

Analysis of Public Visual Aesthetics Preference Factors for Outdoor Advertising in Nanjing, China

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ABSTRACT

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As a famous historical and cultural city, Nanjing has experienced significant growth in recent years. Visual advertising plays a pivotal role in enhancing the city's image and promoting commercial activities. By introducing the current state of visual advertising in Nanjing, we gained insights into its existing advertising management regulations and policies, as well as identified issues related to visual pollution. Through summarizing the characteristics of advertising design, we can discern public preferences and pinpoint the factors influencing their visual aesthetic preferences for advertisements. Representative advertisements are selected through NGT voting, and their advertising design characteristics are summarized through Van Leeuwen's multimodal discourse analysis model. Finally, data is gathered and analyzed through questionnaires to conduct a comprehensive analysis of aesthetic preference factors for five types of advertisements, thereby developing a visual aesthetic preference feature framework. This framework helps cities establish emotional characteristics of visual aesthetics and promote the healthy development of the advertising industry. Advertising designers should also make design plans based on the public's aesthetic preferences factors for advertising, reinforce their sense of social responsibility, and foster a people-oriented design concept that integrates Nanjing's historical and cultural elements. The government should enhance the supervision of advertising content, formulate corresponding standards, guide the industry's healthy development, and elevate the public's advertising aesthetic level. Only by fostering a favourable cultural environment and mitigating the visual pollution caused by advertising can we preserve the city's

aesthetic appeal and enhance its overall visual image.

Contribution/Originality: This study contributes to the existing literature by developing the Preferred Visual Characteristics Framework.

1. Introduction

Advertising, as an important element in business, exerts its significant influence upon modern society, functioning as a form of marketing communication that establishes brand image promotes product services, and promotes consumer purchasing behavior. With the advent of the digital age and the multimedia age, advertising media has also advanced rapidly with the help of this east wind, giving rise to diversified, multi-format, and multi-channel advertising communication methods. From the single poster-style advertising in early Chinese society to today's diversified advertising forms such as the Internet, large screens, digital images, and mobile data (GroupM, 2022). The development tendency of the advertising industry also reflects the changes of the times and the progress of history. Relevant studies have shown that in recent years, due to the requirements of the Nanjing Municipal Government Administration for the construction of the city appearance, advertising in the city has been rectified and planned to a certain extent, but there are still considerable and explicit problems (Tong et al., 2020). Advertising, a fundamental approach of disseminating commercial information, has also witnessed a blowout phenomenon, accompanied by the proliferation of commercial activities. Especially in the commercial center of the city, problems such as the large number, variety, chaos, and vulgarity of advertising have gradually emerged (Chmielewski, 2021). Since the purpose of advertising is to attract people's attention and catch the public's eye, exquisite advertising design can present a perfect fusion with the surrounding urban environment and appearance, and the audience's inner interaction and emotional experience. At the same time, it can also beautify the urban environment and enhance the city's image (Pluciennik & Heldak, 2019).

The so-called visual pollution refers to a cluttered and clichéd phenomenon of the city, which evokes discomfort and negative emotions rather than giving people a sense of beauty, leading to irritability, depression, bad mood, and then damaging physical and mental health (Meetiayagoda et al., 2016). In the context of advertising, vulgar content, poor design and other factors can cause visual stimulation and psychological distress among the audience, resulting in emotional fluctuations (Altrjman et al., 2022). In fact, visual pollution arises from various urban phenomena, including messy buildings, messy wires and poles, dazzling billboards, etc. Besides, as a complex problem, there are many factors contributing to visual pollution (Hossain et al., 2021). For example, due to the process of urbanization and commercialization, the placement of advertisements lacks supervision, neglect and cultural attitude differences.

As cities continues to develop and science and technology progress rapidly, urbanization will be insufficient of buildings with artistic appeal. Some commercial advertisements in urban buildings feature unreasonable designs that fails to respect the main position of the building, exhibiting issues such as excessive scale, uneven hanging positions, glaring and disharmonious colors (Wang, 2019). Additionally, advertisements are ubiquitous everywhere for consumption, from bus stations to shopping malls. The chaotic arrangement of advertisements results in an overwhelming of messy visual elements.

These commercial advertisements not only fall short of their intended communicative effect but also extensively cover building monomers, polluting the city's overall image and posing huge psychological and physical harm to urban residents (AlElaiwi et al., 2023). This phenomenon exerts a visual impact on people's vision, influences their emotions, and contributes to a decline in their health levels. If people live in such a disharmonious environment for a long time, their physical and mental health will be directly affected.

2. Research Question

Visual features are pivotal elements of daily aesthetics, playing an important role in shaping perceptions and preferences and influencing the spiritual world of individuals. Through the analysis and understanding of advertisements, this thesis explores public preferences for visual features and analyzes preferences for five different types of advertisements: road sign advertisements, traffic advertisements, light box advertisements, store sign advertisements, and LED light advertisements. In providing a comprehensive discussion, the major findings of the study focus on answering the three research questions: What are the public's preferences for visual characteristics in public advertising that can help reduce visual pollution in Nanjing, China?

