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Yaozhou Kiln Museum e-commerce applet mindstream experience design practice

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Abstract: *In this paper, we design and practice the e-commerce applet platform of Yaozhou Kiln Museum to help the development of Yao porcelain culture. Based on the heart flow theory and the PAT model, we analyze the factors that generate the heart flow experience in the e-commerce applet of Yaozhou Kiln Museum, summarize the factors from the five elements of user experience and then classify them, and build a design model for the e-commerce applet of Yaozhou Kiln Museum. According to the results of user satisfaction survey, it can be seen that the heart flow experience of Yaozhou Kiln Museum e-commerce applet has good satisfaction in three perspectives of visual experience, interactive experience and emotional perception experience, which can enhance users' willingness to use the platform to stimulate heart flow. Therefore, the introduction of mind flow theory into the design of e-commerce applet of Yaozhou Kiln Museum can strengthen the link between users and the platform and explore more possibilities for the establishment of e-commerce applet of Yaozhou Kiln Museum from the perspective of optimal experience.*

Keywords: *mind flow theory; Yaozhou Kiln Museum; user experience; e-commerce applet design*

1. Introduction

During the main event of International Museum Day 2022 in China, Alberto Galandini, President of ICOM, emphasized the importance of online development of museums in the context of epidemic normalization and the importance of conducting innovative explorations and using digital technologies[1]. Nowadays, online museums are flourishing and major museums are seeking new breakthroughs in cultural export by launching their own cultural and creative products and developing cultural and creative sales platforms to achieve new cultural dissemination[2]. The Yaozhou Kiln Museum, built on the site of Yaozhou Kiln, is the largest museum of ancient ceramic sites in China, integrating the display of relics, specimens, and demonstrations of simulated ancient porcelain-making techniques. Classic ceramic artifacts from different historical periods such as Tang, Five Dynasties, Song, Jin and Yuan, Ming and Qing, and Republic of China are displayed[3]. A timely sales platform is needed to promote its cultural and creative products in the post-epidemic era to achieve cultural export and dissemination. We analyze the design elements of the Yaozhou Kiln Museum's e-commerce applet from the perspective of heart flow to achieve the best experience for users, contribute to its heritage revitalization and inheritance, and provide ideas for the construction of the Yaozhou Kiln Museum's e-commerce applet.

2. The role of mind flow theory in the design of e-commerce applet of Yaozhou Kiln Museum

With the rapid development of cultural e-commerce platforms under the Internet, the Yaozhou Kiln Museum e-commerce applet needs to enhance consumers' willingness to purchase in order to strengthen its competitiveness, and user experience is an important factor that directly affects willingness to purchase[4]. Psychologist Mihaly Csikszentmihalyi proposed the theory of mind flow from the perspective of studying consumer behavior and emotion to provide a new path to improve user experience[5]. Adding the mind flow theory to the design of the e-commerce applet of Yaozhou Kiln Museum, the immersive shopping experience unfolds, the cultural story is promoted, and the spiritual distance between people and Yaozhou Kiln culture is brought closer. A quality user experience can enhance the willingness to use and then compensate for the loss of audience, exploring a new perspective on the design of the Yaozhou Kiln Museum e-commerce applet.

ISSN 2618-1568 Vol. 5, Issue 1: 52-61, DOI: 10.25236/FAR.2023.050111

3. Analysis of the design of mind flow experience of Yewzhou Kiln Museum e-commerce applet

3.1 User requirements

Research is conducted on the target users to summarize the needs of users' mindstream experience based on the features of easy-to-use, efficient and community-oriented mobile shopping[6], namely, visual novelty, clear architecture, smooth operation, rich content and emotional immersion, among which the clear architecture, smooth operation and rich content directly influence the users' willingness to use the platform.

