same time, will not cause any damage to the ecological environment that people rely on.

1.3 Research theory

1.3.1 Fuzzy theory of design

Specific performance in the following aspects: First, uncertainty, the so-called uncertainty, refers to the unstable characteristics of things. Due to the constant change of time and space, there are a lot of uncertain intermediate links, which transition to each other, showing a unique fuzzy state. Therefore, certainty is temporary and relative, while uncertainty is permanent and absolute. The second is wholeness, which focuses on grasping the whole of things rather than the parts. In the process of blending and penetrating, each part constantly makes its outline and impression disappear in the connection with each other. And in this interrelation, reassemble the outline and impression into a unified whole (Shenid Bhayroo, 2014). It is general and hazy, thus showing a kind of fuzzy aesthetic feeling; And then the interpermeability, another characteristic of ambiguity, is the interpermeability, or the permeability and the transition of the medium.

The fuzziness of visual communication design is also reflected in environmental design, product design and clothing design, which shows its broad inclusiveness. It mainly reflects the following characteristics: First, it gets rid of the traditional one-way communication to the development of two-way and multi-directional communication, and arouses the participation and intervention of the audience. Pay attention to the audience's emotional factors of psychological induction. Secondly, it takes creative thinking as the creative expression, and its visual expression is full of interaction, intersolution, transformation and combination between different things, between reality and illusion, and between concrete and abstract. Third, novel and diversified techniques of expression. Complex and diverse designs have different meanings at different levels, and are a great fusion of non-traditional relevant information.

The research objective is determined according to the research question: the main factors affecting visual communication in design. According to the research objectives and related literature review, it is found that the most influential factors worth studying are: market factors, historical factors and cultural factors; The variables to be further determined are: market factors, historical factors, cultural factors, visual communication, design style.

1.3.2 Visual communication design style

Buffon, a French writer and naturalist, believed that style is man; Hegel believes that style is a form of expression subject to the various conditions of the materials used, and that it is also adapted to the requirements of a certain kind of art and the rules derived from the concept of the theme. Style is a form of expression. It is the embodiment of the individuality of designers and design groups in their works (Xiaochen Geng, Shaopeng Wu & Zhiqiang Lin, 2018). Visual communication design style is a relatively independent form presented by designers with the combination of form, color, form and material. The combination relationship between the design elements must have a certain continuity, that is, relative stability can be called a design style.

In visual communication, the design style pays attention to the pursuit of being different and unconventional, showing and publicizing the personality, which is the embodiment of the desire for innovation and the ability to create. The novelty in the visual communication design style can not only produce an extraordinary sense of freshness and vividness, so that the artistic image is more interesting and charming, but also can attract people's attention and leave a deep impression. Therefore, personality has a very important value in visual communication design style. The individuality of visual communication design style is first reflected in the uniqueness of creativity. The uniqueness of creativity is due to the difference of visual artist's concept, consciousness and mental state. The main factors affecting the style of visual communication design include market

factors, national culture, foreign culture, etc., which not only reflects different artists' different perspectives and methods of life observation, experience and thinking, but also reflects different visual artists' preference and pursuit of artistic language style, which is also an important expression of modern designers' creative ability.

2 Research Question

2.1 Problems with management decisions

How can designers improve their visual acuity?

2.2 The problem of market research

Identify the factors that influence visual communication in design.

2.3 Research Objective

2.3.1 The importance of visual communication in design.

2.3.2 The main factors affecting visual communication in design.

2.3.3 Determine the relationship between visual communication and design style.

3 Literature review

At present, there are many academic studies and discussions on the design industry, but the research on the influencing factors of visual communication is still in a relatively shallow stage. There are many studies on the industry and designers themselves, but few studies on the influencing factors of visual communication and design style. With the rapid development of society, whether it is consumers, markets or designers themselves, the ways and channels to obtain information are more extensive and diversified, thus changing the visual communication and the display of design style to a certain extent. This paper studies the factors that affect visual communication, and draws on the statistical method of factor analysis, design fuzzy theory and related research on visual communication design as the basis of theory and research.