3. Literature Review

3.1. The current situation of visual advertising in Nanjing

Advertisements can be found in every corner of the city, such as supermarket advertisements, store signs, electronic screen advertisements in shopping malls, posters on park chairs, small cards on doors, leaflets, banners, road signs and any other small advertisements on physical objects. There are some advertisements posted on the glass of some buildings, whereas advertisements of different sizes in buildings of the community and some office buildings (Alvarez & Cavanagh, 2004). Whether walking on the bustling Nanjing Road or passing through the exotic Huaihai Road, advertisements are ubiquitous, along with commercial plaques of different sizes, shapes and colors (Tatler et al., 2005). Shopping malls, subway stations, taxis, shops, bus stops, neon advertisements of various colors, and various billboards hanging on overpasses, our lives are surrounded by the urban environment. However, some advertisements do not add color to the city, instead, they exert a counter-effect, owing to the fact that the colorful appearance also brings a kind of visual pollution (Sharifi Nowghabi & Talebzadeh, 2019).

Regarding to outdoor environments in Nanjing, as depicted in Figure 1, store sign advertising, though intending to promote their products and make their advertisements stand out, has resulting in the single layout of the current small advertisements, which is mainly in horizontal and vertical directions, with key information magnified and presented in monochromatic text and color. The prevalent use of bright colors, such as red and yellow, can lead to visual fatigue at a glance. As illustrated in Figure 2, Information column advertisements frequently employ bold and Song fonts. In order to save time, many advertisers overlook artistic processing, resulting in fonts that appear messy and lacking aesthetic sense. This is particular evident in small advertisements for rental information, part-time jobs, which deter people from seeking the desired information, let alone pay attention to it. Some of these works, which should out to provide visual pleasure, suffer from simplistic and crude content due to the

misapplication of design elements, devoid of any aesthetic value, and are rigidly imposed on the audience. The content they present has seriously deviated from the essence of advertising, merely highlighting the unilateral purpose of the advertising designer, thereby contributing to visual pollution (Rodriguez & Dimitrova, 2021).

Figure 1 : Store sign advertising Figure 2 : Information column advertising



Beyond the pollution in the form and color of advertisements, another prevalent form of visual pollution arises from mistakes in the expression of advertisement content. In contemporary design works, some advertisements fail to fully recognize that beyond their commercial nature, they also represent the thinking process of the designer. Therefore, in order to mitigate and control visual pollution in the city, it is imperative to undertake urban design and planning in accordance to with aesthetic principles, so as to ensure the city image as harmonious and visually appealing as possible (Wilson et al, 2015).

2.3. Problem Statement of Nanjing Visual Advertising Management

The city's advertising is mainly over-commercialized. Through the summary and analysis of the size, dimensions, color, and quantity of advertisements in Nanjing, its visual pollution comes from the variety and disorder of advertisements, resulting in a messy urban visual environment (Bendak, 2010). Driven by high profits, various advertising companies leverage their private relationships and channels to erect billboards within the city's limited space, thus, rendering these billboards being unorganized without any design and planning, filling every corner of the city (Amoako, 2019). Figure 3 outlines the various concerning issues with Nanjing's visual advertising management.

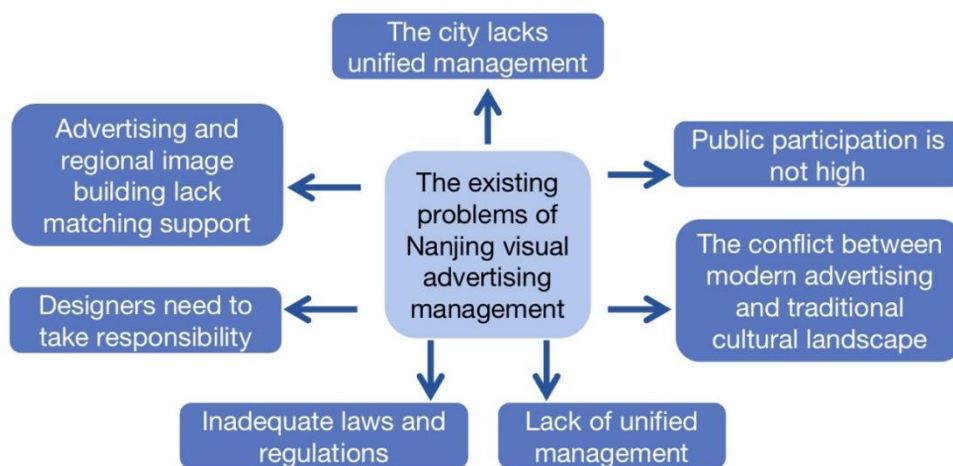
There are numerous safety hazards in advertising, for instance, the lack of flexibility. Walking on the street, you will find many advertisements, big or small, high or low; when taking the bus, promotional advertisements on the platform remain prevalent, so as the small advertisements in the bus after aboard; when taking the subway, large advertisements in the carriage with colorful visual collision exist; when shopping in the mall, there are video advertisements at all times on the mall's large electronic display screen; when the driver is driving, billboards on both sides of the road appear at intervals, and visual pollution is everywhere (Sharifi Nowghabi & Talebzadeh, 2019). Some advertisements are improperly located, affecting traffic safety and pedestrian sight, and lack flexibility. we are suffering from visual pollution all the time even though we share the convenience of transportation (Chmielewski, 2020).

Visual communication designers must embrace their mission. Public transportation is ubiquitous in urban settings, and its bodies also present various advertisements. In terms of design form and content, these advertisements exhibit diverse array of shapes and styles coexist with varying sizes; regarding color, they are vibrant and dazzling, yet often lack cultural depth. Hence, designers should shoulder their responsibilities and strive to achieve the sustainable development goal of being "people-oriented and adapting to local conditions". They should pay greater attention to life, human nature, and the harmonious coexistence of man and nature, resist low tastes, and guide the public to establish correct values (Borchert, 1981).