3.2 Elements influencing users to generate mind-flow experience

The three necessary basic conditions of mindstream experience: clear goals, effective feedback mechanism, and their own skills matching the perceived challenges[7], mobile e-commerce mindstream experience generation factors: platform challenge, responsiveness, clear goals, timely feedback, interactivity, and perceived ease of use[8-9]. Through the research on the same type of platform Samsung Pile Museum Cultural and Creative Applet, Forbidden City Cultural and Creative Museum Applet, Zhejiang Modern Ceramic Museum Applet, and Chinese Architectural and Ceramic Museum Applet - Eat Tea Go Cultural and Creative Museum, the heart flow experience PAT model tool and task dimension were summarized to produce the heart flow experience of Yaozhou Kiln Museum e-commerce applet Design elements (*Table. 1*).

Table 1: Analysis of the elements of the heart flow experience of the e-commerce mini-program of the Yaozhou Kiln Museum

dimension	User requirements	Mindstream design elements	Cardiac flow elements	Cardiac flow results
Artifact Dimension	Visual novelty	Yao porcelain theme style, simple picture, and Color Unity	Attractiveness	Positive shopping mood, time distortion, full attention
		Icons and personalized interface of Yew Porcelain elements		
	Clear structure	Clearly laid out and classified by the characteristics of Yew porcelain	Fluency	
		Operation positioning, core functions shallow		
	Smooth operation	Operation tips, process simplification, and Default background operation	Perceptual ease of use	
		Goal-oriented	Clarity of purpose	
	Multi-sensory Interaction	Sensory interaction, online museum cloud shopping	Interactivity	
		Fun feedback animation	Timely feedback	
		Diversification of product display methods	Attractiveness	
	Rich content	Reward System	Sense of accomplishment	
		Game Setting	Matching skills to challenges	
Task Dimension	Emotional immersion	High Concept Giving	Sense of accomplishment	
		Sociality	Interactivity	

3.3 Classification of Elements of Heart Flow Experience Design

Flow experience is an optimal user experience state. Garrett, the father of Ajax, first proposed the "five elements of user experience" model in User Experience Elements in 2002, and explained how to improve user experience from the strategic layer, scope layer, structure layer, framework layer, and presentation layer of product design[10-11]. From the perspective of flow experience, the five levels of

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the five elements of user experience are reclassified according to the characteristics of the e-commerce applet of Yaozhou Kiln Museum, namely: top-level design dimension, content design dimension, architecture design dimension, visual design dimension and emotional design dimension generated after the introduction of flow theory. The top-level design dimension corresponds to the strategic level, and the content design dimension corresponds to the scope level, The architecture design dimension includes the navigation design and information design of the structure layer and the framework layer, and the visual design dimension corresponds to the interface design of the presentation layer and the framework layer. Focus on the content, architecture, visual and emotional design dimensions, and classify the platform flow design elements (Fig. 1).