In visual communication design, unclear or unclear graphic design will have a serious misleading effect on the masses. For example, more than 10,000 people are injured or even killed every year in the United States because of poor drug packaging design (Kenagy & Stein, 2001). In addition, in the design work, the impact of the market aspect on the design work can not be ignored. Visual communication not only determines the overall design style, but also must meet the requirements of the market. Therefore, the communication between designers and marketing personnel is very important, and there are not many studies in this area. Paton and Dorst(2011) found that it is very important to establish a good common language between marketing personnel and designers in successful visual communication design. It is very rare to study the influencing factors of visual communication design style, especially the use of factor statistical methods. However, in other aspects of the design discipline, there are various research methods and tools (Clarkson, Coleman, Hosking, & Waller, 2011). Weihs, C., Ickstadt, K. elaborated on the basic knowledge of how to flexibly use statistics in the field of data science (LuQuan Wang, 2020). Xinwei He proposed the influence of statistics on data processing, that is, how to use statistical methods to deal with huge database sets (Corinne Rancurel, 2019).

In the design work, visual communication is a process for designers to accept and process

information and express it pleasantly when designing innovative products. It can be divided into four stages: perception, understanding, preference and decision. In the process of visual communication design, the designer's culture, background, values, aesthetics, market and other attributes will unconsciously affect the designer's style in visual communication design. Under the influence of the subconscious mind, the designer finally makes a comprehensive subjective evaluation of the stimulus object through the form of fuzzy language (Lutz M. Kolbe, 2019). In the actual design process of visual communication design, not only artistic design, but also all the links related to products, markets and consumption are considered, which opens up a broader and free world for the study of visual communication design.

4 Study Variable

4.1 Selection variable

4.1.1 Market factor

Market factors generally refer to market factors. A market consists of three main elements: people with a need, the ability to buy to satisfy that need, and the desire to buy. The formula is expressed as: market = population + purchasing power + purchase desire. These three factors of the market are mutually restrictive and indispensable. Only the combination of the three can form a realistic market and determine the scale and capacity of the market.

Designers will be affected by market changes in visual communication design, so market factors are selected as variables in this survey.

4.1.2 Historical factor

A historical element is a theory that holds that social history is determined by a variety of factors (causes, conditions). It treats political, economic, cultural, moral, legal, emotional, rational and other factors equally, and opposes the distinction between primary and secondary, determinative and non-determinative causes. The idea that every aspect of social life affects and is affected by all others in equal measure.

Designers are influenced by social history in visual communication design, so historical factors are selected as variables in this survey.

4.1.3 Cultural factor

Cultural factors refer to the quality of the habits of production and life of a person, a social group, a nation and a country (the performance of basic cultural quality). It is a process of thought, not volitional; You can vividly say: "your clothes, food, housing, behavior, speech, everywhere from the side of the reflection of your basic level." Popular saying is: through your behavior, you can see through your bones, you do not need to deliberately to hide what, because it is meaningless. For individuals, cultural factors are an ideal tool to see through one's education and living environment.

Designers will be influenced by social culture in visual communication design, so cultural factors are selected as variables in this investigation.

4.1.4 Visual communication

Visual communication refers to the use of visual symbols to convey various information. It mainly includes logo, advertising, packaging, store internal and external environment, corporate image and

other aspects. Since these are conveyed to consumers through visual images, it is called "visual communication". It plays the role of bridging enterprises, commodities and consumers. Visual communication mainly takes text, graphics, color as the basic elements of artistic creation, in the spiritual and cultural field with its unique artistic charm affects people's feelings and ideas, and plays a very important role in People's Daily life.

Different designers will produce different design works in visual communication design due to the different information they receive. Therefore, visual communication is selected as the variable in this research.