In the process of urban planning and design, urban residents should be encouraged to participate more to further supervise and ensure the accuracy of planning direction. We should attach great importance to the methods of public engagement in urban planning, improve the scientific rationality of urban planning and design as much as possible, understand the needs of the public and improve the rationality of development (Ogunbodede & Sunmola, 2014).

The city suffers from a devoid of unified management. Visual pollution is also exacerbated by the inadequate market supervision of urban advertising and the lack of coordination between various sectors. This leads to insufficient management, rigid management mode, and failure to reflect the market guidance role. Simultaneously, there is a deficiency in corresponding policy norms in regard to the placement and application of advertisements. The laws and regulations in the advertising industry are imperfect, and the supervision mechanism is flawed, rendering serious visual pollution (Andjarsari et al, 2022).

Figure 3: The existing problems of Nanjing's visual advertising management



3.3. Current advertising management regulations and policies in Nanjing

For the management of outdoor advertising environments, China has promulgated some relatively macro-level management regulations, which stipulates the management scope of outdoor advertising, the administrative and legal procedures for outdoor advertising. The relevant functional departments successively issued relevant policies and regulations such as the "Nanjing City Outdoor Advertising and Signage Management Interim Regulations" and the "Outdoor Advertising Facilities and Signage Facilities

Guidelines (Trial)" in 1993 and 2000, respectively. Nonetheless, there still exists a lack of unified technical specifications and standards for outdoor advertising installations. The planning and control of this field vary across different cities, and the planning of outdoor advertising settings has consistently remained in an exploratory state (GroupM, 2022). Among them, the "Standards for the Installation of Outdoor Advertising and Shop Signage Facilities in Urban Areas of Jiangsu Province" also mandates that "The content of shop signs and signs shall be consistent with the name of the business registration of the unit, and shall not contain advertising information such as business service content, telephone number, product (picture) promotion and publicity". Additionally, the "Standards for Urban Appearance of Jiangsu Province" was officially enacted on March 18, 2005 (Chen & Gan, 2023). Despite the government's decree being in effect for over two decades, the issues prevalent in Jiangsu's urban outdoor advertising have not been solved. In practice, numerous store signs and signs in every city contain information related to commercial business. Therefore, it can be argued that we do not lack corresponding rules and regulations for the management of urban visual image, but rather, we lack law enforcement and management capabilities, as well as professional design management personnel.

4. Methods

This paper analyzes the existing problems in Nanjing's advertising in combination with the literature, and constructs a visual feature framework to reduce the visual pollution in urban advertising. The participation of the public is crucial to the visual pollution of Nanjing's urban advertising (Sumartono, 2009). The study found that understanding and applying public preferences is one of the key factors to improve public participation. First, the nominal group technique was used for group discussion to analyze and summarize representative advertisements. Then, the advertising design features were summarized through Van Leeuwen's multimodal discourse analysis model. Finally, data was collected through questionnaires. By collecting and analyzing the public's preferences and participation, and examining the factors that affect the public's preference for advertising, effective countermeasures were proposed to promote the healthy development of the advertising industry, thereby developing a visual aesthetic preference feature framework. By understanding public preferences and identifying the factors that shapes their aesthetic inclinations toward advertising, a visual feature framework was developed to help cities establish the emotional characteristics of visual aesthetics. Based on the public's visual preferences and preferences for visual aesthetic features, the expression of advertising carriers remains unique, thereby fostering a favourable city impression. The information it conveys can be used in creative design endeavors or methodologies, empowering designers to innovate images aligned with user preferences and favourable visual traits. This approach not only mitigates visual pollution but also maintains the beautiful image of the city (Liu, 2022). However, there are some limitations in this study. Given the specific social environment in different regions, variations in audience reception and regional contexts are inevitable (Peng, 2022). Therefore, in the study, this topic will be further combined with the data on public visual aesthetic preferences to further determine the specific visual feature framework.

5. Analysis And Finding

5.1. Summary of Advertising Design Features Factor

Based on the previous data collection and statistics, the statistical participants involved in this study represent a diverse range of design professions. Table 1 reports the statistical advertising design features, including information content, meaning, design style, and design pattern. It is also noteworthy that some of the participants wrote the same design features as other participants, which will be screened and filtered, and finally filtered and reduced to the final sixteen design feature descriptions, determining the visual preferences of the public in Nanjing for advertisements.

Table 1: Design Characteristic Factor of the Advertisements

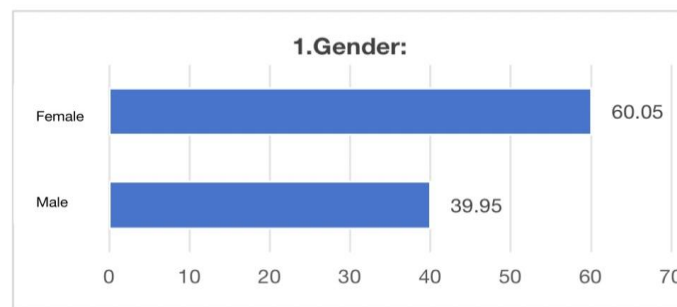
Priority	Design Characteristic Factor	Total Vote
Content of information	Traditional symbols	6
	Handwritten elements	9
	Incorporate photographic imagery	11
	Portray human figures	12
	Scenic landscapes	14
Significance	Cultural transmission	8
	Social education	10
	Corporate ethos	17
	Evoke consumer engagement	17
	Product service	17
Design Style	Maximalist style	10
	Symmetrical style	15
	Fashion style	15
	Flat style	16
	Classical Chinese style	18
Visual mode	Whimsical illustrations	12
	Artistic fonts	12
	Creative compositions	13
	Warm tone	13
	Rich in images and light on text	16