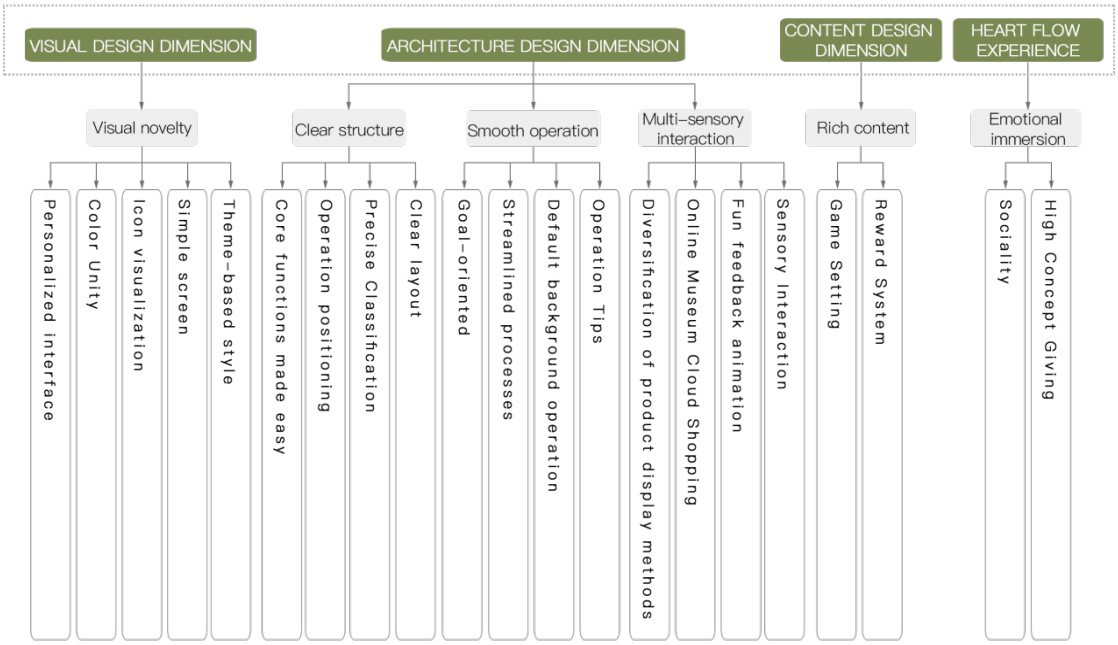

Figure 1: Classification of the design elements of the heart flow experience of the e-commerce mini-program of the Yaozhou Kiln Museum

4. Mindstream experience design method for the e-commerce applet of Yaozhou Kiln Museum

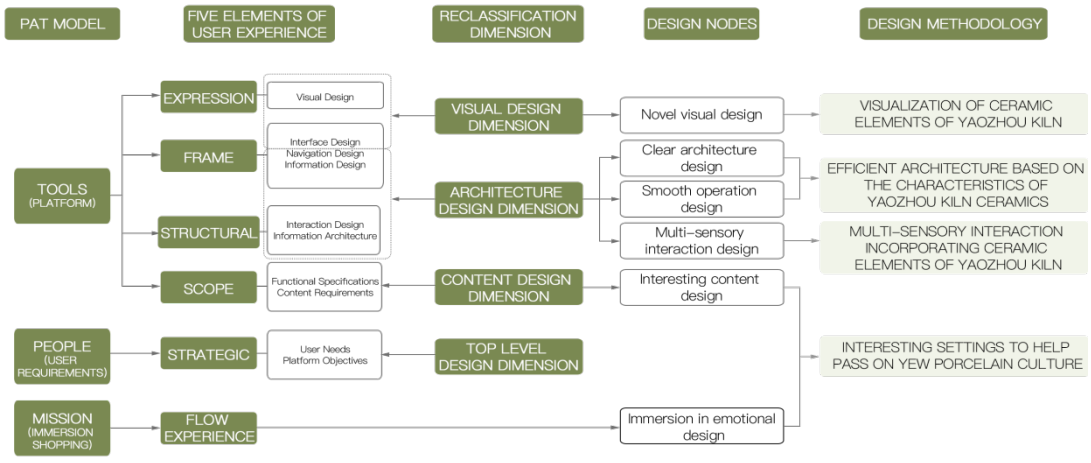

Figure 2: Design model of mind flow experience of e-commerce mini-program of Yaozhou Kiln Museum

The reclassification dimensions are associated with the PAT model and interpreted to the design method of platform user mind flow experience. The design nodes corresponding to each dimension are: novel visual design, clear architecture design, smooth operation design, multi-sensory interaction design, interesting content design, and immersive emotion design. The immersive emotional design of the mindstream dimension complements the interesting content of the top-level dimension and the

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content dimension, and the design nodes are linked to deduce the relevant design methods (Fig. 2).