4.1.5 Design style

Design style is a product of art or characteristic decoration furniture with unique flavor, in other words, design form, design thinking, different ideas, design form and design style are different, so the design style can be varied, there are many kinds, but generally can be divided into classical style and Baroque style, these two art forms are also the poles of various styles.

In visual communication design, different design styles produce different works, so design styles are selected as variables in this investigation.

4.2 Relationship between variables and research hypothesis

4.2.1 Market factors and visual communication in design work

In the analysis of ways to improve visual communication acuity, it is found that in the overall market economy, if there is no sufficient funds or quick payment, then the design works will not be cool or special. In order to save funds, they are generally within the scope of traditional design; On the other hand, influenced by the market trend, the design criteria and programs will also change; The impact of safety factors, such as fire and earthquake, will also directly affect the complexity and special requirements of the design.

H1: Market factors and visual communication have significant influence on design work.

4.2.2 Historical factors and visual communication in design work

In the analysis of ways to improve visual communication acuity, it is found that around the 1920s, a group of advanced designers in Europe formed a powerful group to promote the prosperity and development of the design industry. The content of this movement in the design industry is very complex, including spiritual and ideological reform, as well as technological progress. As the mainstream of modern design, visual communication design is deeply influenced by traditional culture and historical culture, and forms a design style combining modern and traditional through mutual integration.

H2: Historical factors and visual communication in design work have a significant impact.

4.2.3 Cultural factors and visual communication in design work

In the path analysis of improving visual acuity, it is found that different forms of cultural knowledge objectively restrict the choice of design content, and culture is deep in the psychology of designers, which is a powerful force with internal restriction. If different countries have different cultural traditions, the design will show different characteristics. For example, the traditional British society has a profound tradition of classical humanism, the American pragmatism, the French romance, and the mainstream Confucian culture in China, all have a deep influence on the visual communication design.

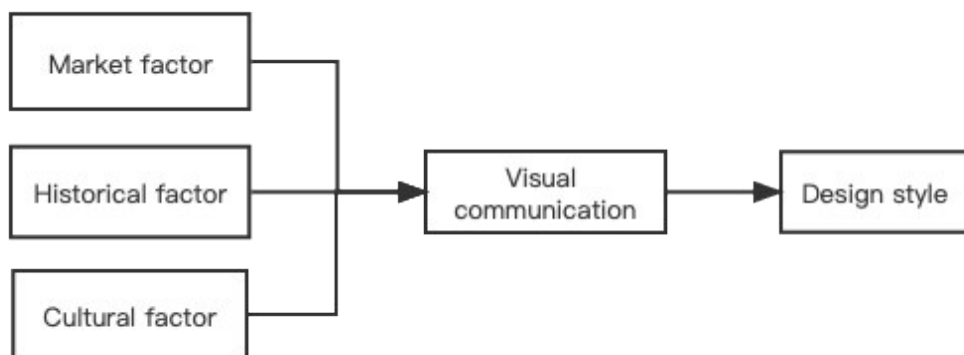
H3: Cultural factors and visual communication have a significant impact on design work.

4.2.4 Visual communication and design style in design work

Visual design is the means and result of the subjective form of eye function. Similarities and differences with visual communication design, visual communication design is a part of visual design, mainly for the object to be communicated, namely the audience and the lack of the designer's own visual demand factors. Visual communication is conveyed to both the visual audience and the designer himself. Therefore, in-depth research on visual communication has paid attention to all aspects of visual experience, and it is more appropriate to call it visual design. The visual design includes cyberpunk style, steampunk style, Bauhaus style, pop style, Memphis style, hyper-realistic style, steam wave style, MBE illustration style, cubism style, low-surface modeling LOW-POLY style, minimalist style, pixel style, ultra-complex style, OP style, Gothic style and so on.

H4: Visual communication and design style have a significant impact in design work.