5.2. Analysis of Factors Affecting the Public's Preference for Visual Aesthetics in Advertising

Visual features are pivotal elements of our daily aesthetics, playing an important role in shaping perceptions and preferences, and influencing our spiritual world. Through the analysis and understanding of advertisements, this paper explores the public preferences for visual features, and analyzes the public's aesthetic preferences for five different types of advertisements: road sign advertisements, traffic advertisements, light box advertisements, store sign advertisements, and LED light advertisements.

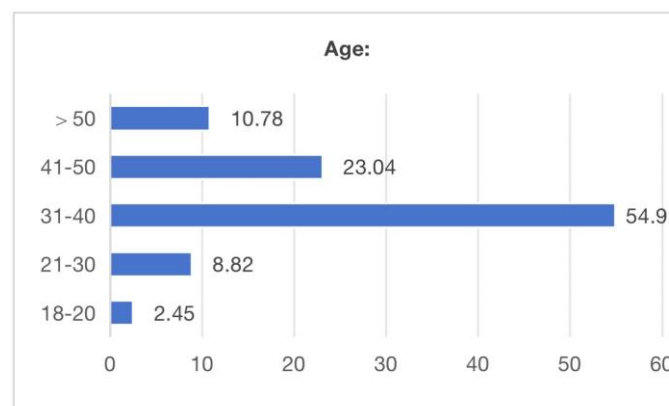
This study was conducted in Nanjing, Jiangsu Province. However, 11 questionnaires were incomplete so that the final sample was of 408 participants, all of whom residing in Nanjing. As shown in Figure 4, the gender distribution revealed 245 female participants, accounting for 60.05%, which slightly outnumbers the 163 male participants, accounting for 39.95%.

Figure 4: Gender distribution map



The age distribution of participants is shown in Figure 5. The 31-40 age group accounted for the highest proportion of participants, reaching 54.90%. The second largest group of participants in the current study were aged 41-50, at 23.04%. This was followed by the 21-30 age group at 8.82%. In fact, despite being a vision-related survey, middle-aged participants demonstrated higher enthusiasm and willingness to participate. Besides, older teachers had more design experience that favored designers with design experience. Finally, the proportion of participants aged 18-20 and over 50 was relatively lower. Notably, two participants aged 60 and over were also invited to take part in the survey, but were disqualified from the total calculation due to their incomplete questionnaires.

Figure 5: Age class distribution map



In terms of comprehending the visual environment of Nanjing, according to the data collection and the survey findings, 79.66% of the participants demonstrated an understanding of the visual environment of Nanjing, while 8.82% of the participants exhibiting a strong grasp of the city's visual environment and 11.52% lacking understanding, as depicted in Figure 6.

As for the learning level of design experience, Figure 7 reveals that 62.50% of participants possess 0-5 years of design experience, 26.23% have 6-10 years, and 11.27% boast over 10 years of design experience. This information provides us with a comprehensive overview of participants' backgrounds and design experience.

Figure 6: Hierarchical distribution of visual environment understanding in Nanjing

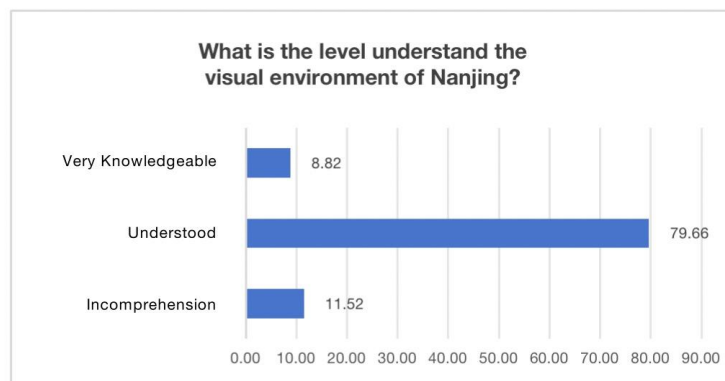
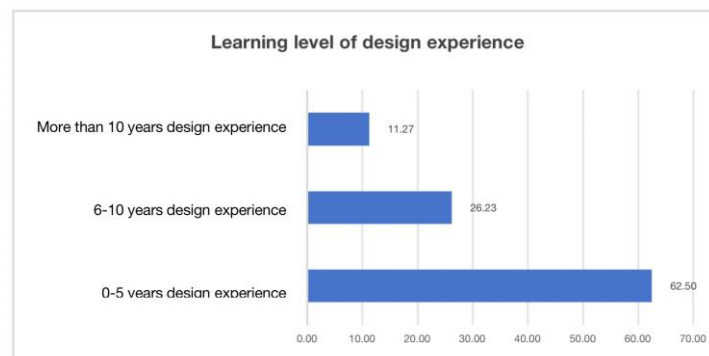


Figure 7: Distribution of visual design experience



This study utilizes a sample of 408 respondents as a sample to investigate preferences for road sign advertising. Table 2 presents the survey results, which indicate a high degree of consistency among respondents in their preferences for various road sign advertising elements, with an overall high level of preference. Specifically, in terms of advertising elements, respondents exhibited a higher preference for advertisements incorporating hand-painted elements ($M=3.635$, $SD=1.152$) and landscape elements ($M=3.500$, $SD=0.881$), while advertisements with photographic elements received lower preference ($M=2.507$, $SD=0.914$). In terms of expectations for advertising significance, respondents hope that road sign advertising can reflect cultural communication ($M=3.819$, $SD=1.100$), and social education functions ($M=3.730$, $SD=0.752$) are also concerned issues, but they are relatively indifferent to product and service display ($M=2.439$, $SD=0.904$).