4.1 Visualization of ceramic elements of Yaozhou kiln

4.1.1 Yaozhou Kiln Ceramic Elements into Thematic Style

The combination of graphic and dynamic effects is used for large sections of text, extracting the outline of the structure of classic YAOZHOU kiln ceramics into flat graphics, with graphics as the main text[12], and creating visual dynamic effects and interesting animations on dynamic features to illustrate YAOZHOU porcelain engraving techniques, so as to deepen users' understanding of YAOZHOU porcelain culture and enrich the pleasure of using the process.

4.1.2 Personalized Theme Setting

In response to the different psychology of some users, personalized settings are added to the platform, and "Theme Skinning" is set up in the "More" section of "Me" to draw theme skins for different collections of Yaozhou Kiln Museum, giving the collections personality characteristics to make them anthropomorphic, meeting the special needs of some users and optimizing the experience process.

4.2 Efficient architecture based on the characteristics of Yaozhou kiln ceramics

4.2.1 Artistic guide page design

At the beginning of the platform, users need guidance with goals and attitudes. The guide page of the platform is designed based on the classic YAOZHOU kiln vessels (Fig. 3), which is a simple and interesting way to close the distance with users and show the unique artistic style of YAOZHOU porcelain, and a sentimental design that makes it easier for users to generate heart flow[13]. The platform resonates well with users and makes them more immersed in it.

Figure 3: Yewzhou Kiln Museum e-commerce applet guide page design

4.2.2 Functional architecture of the platform based on user requirements

Functional architecture is the organization of platform information units, designed according to the needs of user purchase operations, which can make users understand the framework and main functions of the platform more intuitively and quickly[14]. Sort out the user's operational needs, create a relaxed

ISSN 2618-1568 Vol. 5, Issue 1: 52-61, DOI: 10.25236/FAR.2023.050111

bazaar sense of operation atmosphere, set the core functions in the tab bar area using location-based navigation to clarify the user's current location to enhance the ease of operation.

4.3 Multi-sensory interaction incorporating ceramic elements of Yaozhou kiln

4.3.1 Interesting feedback design for inverted pot elements

Interactive feedback relies on visual, auditory and tactile generation[15]. Visual-based, priority design high-frequency progress indicators, the use of visual non-modal feedback form set pouring pot principle kinetic effect in the loading page, from the bottom of the pot to fill the water and then put the pot right out of the spout, so as to attract the user's attention. Click on the purchase button with tactile vibration, after completing the payment to give the user to pack the porcelain collision sound to assist visual enhancement visualization feeling, set up the permission to open and close, so that users can easily and effectively complete the shopping goal.

4.3.2 Multi-sensory online cloud shopping design of Yaozhou Kiln Museum

The development of online cloud shopping mode creates a three-dimensional sense of space, introduces 3D restoration technology to the display of ceramic cultural and creative products, realizes the switch from flat to 3D, associates the cultural and creative products with the original collection, views the texture, pattern, material and other details of ceramic products through interactive control such as zooming, rotating and moving, and integrates the space atmosphere to realize a multi-sensory experience of eyes, ears, mouth and hands, mobilizes customers' emotions and improves service quality. For some products set up a multi-dimensional three-dimensional display, so that products and users to achieve a multi-angle all-round interaction, adding satisfaction to the shopping experience, establish an intuitive, real, reliable platform impression.

4.4 Interesting settings to help pass on Yew Porcelain culture

4.4.1 Reward system named after the process of pouring pots

The multi-level reward method combining material and spirituality is integrated into the cultural characteristics of YAOZHOU kiln for mechanism development. The names of the membership levels are named after the process of YAOZHOU kiln pouring pots, which are in the following order: gluing, bonding, repairing, engraving, plain firing, glazing, and glaze firing, and each step has three levels. Injecting storytelling mobilizes users' interest in the grade section, generates positive experience emotions, popularizes the knowledge of YAO porcelain craft to users, and enhances the attention of YAO porcelain culture.

4.4.2 Celebrate YAOZHOU Kiln Culture with Stories

The interactive function is set up in the center of the tab bar for users to identify quickly, and the section of "Little Beauty of Yaozhou Kiln Museum" shows the story behind the collection of Yaozhou Kiln Museum in a simple and easy narrative form. Users can learn about the culture of Yaozhou kilns.