4.3 Model Diagram



5 Methodology

5.1 Qualitative Research

5.1.1 Purpose of interview

In-depth understanding of designers' real and direct views on visual communication and design style through interviews, and understanding of what factors designers think will affect their design style in visual communication design work, so as to prepare for the content of questionnaire for quantitative research in the future.

5.1.2 Interview outline

5.1.3 Interview limitations

Advantages: I can directly understand the interviewees' views on the issues, and have flexibility. I can directly respond to the interviewees' questions and ask them directly. It is more convenient to understand the interviewees, and the data is more real. We can know the designer's opinion in advance and prepare for the following research.

Limitations: The questions in the interview have certain guidance, which will affect the

respondents' views on the questions, lack objectivity, and affect the respondents' thinking about the questions.

Interview Outline	
Method of in- terview	Meeting online
Date of inter- view	December 10, 2022
The interviewer	XXX
Subject of in- terview	A corporate designer
Content of the Interview	In the design work, what aspects do you think your design works are affected by, such as market changes, foreign culture, please tell me in detail.
	How do you see the impact of market factors in visual communication design?
	How do you think history plays a role in visual communication?
	What influence do you think foreign culture has on visual communication design?
	What influence do you think traditional culture has on visual communication design?
	What is the importance of a designer in terms of color perception?
	Will design style be influenced by various cultures in design work?
	What do you think is the most influential factor in the design of visual communication?
	In design work, how do you complete the full life cycle of a work? Please tell me more about it.

5.1.4 Characteristics of respondents

Designers who have worked in the design industry for less than two years			
Name	Xiao Chen	Xiao Zhang	Kaoru
Gender	Female	Male	Female
Job oppor- tunities	Graphic designer	UI designer	landscaper
Background Information	Bachelor degree in general two, working in a private enterprise	Graduated from ordinary two, working in a state- owned enterprise	He graduated from 211 key university with a bachelor's degree and worked in a private enterprise

Summary: This group of respondents is characterized by the fact that they are all employees engaged in design work with no more than two years of working time. This group of respondents are Xiao Chen (graduated from General No.2 university and worked in a private enterprise), Xiao Zhang (graduated from General No.2 university and worked in a state-owned enterprise), and Xiao Xin (graduated from 211 key university and worked in a private start-up enterprise). The questions they answer come from their usual work experience, and the information they provide is their own experience, so it is of research significance to this research.

5.2 Quantitative research methods

5.2.1 Purpose of the questionnaire

The ideas of designers in the design industry were collected through questionnaires to break through geographical restrictions and expand the scope of research, making the collected data more scientific. The method of sociological statistics is used to describe and analyze the quantity and obtain the required survey data.

5.2.2 Distribution and design of questionnaire questions

After consulting a large number of literature on visual communication design, drawing on the research of domestic and foreign scholars in this field, using the design fuzzy theory, combined with the remote data analysis theory, the questionnaire design is self-made and modified "Investigation of visual communication design style in design work". The form of the questionnaire is closed, which is more convenient for the respondents to fill in the questionnaire and collect and sort out the data in the later stage.

The questionnaire contains 19 questions and consists of two major parts.

The first part is personal information, which is mainly to understand the basic characteristics of the respondents. There are four questions in total, including the gender, age, job position and working years of the respondents.

In the second part, according to the content of design fuzzy theory, the problems are divided into five dimensions, namely market factors, historical factors, cultural factors, visual communication and design style. Three questions were designed for each dimension, with a total of 15 questions. The five-point likert scale is used to score, and the respondents are "strongly agree, agree, neutral, disagree, and strongly disagree," and the scores are "5, 4, 3, 2, and 1," with the higher the score is, the higher the pleasure is, and vice versa.