Based on the above findings, respondents' preferences for road sign advertisements are mainly concentrated on those with hand-painted elements, more pictures and less text, classical Chinese style, and elements that can reflect the meaning of cultural communication. Therefore, designers should keep these audience preferences at the forefront when creating billboard ads to increase the receptivity and visual appeal of the ads.

Table 2: Descriptive statistics of the preferences factors for street sign advertising

Basic index						
Name	S.s	Min	Max	Mean	Std.D	Median

I prefer the street sign advertisements that weave in hand-drawn elements.	408	1.000	5.000	3.635	1.152	4.000
I prefer the street sign advertisements that capture scenic landscapes.	408	1.000	5.000	3.500	0.881	4.000
I prefer the street sign advertisements that portray human figures.	408	1.000	5.000	3.429	0.914	4.000
I prefer the street sign advertisements that feature traditional symbols.	408	1.000	5.000	3.426	0.906	4.000
I prefer the street sign advertisements that incorporate photographic imagery.	408	1.000	5.000	2.507	0.914	2.000
I hope the street sign advertisements to embody cultural transmission.	408	1.000	5.000	3.819	1.100	4.000
I hope the street sign advertisements to serve as a vehicle for social education.	408	2.000	5.000	3.730	0.752	4.000
I hope the street sign advertisements to evoke consumer engagement.	408	1.000	5.000	3.527	0.922	4.000
I hope the street sign advertisements to spotlight products and services.	408	1.000	5.000	2.439	0.904	2.000
I hope the street sign advertisements to reflect corporate ethos.	408	1.000	5.000	3.586	0.854	4.000
I prefer the street sign advertisements with a visual style rich in images and light on text.	408	1.000	5.000	3.701	1.143	4.000
I prefer the street sign advertisements with artistic fonts.	408	1.000	5.000	3.676	0.855	4.000
I prefer the street sign advertisements with whimsical illustrations.	408	1.000	5.000	3.537	0.900	4.000
I prefer the street sign advertisements with creative compositions.	408	1.000	5.000	3.453	0.877	4.000
I prefer the street sign advertisements with warm tones.	408	1.000	5.000	2.485	0.881	2.000
I prefer the street sign advertisements featured with maximalism style.	408	1.000	5.000	3.674	1.092	4.000
I prefer the street sign advertisements featured with classical Chinese style.	408	1.000	5.000	3.723	0.777	4.000
I prefer the street sign advertisements featured with flat	408	1.000	5.000	3.500	0.850	4.000

design style.						
I prefer the street sign advertisements featured with fashionable style.	408	1.000	5.000	3.669	0.722	4.000
I prefer the street sign advertisements featured with symmetrical style.	408	1.000	5.000	2.485	0.823	2.000

This study collected data from 408 respondents regarding their preference on traffic advertising. In table 3, statistical analysis revealed that in terms of advertising elements, respondents preferred advertisements containing human elements ($M=3.654$, $SD=0.755$), traditional symbols ($M=3.708$, $SD=0.778$) and photographic elements ($M=3.495$, $SD=0.835$), while landscape elements received lower preference ($M=2.505$, $SD=0.847$). In terms of advertising function expectations, respondents generally hoped that traffic advertising would serve social education functions ($M=3.725$, $SD=0.783$), followed by product and service display ($M=3.441$, $SD=0.917$), with lower expectations for stimulating consumption ($M=2.569$, $SD=0.878$). By comparing the classical Chinese style ($M=3.544$, $SD=0.899$) and the fashion style ($M=3.512$, $SD=0.875$), it can be inferred that the respondents' preferences reflect their emphasis on creativity, cultural symbols and functionality in traffic advertisements. These insights provide valuable guidance for traffic advertisement design. Designers should incorporate more attractive and educational elements into advertising content, visual presentation and style selection to improve advertising effectiveness and public acceptance.

Table 3: Descriptive statistics of the preferences factors for traffic advertising

Basic index Name	S.s	Min	Max	Mean	Std.	Median
I prefer the traffic advertisements that weave in hand-drawn elements.	408	1.000	5.000	3.561	1.087	4.000
I prefer the traffic advertisements that capture scenic landscapes.	408	1.000	5.000	2.505	0.847	2.000
I prefer the traffic advertisements that portray human figures.	408	1.000	5.000	3.654	0.755	4.000
I prefer the traffic advertisements that feature traditional symbols.	408	1.000	5.000	3.708	0.778	4.000
I prefer the traffic advertisements that incorporate photographic imagery.	408	1.000	5.000	3.495	0.835	4.000
I hope the traffic advertisements to embody cultural transmission.	408	1.000	5.000	3.669	1.165	4.000
I hope the traffic advertisements to serve as a vehicle for social education.	408	1.000	5.000	3.725	0.783	4.000
I hope the traffic advertisements to evoke consumer engagement.	408	1.000	5.000	2.569	0.878	2.000
I hope the traffic advertisements to spotlight products and services.	408	1.000	5.000	3.441	0.917	4.000
I hope the traffic advertisements to reflect corporate ethos.	408	1.000	5.000	3.444	0.871	4.000
I prefer the traffic advertisements with a visual style rich in images and light on text.	408	1.000	5.000	3.576	1.067	4.000
I prefer the traffic advertisements with artistic fonts.	408	1.000	5.000	3.676	0.754	4.000