4.4.3 Empowering users with a sense of mission to preserve the ceramic culture of Yaozhou kiln

A creative idea with a sense of mission can give a grand meaning to the user's shopping experience, sublimating the shopping experience itself and creating excitement and a sense of accomplishment for the user[16].Under the theme of "My Yaozhou kiln Warmth", the Yaozhou kiln Museum will provide material and spiritual support to the folk artisans in the name of the users who own 14 Yaozhou kiln creations, and present them with commemorative certificates.When users feel they are needed, they will actively participate in the experience of the platform to reach a state of mind flow more easily.

4.4.4 "Yaozhou Kiln Ceramic Making" Entertainment Game

Compared with text-based learning, the entertainment experience is easier to achieve a state of mind flow, using the game experience to alleviate the user's sense of boredom when using the platform and to balance their skills and perceived challenges. In the "Discovery" section, we have added entertainment games such as "Yaozhou Kiln Ceramic Making" and "Ornament Drawing" from simple to difficult. For example, in the "Ornament Drawing" game, you can experience different drawing games in the interface by choosing the frame or pattern of the collection and completing different stages of tasks to obtain results.

ISSN 2618-1568 Vol. 5, Issue 1: 52-61, DOI: 10.25236/FAR.2023.050111

5. Design Practice

5.1 Small program information architecture design

The basic functional modules of the applet are mainly: core display module - Home page, efficient guidance module - Category, interesting interactive module - Discover, transaction conversion module - Bag, User Information Module - Me(Fig. 4).