Market Factors	Design work is often influenced by consumer groups
	Design work is often influenced by public aesthetics
	Design work is often influenced by the mainstream style of The Times
Historical factors	It is easy to be influenced by the social politics of a specific historical period in design work
	Design work is easily affected by the level of scientific and technological development in a specific historical period
	Design work is susceptible to the level of economic development in a particular historical period
Cultural factors	The design work is easy to be influenced by national culture
	It is easy to be influenced by foreign culture in design work
	As a creative activity, design plays an important role in cultural exchange
Visual communication	Will the designer's color perception in the design work determine the quality of the work
	The subjective initiative of the designer in the design work will determine the quality of the work
	In the design work, the designer's objective cognition will determine the quality of the work
Style of design	Is each designer a style of design
	Will the materials used in the design work determine the design style
	Will design style be influenced by various cultures in design work

5.2.3 Evaluation questionnaire design, distribution, collection and other processes

The questionnaire includes personal information and five other dimensions, namely market factors, historical factors, cultural factors, visual communication and design style. By reviewing relevant literature, we obtained information helpful to the research, and combined with the characteristics of designers in visual communication in the design industry, we scored the specific measurement indicators in the form of Likert five-point scale. Respondents expressed their agreement with the description of the scale items from the five levels of "strongly agree, agree, neutral, disagree, and strongly disagree."

When designing the content of the questionnaire, I discussed with other students repeatedly to ensure the validity of the content. After determining the content of the questionnaire, online questionnaires were collected through the Questionnaire Star, and questionnaires were distributed to enterprise workers engaged in visual communication design, and a large number of valid questionnaires were obtained. In the process of data collection, data collection was carried out through the questionnaire star, and the software was used to successfully collect questionnaire data.

5.2.4 Characteristics of participants

What is your gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	109	51.9	51.9	51.9
	2	101	48.1	48.1	100.0
	Total	210	100.0	100.0	

Your age group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	32	15.2	15.2	15.2
	2	116	55.2	55.2	70.5
	3	62	29.5	29.5	100.0
	Total	210	100.0	100.0	

What is your position?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	63	30.0	30.0	30.0
	2	59	28.1	28.1	58.1
	3	59	28.1	28.1	86.2
	4	29	13.8	13.8	100.0
	Total	210	100.0	100.0	

How long have you been in this position?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	21	10.0	10.0	10.0
	2	99	47.1	47.1	57.1
	3	90	42.9	42.9	100.0
	Total	210	100.0	100.0	

210 valid questionnaires were collected in this study. According to the descriptive statistics of the questionnaire, males accounted for 51.9% and females accounted for 48.1%; 15.2% were between 20 and 30 years old, 55.2% were between 31 and 40 years old, and 29.5% were above 40 years old. 30% were landscape designers, 28.1% were UI designers, 28.1% were graphic designers, and 13.8% were visual designers. 10% had worked for 2 years or less, 47.1% had worked for 3-5 years, and 42.9% had worked for 6 years or more. The sample group data collected are diverse and can basically represent the basic characteristics of visual communication design workers, which can

meet the needs of this study.

6 Data Analysis

6.1 Content analysis of qualitative research

Through the interviews, we have learned the designers' views on visual communication in advance. The interviewees believe that in the design work, visual communication design is changed by market factors, historical factors and cultural factors, thus affecting visual communication and design style.

6.2 Data analysis of quantitative research

6.2.1 Descriptive analysis of important variables

		Statistics				
N	Valid	market	history	culture	vision	style
	Missing	210	210	210	210	210
		0	0	0	0	0
Mean		4.0206	3.9698	3.9698	4.0571	4.0381
Median		4.3333	4.3333	4.0000	4.3333	4.3333
Variance		.647	.742	.637	.658	.723

The five variables of the questionnaire "market factors, historical factors, cultural factors, visual communication, and design style" are descriptively counted. Respectively, the average is 4.0206, 3.9698, 3.9698, 4.0571, 4.0381, each numerical difference is not big, illustrate each variable for score no obvious difference. The average value of the variable is between 3.96 and 4.04, which is significantly greater than 2.5, indicating that the designers participating in the questionnaire survey believe that market factors, historical factors, cultural factors, visual communication and design style have an impact on their work. Half rated the job more challenging than 3.5, and half rated it less than 3.5. The median values of the variables are all between 4.0-4.4, which is significantly greater than 2.5, indicating that half of the people scored above 4.0, indicating that half of the people think that market factors, historical factors, cultural factors, visual communication and design style have an impact on their work. The standard deviation data of the variables are all between 0.6 and 0.8, indicating that the differences in the scores of the designers participating in the survey are not obvious, and the differences in the scores of the participants on the cultural factors are the least.