I prefer the traffic advertisements with whimsical illustrations.	408	1.000	5.000	2.517	0.875	2.000
I prefer the traffic advertisements with creative compositions	408	1.000	5.000	3.696	0.787	4.000
I prefer the traffic advertisements with warm tones.	408	1.000	5.000	3.505	0.861	4.000
I prefer the traffic advertisements featured with maximalism style.	408	1.000	5.000	2.424	0.881	2.000
I prefer the traffic advertisements featured with classical Chinese style.	408	1.000	5.000	3.544	0.899	4.000
I prefer the traffic advertisements featured with flat design style.	408	1.000	5.000	3.775	1.116	4.000
I prefer the traffic advertisements featured with fashionable style.	408	1.000	5.000	3.512	0.875	4.000
I prefer the traffic advertisements featured with symmetrical style.	408	1.000	5.000	3.512	0.935	4.000

In table 4, the survey data on the preferences of 408 respondents on lightbox advertisements indicated that: in terms of preferences for advertising information content, hand-painted elements ($M=3.784$, $SD=1.092$) and character elements ($M=3.679$, $SD=0.819$) were the most favored, followed by landscapes ($M=3.576$, $SD=0.872$) and traditional symbols ($M=3.544$, $SD=0.822$), and photography ($M=2.505$, $SD=0.898$) was relatively unpopular; regarding meaning expectations, respondents valued product and service display ($M=3.730$, $SD=0.736$) and social education ($M=3.718$, $SD=1.059$), while cultural communication ($M=3.493$, $SD=0.847$) and stimulating consumption ($M=2.453$, $SD=0.885$) garnered less attention; in terms of visual mode, interesting illustrations ($M=3.674$, $SD=1.104$), warm colors ($M=3.505$, $SD=0.878$), and creative compositions ($M=3.456$, $SD=0.852$) were more popular, while artistic fonts ($M=2.507$, $SD=0.850$) were not. Overall, respondents' preferences indicate their comprehensive demands for the content, design and meaning of light box advertisements. They particularly prefer creative advertisements that are eye-catching and are infused with cultural elements, while also paying more attention to the practicality and commercial value.

Table 4: Descriptive statistics of the preferences factors for light box advertising

Basic index						
Name	S.s	Min	Max	Mean	Std.	Median
I prefer the light box advertisements that weave in hand-drawn elements.	408	1.000	5.000	3.784	1.092	4.000
I prefer the light box advertisements that capture scenic landscapes.	408	1.000	5.000	3.576	0.872	4.000
I prefer the light box advertisements that portray human figures.	408	1.000	5.000	3.679	0.819	4.000
I prefer the light box advertisements that feature traditional symbols.	408	1.000	5.000	3.544	0.822	4.000
I prefer the light box advertisements that incorporate photographic imagery.	408	1.000	5.000	2.505	0.898	2.000
I hope the light box advertisements to embody cultural transmission.	408	1.000	5.000	3.493	0.847	4.000
I hope the light box advertisements to serve as a vehicle for social education.	408	1.000	5.000	3.718	1.059	4.000
I hope the light box advertisements to evoke consumer engagement.	408	1.000	5.000	2.453	0.885	2.000
I hope the light box advertisements to	408	1.000	5.000	3.730	0.736	4.000

spotlight products and services.

I hope the light box advertisements to reflect corporate ethos.	408	1.000	5.000	3.532	0.889	4.000
I prefer the light box advertisements with a visual style rich in images and light on text.	408	1.000	5.000	3.493	0.922	4.000
I prefer the light box advertisements with artistic fonts.	408	1.000	5.000	2.507	0.850	2.000
I prefer the light box advertisements with whimsical illustrations.	408	1.000	5.000	3.674	1.104	4.000
I prefer the light box advertisements with creative compositions.	408	1.000	5.000	3.456	0.852	4.000
I prefer the light box advertisements with warm tones.	408	1.000	5.000	3.505	0.878	4.000
I prefer the light box advertisements featured with maximalism style.	408	1.000	5.000	2.525	0.900	2.000
I prefer the light box advertisements featured with classical Chinese style.	408	1.000	5.000	3.510	0.873	4.000
I prefer the light box advertisements featured with flat design style.	408	1.000	5.000	3.502	0.835	4.000
I prefer the light box advertisements featured with fashionable style.	408	1.000	5.000	3.748	1.083	4.000
I prefer the light box advertisements featured with symmetrical style.	408	1.000	5.000	3.539	0.837	4.000

This study gathered data from 408 respondents on their traffic advertising preferences. Overall, in terms of advertising elements, respondents preferred advertisements containing human elements ($M=3.654$, $SD=0.755$), traditional symbols ($M=3.708$, $SD=0.778$) and photographic elements ($M=3.495$, $SD=0.835$), while exhibiting less preference for advertisements containing landscape elements ($M=2.505$, $SD=0.847$). By comparing the classical Chinese style ($M=3.544$, $SD=0.899$) and the fashion style ($M=3.512$, $SD=0.875$), it can be seen that the respondents' preferences reflect their emphasis on creativity, cultural symbols and functionality in traffic advertisements, which provides an important reference for traffic advertisement design. Designers should incorporate more attractive and educational elements into advertising content, visual presentation and style selection to enhance advertising effectiveness and public acceptance.