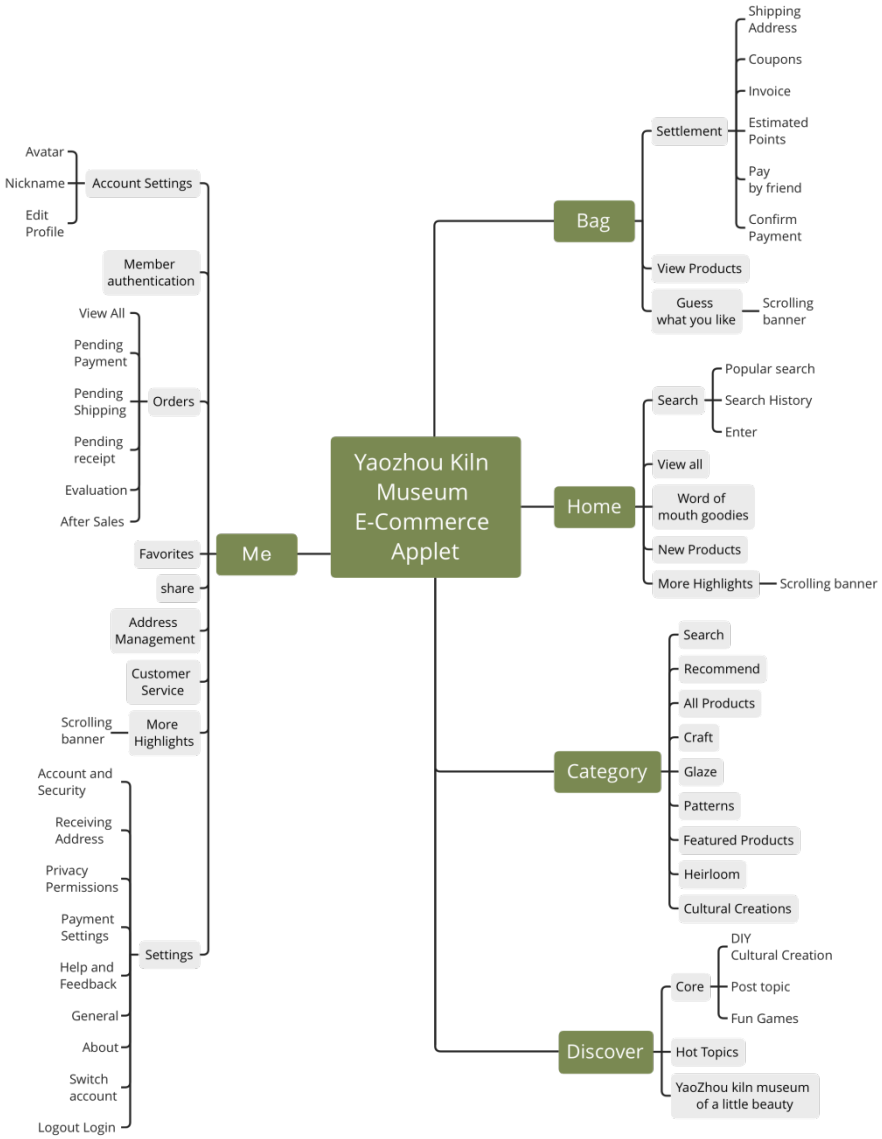

Figure 4: Functional architecture of e-commerce applet of Yaozhou Kiln Museum

5.2 Interaction Prototype Design

The prototype flow design of Yaozhou Kiln Museum e-commerce applet is both the logical deepening of the applet flow structure design and the basis of visual design. Simplify the login process, carry out the login process prompting with spoken language, close the relationship between users and the platform, reduce the resistance of users' initial experience, create an affable experience atmosphere, and form a simple, easy-to-understand and relaxed impression of the platform. The home module design is card-based, the main use of AJAXscollLoad effect, constantly downward fluctuating scroll wheel to load new content, classification page using multi-panel tab form, the main tab on the right side of the page as a primary classification, click into the right side of the page to display secondary tab secondary classification, the main option can also be reached by sliding up and down the secondary tab page. The prototype diagram vividly shows the final logical effect of the applet for verifying the feasibility of the initial platform (Fig. 5).

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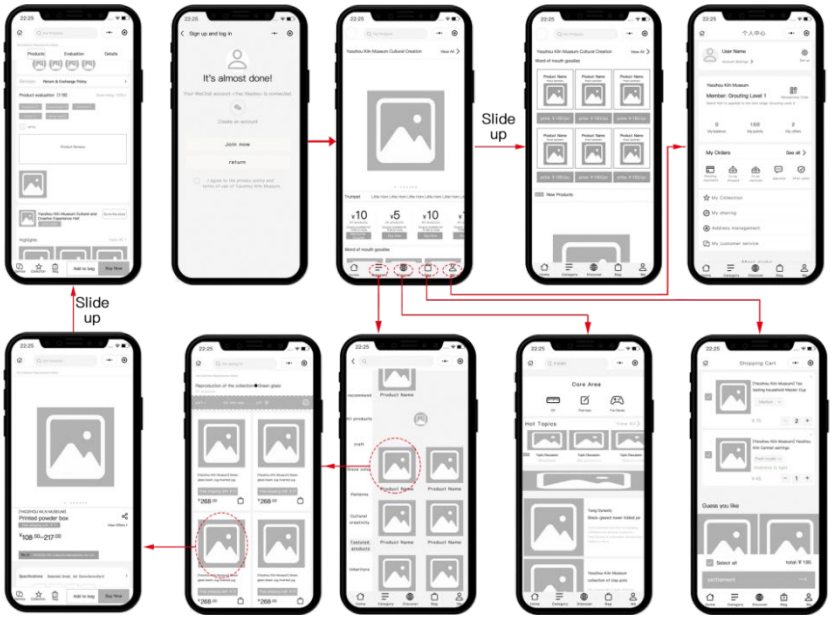

Figure 5: Prototype of Yewzhou Kiln Museum's e-commerce applet

5.3 Visual design

5.3.1 Platform color

The platform colors are based on the traditional glaze color of Yaozhou celadon, olive green, and are visually softened as the main color, which can also distinguish the product's own color to reflect the interface's hierarchy and convey the natural and spontaneous emotional culture of Yaozhou kiln. Black, white and light gray are used as secondary colors to facilitate visual recognition (Fig. 6).