6.2.2 Reliability and validity test

Reliability is the reliability analysis of the questionnaire. In this study, Cronbach's Alpha is used to

Reliability Statistics

Cronbach's Alpha	N of Items
.954	15

test the reliability of the scale. The reliability coefficient of the total scale is better than 0.8, and it is acceptable between 0.7 and 0.8. The reliability coefficient of the subscales should be above 0.7, and 0.6-0.7 is acceptable. If Cronbach's alpha coefficient is below 0.6, we should consider reformulating the questionnaire. The statistical results show that the overall reliability of the questionnaire is 0.954, and the coefficient is greater than 0.8, indicating that the data of this study are highly reliable and the internal consistency of the scale is good.

KMO and Bartlett's Test

Kaiser–Meyer–Olkin Measure of Sampling Adequacy.		.919
Bartlett's Test of Sphericity	Approx. Chi-Square	1066.350
	df	10
	Sig.	.000

Total Variance Explained

Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.229	84.587	84.587	4.229	84.587	84.587
2	.217	4.331	88.919			
3	.204	4.073	92.992			
4	.181	3.625	96.616			
5	.169	3.384	100.000			

Extraction Method: Principal Component Analysis.

The KMO value of the overall validity of the questionnaire is 0.919, which passes Bartlett's test of sphericity. Further exploratory factor analysis, the principal component analysis method was used to extract five factors: market factor, historical factor, cultural factor, visual communication and design style, and the total variance explanation rate was 84.587%, 88.919%, 92.992%, 96.616% and 100%, respectively. The overall results of exploratory factor analysis were good. It can explain more than 80% of the information of the whole questionnaire.

6.2.3 Correlation analysis

6.2.3.1 Bivariate correlation

In order to further study the linear relationship among the dimensions of the five research variables, the correlation analysis method was used to measure the correlation between different variables. It can be seen from the table that the Pearson correlation coefficients among variables are all lower than 0.831, and the correlation coefficients among other variables pass the test at the significance level. It can be seen from the table that market factors, historical factors and cultural factors all positively affect visual communication, which in turn positively affects design style. The hypotheses H1, H2, H3 and H4 are preliminarily verified.

6.2.3.2 Partial correlation

When market factors were not controlled, the correlation coefficient between historical factors and visual communication was 0.812, and the significance level was 0.000, less than 0.001. After controlling the variable of market factors, the correlation coefficient between historical factors and visual communication is 0.467, and the significance level is also 0.000. Therefore, the correlation

		Correlations				
		market	history	culture	vision	style
market	Pearson Correlation	1	.815**	.831**	.794**	.805**
	Sig. (2-tailed)		.000	.000	.000	.000
	Sum of Squares and Cross-products	135.133	118.020	111.353	108.308	115.057
	Covariance	.647	.565	.533	.518	.551
	N	210	210	210	210	210
history	Pearson Correlation	.815**	1	.814**	.812**	.800**
	Sig. (2-tailed)	.000		.000	.000	.000
	Sum of Squares and Cross-products	118.020	155.031	116.920	118.584	122.463
	Covariance	.565	.742	.559	.567	.586
	N	210	210	210	210	210
culture	Pearson Correlation	.831**	.814**	1	.798**	.807**
	Sig. (2-tailed)	.000	.000		.000	.000
	Sum of Squares and Cross-products	111.353	116.920	133.031	107.917	114.352
	Covariance	.533	.559	.637	.516	.547
	N	210	210	210	210	210
vision	Pearson Correlation	.794**	.812**	.798**	1	.796**
	Sig. (2-tailed)	.000	.000	.000		.000
	Sum of Squares and Cross-products	108.308	118.584	107.917	137.537	114.765
	Covariance	.518	.567	.516	.658	.549
	N	210	210	210	210	210
style	Pearson Correlation	.805**	.800**	.807**	.796**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	Sum of Squares and Cross-products	115.057	122.463	114.352	114.765	151.029
	Covariance	.551	.586	.547	.549	.723
	N	210	210	210	210	210