Table 5: Descriptive statistical of the preferences factors for storefront advertising

Basic index Name	S.s	Min	Max	Mean	Std.	Median
I prefer the storefront signage advertisements that weave in hand-drawn elements.	408	1.000	5.000	3.625	1.106	4.000
I prefer the storefront signage advertisements that capture scenic landscapes.	408	1.000	5.000	2.471	0.894	2.000
I prefer the storefront signage advertisements that portray human figures.	408	1.000	5.000	3.534	0.880	4.000
I prefer the storefront signage advertisements that feature traditional symbols.	408	1.000	5.000	3.684	0.787	4.000

I prefer the storefront signage advertisements that incorporate photographic imagery.	408	1.000	5.000	3.654	0.815	4.000
I hope the storefront signage advertisements to embody cultural transmission.	408	1.000	5.000	3.529	0.940	4.000
I hope the storefront signage advertisements to serve as a vehicle for social education.	408	1.000	5.000	3.517	0.903	4.000
I hope the storefront signage advertisements to evoke consumer engagement.	408	1.000	5.000	3.748	1.138	4.000
I hope the storefront signage advertisements to spotlight products and services.	408	1.000	5.000	3.703	0.792	4.000
I hope the storefront signage advertisements to reflect corporate ethos.	408	1.000	5.000	2.507	0.887	2.000
I prefer the storefront signage advertisements with a visual style rich in images and light on text.	408	1.000	5.000	3.532	0.881	4.000
I prefer the storefront signage advertisements with artistic fonts.	408	1.000	5.000	3.755	1.117	4.000
I prefer the storefront signage advertisements with whimsical illustrations.	408	1.000	5.000	3.488	0.909	4.000
I prefer the storefront signage advertisements with creative compositions.	408	1.000	5.000	3.593	0.893	4.000
I prefer the storefront signage advertisements with warm tones.	408	1.000	5.000	2.444	0.899	2.000
I prefer the storefront signage advertisements featured with maximalism style.	408	1.000	5.000	3.510	0.933	4.000
I prefer the storefront signage advertisements featured with classical Chinese style.	408	1.000	5.000	3.770	1.150	4.000
I prefer the storefront signage advertisements featured with flat design style.	408	1.000	5.000	2.498	0.940	2.000
I prefer the storefront signage advertisements featured with fashionable style.	408	1.000	5.000	3.544	0.921	4.000
I prefer the storefront signage advertisements featured with symmetrical style.	408	1.000	5.000	3.564	0.862	4.000

The survey data on the preferences of 408 respondents concerning storefront advertisements revealed intriguing insights. In table 6, in terms of preferences for advertising information content, traditional symbol elements ($M=3.684$, $SD=0.787$) and photographic elements ($M=3.654$, $SD=0.815$) were more popular, while landscape elements ($M=2.471$, $SD=0.894$) were unpopular; in terms of the meaning expectations of visual advertisements, product and service display ($M=3.703$, $SD=0.792$) and stimulating consumption ($M=3.748$, $SD=1.138$) were highly valued, while cultural communication ($M=3.529$, $SD=0.940$) were relatively popular. The degree of attention to it is low; in

terms of design style, classical Chinese style ($M=3.770$, $SD=1.150$) is more appealing, followed by symmetrical style ($M=3.564$, $SD=0.862$) and flat style ($M=2.498$, $SD=0.940$) is notably unpopular. The standard deviation and median of each indicator reflect individual differences and central trends. Overall, when it comes to store sign advertisements, respondents exhibited higher preference for design styles that are both creative and culturally connotative, while also effectively conveying advertising information. This reflects their dual demands for advertising aesthetics and functionality.

Table 6: Descriptive statistical of the preferences factors for LED light advertising

Basic index Name	S.s	Min	Max	Mean	Std.	Median
I prefer the LED light advertisements that weave in hand-drawn elements.	408	1.000	5.000	3.502	0.861	4.000
I prefer the LED light advertisements that capture scenic landscapes.	408	1.000	5.000	2.549	0.863	2.000
I prefer the LED light advertisements that portray human figures.	408	1.000	5.000	3.694	1.038	4.000
I prefer the LED light advertisements that feature traditional symbols.	408	1.000	5.000	3.650	0.753	4.000
I prefer the LED light advertisements that incorporate photographic imagery.	408	1.000	5.000	3.502	0.853	4.000
I hope the LED light advertisements to embody cultural transmission.	408	1.000	5.000	3.471	0.826	4.000
I hope the LED light advertisements to serve as a vehicle for social education.	408	1.000	5.000	3.480	0.850	4.000
I hope the LED light advertisements to evoke consumer engagement.	408	1.000	5.000	3.706	1.059	4.000
I hope the LED light advertisements to spotlight products and services.	408	1.000	5.000	3.544	0.807	4.000
I hope the LED light advertisements to reflect corporate ethos.	408	1.000	5.000	2.520	0.867	2.000
I prefer the LED light advertisements with a visual style rich in images and light on text.	408	1.000	5.000	3.654	1.106	4.000
I prefer the LED light advertisements with artistic fonts.	408	1.000	5.000	3.520	0.867	4.000
I prefer the LED light advertisements with whimsical illustrations.	408	1.000	5.000	3.610	0.860	4.000
I prefer the LED light advertisements with creative compositions.	408	1.000	5.000	3.471	0.924	4.000
I prefer the LED light advertisements with warm tones.	408	1.000	5.000	2.525	0.855	2.000
I prefer the LED light advertisements featured with maximalism style.	408	1.000	5.000	3.529	0.847	4.000
I prefer the LED light advertisements featured with classical Chinese style.	408	1.000	5.000	3.806	1.083	4.000
I prefer the LED light advertisements featured with flat design style.	408	1.000	5.000	3.561	0.882	4.000
I prefer the LED light advertisements featured with fashionable style.	408	1.000	5.000	3.701	0.783	4.000
I prefer the LED light advertisements featured with symmetrical style.	408	1.000	5.000	2.446	0.885	2.000