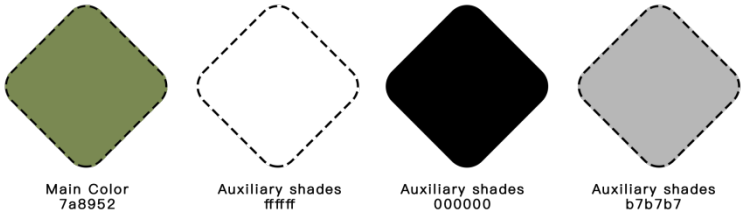

Figure 6: Color selection of Yewzhou Kiln Museum e-commerce applet

5.3.2 Logo Design

The logo design of the app is presented in a flat art style, combining the cross-section and structural lines of the inverted pot to show the structural principle of the inverted pot and the wisdom of the ancient Yaozhou kiln craftsmen, and extracting the natural olive green color to fill the background of the logo, integrating the characteristics of Yaozhou kiln products and showing the overall tone of the platform which is simple and easy to use (Fig. 7).

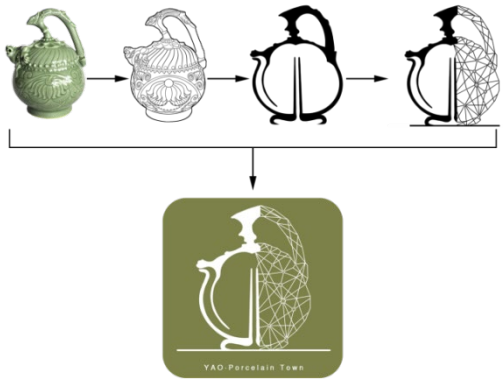

Figure 7: Logo design for the e-commerce applet of Yaozhou Kiln Museum

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5.3.3 Design of each module

Based on the interaction logic of the YAOZHOU YAO Museum e-commerce applet, the interface of each module was designed to enhance the sensory focus of users with a thematic interface style, help them better complete their target tasks, and activate their positive emotions towards the platform (Fig. 8).