**. Correlation is significant at the 0.01 level (2-tailed).

			Correlations			
Control Variables			history	culture	vision	style
market	history	Correlation	1.000	.425	.467	.419
		Significance (2-tailed)	.	.000	.000	.000
		df	0	207	207	207
	culture	Correlation	.425	1.000	.408	.418
		Significance (2-tailed)	.000	.	.000	.000
		df	207	0	207	207
	vision	Correlation	.467	.408	1.000	.435
		Significance (2-tailed)	.000	.000	.	.000
		df	207	207	0	207
	style	Correlation	.419	.418	.435	1.000
		Significance (2-tailed)	.000	.000	.000	.
		df	207	207	207	0

between historical factors and visual communication is positive and strongly correlated. However, after controlling the variable of market factors, the value of the relationship between historical factors and visual communication changes obviously. Therefore, the variable of market factors will affect the connection between historical factors and visual communication.

6.2.4 Regression analysis

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.855 ^a	.731	.728	.42342	2.074

a. Predictors: (Constant), history, culture, market

b. Dependent Variable: vision

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	100.604	3	33.535	187.045	.000 ^b
	Residual	36.933	206	.179		
	Total	137.537	209			

a. Dependent Variable: vision

b. Predictors: (Constant), history, culture, market

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.486	.156		3.120	.002
	culture	.283	.073	.279	3.893	.000
	market	.258	.072	.256	3.566	.000
	history	.354	.065	.376	5.463	.000

a. Dependent Variable: vision

According to the summary of the fitting degree model of the regression equation, the adjusted R² is 0.731, indicating that all independent variables X can explain 73.1% of the changes in the value of the dependent variable Y. The ANOVA data show that the F statistic of the regression equation model is 187.045, which passes the F test at the 95% confidence level (P value is 0.000), indicating that the model has good interpretation and fit. It indicates that at least one of the three dimensions will have an impact on visual communication.

Establish regression equation: visual communication (Y) = 0.468 + 0.283 × cultural factor + 0.258 × market factor + 0.354 × historical factor. Among the four dimensions, historical factors have the greatest impact on visual communication.

6.2.5 Analysis of intermediate variables

(1) The mediating role of visual communication between market factors and design style

Model 1:

Model 2:

Model 3:

Follow the steps to conduct the inspection:

① The coefficient $c=0.000 < 0.05$ in Model 1 shows significance, which can be further tested.

② By testing coefficient a of Model 3 and coefficient b of Model 2, it can be seen that coefficient a

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.615	.178		3.451	.001					
	market	.851	.043	.805	19.596	.000	.805	.805	.805	1.000	1.000

a. Dependent Variable: style

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.244	.169		1.439	.152					
	market	.495	.065	.468	7.667	.000	.805	.470	.284	.369	2.711
	vision	.444	.064	.424	6.942	.000	.796	.435	.258	.369	2.711

a. Dependent Variable: style

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.835	.174		4.792	.000					
	market	.801	.042	.794	18.866	.000	.794	.794	.794	1.000	1.000

a. Dependent Variable: vision

=0.000 < 0.05 shows significance, and coefficient b=0.000 < 0.05 shows significance. That is, both a and b are significant, and the next test is conducted.