Table 6 provides data on respondents' preferences across different dimensions of LED light advertising. In terms of information content, character elements ($M = 3.694$, $SD = 1.038$) and traditional symbol elements ($M = 3.650$, $SD = 0.753$) were more popular, reflecting consumers' preference for advertising elements with emotional connections and cultural values. In contrast, landscape elements ($M = 2.549$, $SD = 0.863$) were less preferred, possibly because these elements were perceived as more monotonous or lacking visual appeal. Less attention was given to social education ($M = 3.480$, $SD = 0.850$), indicating that people placed greater emphasis on the commercial function and practicality of advertising. In terms of visual mode, interesting illustrations ($M = 3.610$, $SD = 0.860$) and artistic fonts ($M = 3.520$, $SD = 0.867$) received high ratings, indicating that creative elements effectively attract audience attention. Regarding design style, classical Chinese style ($M = 3.806$, $SD = 1.083$) and fashion style ($M = 3.701$, $SD = 0.783$) showed strong preference. The symmetrical style ($M = 2.446$, $SD = 0.885$) was relatively less preferred, possibly because it was perceived as more regular and lacking innovation.

6. Results

The discussion integrated the results from the NGT and the questionnaire survey to identify public preferences for visual advertisements in Nanjing. The table 7 summarises five types of urban advertisements, comparing their information content, functional significance, design mode and visual design style. About street sign, adopting hand-drawn elements and an image-heavy, text-light layout with classical Chinese styling strengthens cultural transmission. The traditional aesthetic forms a distinctive local visual identity, easily capturing pedestrians' attention and conveying cultural connotations intuitively. About traffic advertisement, built on traditional symbols and creative flat design layouts, these advertisements achieve effective social education. About light Box Advertisement, whimsical illustrated hand-drawn content paired with fashionable visual styles delivers social education with strong visual appeal. About storefront Signage, traditional symbols and artistic fonts within classical Chinese aesthetics effectively stimulate consumer engagement. About LED Light Advertisement, human figure portrayals, image-rich and text-sparse layouts, and classical Chinese visual styles readily arouse audience engagement.

Table 7: Preferred visual characteristic factors

Five Types of Advertisements	Themes	Content of Information	Significance	Design Mode	Design Style
Street Sign		hand-drawn elements	cultural transmission	rich in images and light on text	classical Chinese style
Traffic Advertisements		traditional symbols	Social education	creative compositions	flat design style
Light Box		hand-drawn elements	Social education	whimsical illustrations	fashionable style
Storefront Signage		traditional symbols	evoke consumer engagement	artistic fonts	classical Chinese style
LED Light		portray human figures	evoke consumer engagement	rich in images and light on text	classical Chinese style

7. Conclusion

In summary, this study explores the current status of visual advertising in Nanjing, examining the current advertising management regulations and policies, thereby identifying the problems of visual pollution. In order to address those issues, government should take immediate and effective actions. First, strengthen the construction of laws and regulations and refine advertising management regulations. Secondly, planning and design formulate regional plans for visual advertising, encourage the combination of design and culture, enhance the artistry of advertising, and handle the relationship between commercial advertising and the entire city. Thirdly, engage in national participation activities, such as public involvement and awareness campaigns to attract citizens' attention to the visual environment. By summarizing the characteristics of advertising design, understanding the public preferences and analyzing the factors about the public aesthetic inclinations towards advertising, sorting out and determining the public's aesthetic preferences, there has been a comprehensive analysis of aesthetic preference factors for five types of advertisement. In order to propose effective countermeasures and promote the healthy development of the advertising industry, a visual aesthetic preference feature framework is developed, which ascertain the formation of the emotional features of visual aesthetics. Advertising designers should also craft design plans based on the public aesthetic partiality for advertising, reinforce their sense of social responsibility, promote visual aesthetics, and pay more attention to the humanistic environment and nature, while adopting a people-oriented design concept. Only by creating a good cultural environment and reducing the visual pollution caused by advertising can we maintain the beautiful image of the city and improve the overall visual image of the city.

Ethics Approval and Consent to Participate

The researchers used the research ethics provided by the Research Ethics Committee of Universiti Putra Malaysia. All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee. Informed consent was obtained from all participants according to the Declaration of Helsinki.

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Conflict of Interest

The authors reported no conflicts of interest for this work and declare that there is no potential conflict of interest with respect to the research, authorship, or publication of this article.

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