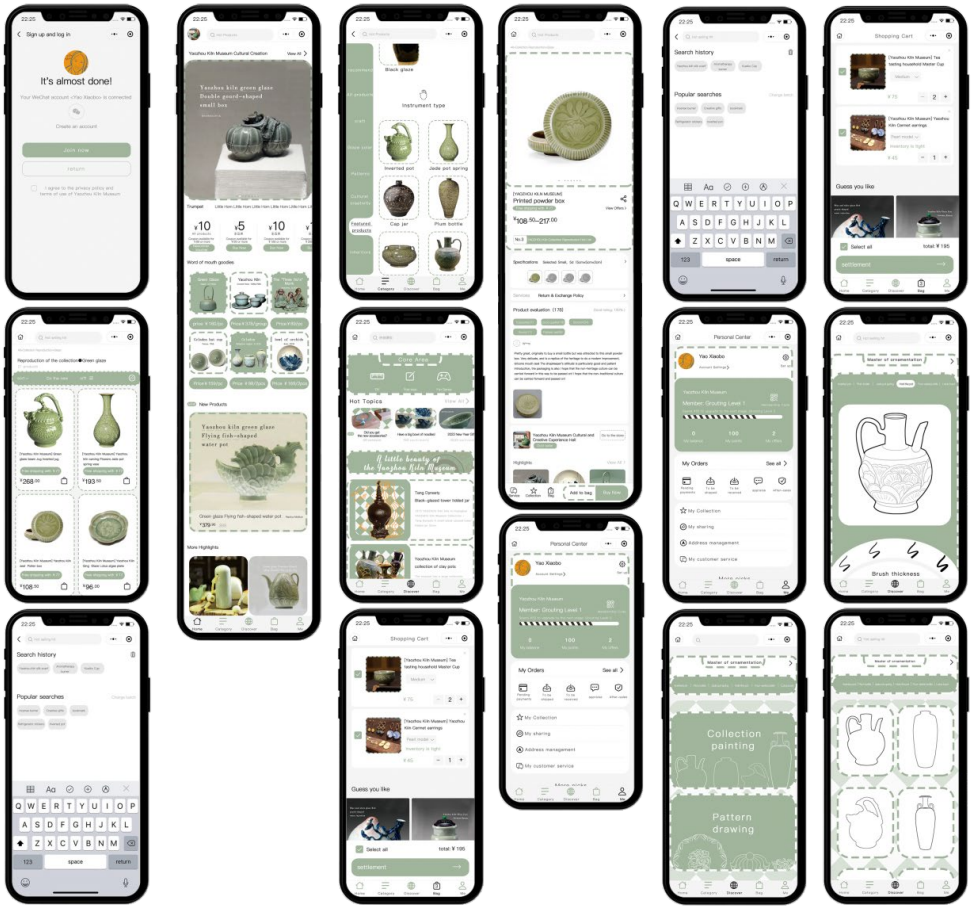

Figure 8: Design of each module of the e-commerce applet of Yaozhou Kiln Museum

5.3.4 Design verification

After the design was completed, 60 users were invited to conduct satisfaction surveys from the perspectives of visual experience, interactive experience and emotional perception experience of the platform, and the rationality of the design method was measured based on the results of the users' operation of the ink knife prototyping software and other platforms of the same type for the Yaozhou Kiln Museum e-commerce applet. The summary results are shown in Table 2, Table 3, and Table 4. The total value of user satisfaction from the three perspectives is higher than other platforms of the same type, which indicates that the application of the design method can enhance the user's pleasure when using the platform, tend to immerse the shopping experience process, and stimulate the user's mind flow experience.

Table 2: Visual experience satisfaction value comparison summary

Survey content	Visual experience satisfaction value					
	Theme style	Interface visualization	element icon	Color uniformity	Personalized interface	The total mean
Yaozhou Kiln Museum e-commerce mini program	4.74	4.57	4.09	4.84	4.21	4.49
Other platforms of the same type	4.35	3.91	3.64	4.42	3.5	3.96

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Table 3: Interaction experience satisfaction values are compared to the summary

Survey content	Engagement experience satisfaction value					
	Smooth operation	Multi-sensory interaction	The layout is clear	There are many ways to view products	Easy to use	The total mean
Yaozhou Kiln Museum e-commerce mini program	4.37	4.46	4.36	4.61	4.29	4.42
Other platforms of the same type	4.32	3.75	4.32	3.87	4.29	4.17

Table 4: Emotional experience satisfaction values comparison summary

Survey content	Emotional experience satisfaction value					
	Sociability	Fun and moving	A sense of control	All eyes and ears	Increased willingness to buy	The total mean
Yaozhou Kiln Museum e-commerce mini program	4.03	4.61	4.01	4.14	4.46	4.25
Other platforms of the same type	3.98	3.31	4	4.03	4.25	3.91

6. Conclusion

In the context of mind flow theory, we use the PAT model and the knowledge of the five elements of user experience model to deduce the mind flow experience design model that meets the needs of users of the e-commerce applet of Yaozhou Kiln Museum, summarize the design ideas, complete the design practice, and explore the possibility of establishing the applet. The platform is related to whether the user's shopping experience is smooth, fluid and pleasant. The design of Yaozhou Kiln Museum e-commerce applet that meets the user's needs can stimulate their interest and positive emotions, enhance their stickiness with the platform and their love for the museum, help them achieve the best experience and help the development of Yaozhou Kiln Museum ceramic culture.

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