③ By testing the coefficient c' in Model 2, we can see that c' equals 0.000 < 0.05, showing significance.

Based on the above three-step test, it is concluded that visual communication plays a mediating role between market factors and design style, and H1 is established.

(2) The mediating role of visual communication between historical factors and design style
Model 1:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.695	.174		4.002	.000					
	style	.811	.042	.800	19.251	.000	.800	.800	.800	1.000	1.000

a. Dependent Variable: history

Model 2:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.194	.165		1.174	.242					
	style	.425	.061	.420	6.957	.000	.800	.435	.254	.366	2.733
	vision	.507	.064	.478	7.914	.000	.812	.482	.289	.366	2.733

a. Dependent Variable: history

Model 3:

Follow the steps to conduct the inspection:

① The coefficient c=0.000 < 0.05 in Model 1 shows significance, which can be further tested.

② By testing coefficient a of Model 3 and coefficient b of Model 2, it can be seen that coefficient a =0.000 < 0.05 shows significance, and coefficient b=0.000 < 0.05 shows significance. That is, both a and b are significant, and the next test is conducted.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.021	.155		6.593	.000					
	history	.765	.038	.812	20.072	.000	.812	.812	.812	1.000	1.000

a. Dependent Variable: vision

③ By testing the coefficient c' in Model 2, we can see that c' equals $0.000 < 0.05$, showing significance.

Based on the above three-step test, it is concluded that visual communication plays a mediating role between historical factors and design style, and H2 is established.

(3) The mediating role of visual communication between cultural factors and design style
Model 1:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.626	.177		3.540	.000					
	culture	.860	.044	.807	19.691	.000	.807	.807	.807	1.000	1.000

a. Dependent Variable: style

Model 2:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.257	.169		1.524	.129					
	culture	.503	.066	.472	7.664	.000	.807	.470	.284	.363	2.751
	vision	.440	.064	.420	6.823	.000	.796	.428	.253	.363	2.751

a. Dependent Variable: style

Model 3:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.837	.172		4.862	.000					
	culture	.811	.043	.798	19.085	.000	.798	.798	.798	1.000	1.000

a. Dependent Variable: vision

Follow the steps to conduct the inspection:

① The coefficient $c=0.000 < 0.05$ in Model 1 shows significance, which can be further tested.

② By testing coefficient a of Model 3 and coefficient b of Model 2, it can be seen that coefficient $a=0.000 < 0.05$ shows significance, and coefficient $b=0.000 < 0.05$ shows significance. That is, both a and b are significant, and the next test is conducted.

③ By testing the coefficient c' in Model 2, we can see that c' equals $0.000 < 0.05$, showing significance.

Based on the above three-step test, it is concluded that visual communication plays a mediating role between cultural factors and design style, and H3 is established.

7 Conclusion

7.1 Qualitative research conclusions

Through the interviews, we understand the designers' views on visual communication. Designers agree that changes in market factors, historical factors and cultural factors have an impact on visual communication and design style. Designers will adjust the working process and method of visual communication design according to the work content, and enterprises will also provide corresponding conditions according to the improvement of designers' personal feelings. Improve the designer's sensitivity to visual communication.

7.2 Quantitative research conclusions

Through the analysis of the collected questionnaire data, it can be seen that the hypotheses of H1, H2, H3 and H4 are all valid, that is, in the design work, market factors, historical factors and cultural factors will affect the visual communication and thus the design style.

8 Suggestions

According to the different nature of their work, designers should adjust to the best state with me at any time when carrying out visual communication design work. They can also put forward suggestions to improve their visual acuity, so that the design style of the work can be maintained within the estimated period. In the face of sudden market factors, can adapt at any time, so that their design level to achieve the best. When it is difficult to verify historical factors, you can ask experienced colleagues for help according to your needs. In terms of cultural factors, whether it is foreign culture or domestic culture, it can flexibly adjust the state to ensure the quality of works.

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