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RESEARCH ON THE DESIGN OF CHINESE FRESH FOOD E-COMMERCE APP BASED ON THE EXPERIENCE EEI MODEL

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Abstract:

As more people in China are embracing online shopping for their fresh food, creating apps that offer a fun and engaging experience has become crucial for keeping users happy and coming back for more. This paper dives into how to design fresh food e-commerce apps that truly connect with users, guided by the Experience Economy Index (EEI) model. In this study, 214 questionnaires were collected through an online questionnaire app, aiming to identify users' preferences for e-commerce apps for fresh food in China.Our research identified three main factors that users care about: intuitive, behavioural, and reflective.First, users want a visually appealing and modern design (intuitive demands).Second, users need interactive and easy-to-use features (behavioural demands).Lastly, users are looking for a shopping experience that feels immersive and enjoyable (reflective demands).The findings showed that users, especially those aged 30-40 and slightly more women than men, value apps with clear visuals, interactive elements, and rich graphical content. Using these insights, we developed a strategic model that integrates these preferences into the EEI framework. Based on the findings, we offered practical tips for improving the design of fresh food e-commerce apps, which including focusing on user-centered design, enhancing visual and interactive elements, and using feedback mechanisms like personalized promotions to keep users engaged. By combining theory with real-world data, this study provides a clear roadmap for creating user-friendly fresh food e-commerce apps that not only meet but exceed user expectations, aiming to make online shopping a more enjoyable and satisfying experience for everyone.

Keywords:

Experience Economy Index Model; E-Commerce App Design; User Experience; User Centered Design

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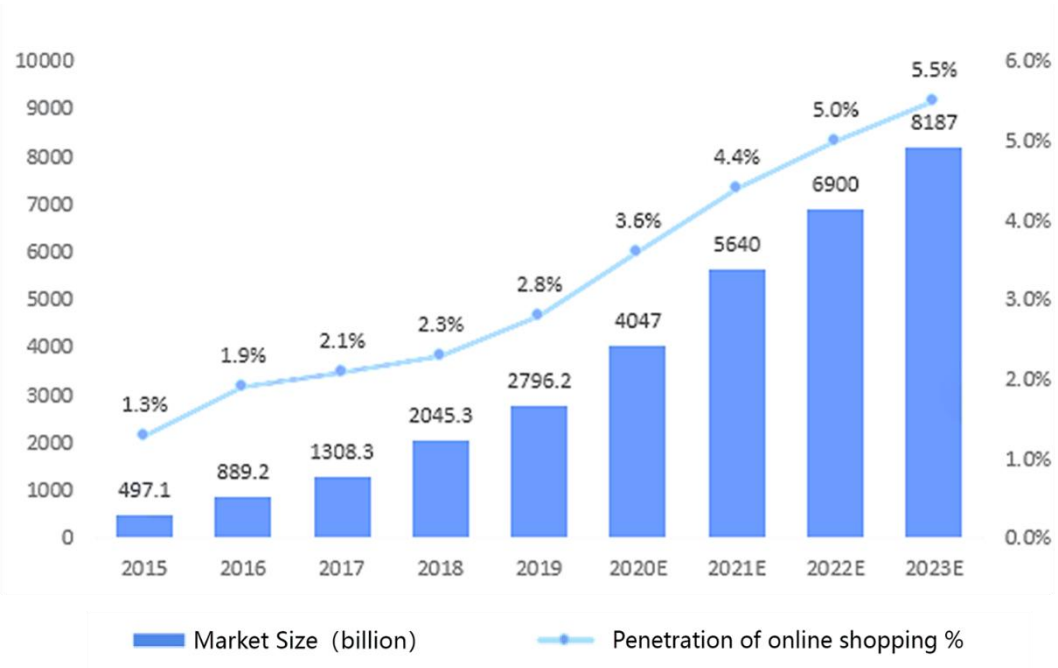
Introduction

In recent years, the way we shop for fresh food has undergone a significant transformation. Many of us have developed a habit of buying groceries online, and this trend has prompted the fresh food retail market to focus more on online sales. As a result, the number of people shopping for fresh food online has been steadily increasing year after year. Fresh food is an essential part of our daily lives, and the online market for these products has become a huge industry in China. According to the data of iResearch institute(Table 1), the market transaction scale of China's fresh food e-commerce industry reached 279.62 billion CNY in 2019, an increase of 36.7% over the previous year. 2020 is affected by the epidemic, and under the support of the "no-contact economy", consumers' demand for fresh food to the home has increased significantly, and the number of people purchasing fresh food online will steadily increase. The scale of the fresh food e-commerce market will be significantly increased, and by 2023, the transaction scale of the fresh food e-commerce market will exceed 800 billion CNY.This impressive number highlights how important online fresh food shopping has become for many people. The role of fresh food e-commerce apps is crucial in this new shopping landscape.

Table 1: Market Size of China's Fresh Food E-commerce Industry, 2015-2023



App design and user experience is crucial for consumers.These apps not only make it easier for us to buy fresh food but also enhance our overall shopping experience. Studies found that when e-commerce platforms improve their visual quality and traffic conversion systems, it directly encourages more people to make purchases (W. Wang & Li, 2021; Yan, 2019). This means that how an app looks and how easy it is to use can make a big difference in whether we decide to buy something (Iván Rebollar-Xochicale, Fernando Maldonado-Azpeitia, & Alberto Ochoa-Zezzatti, 2021; Mishra, Shukla, Rana, & Dwivedi, 2021). However, there are few studies on fresh food e-commerce APP design in China, especially there has not been an exploration of

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fresh food e-commerce app design based on the Experience Expectation Interface (EEI) model.Therefore, this study aims to explore the current situation of the fresh food e-commerce industry and APP design from the perspective of the EEI model. Find ways to make these apps better by focusing on Chinese consumers' shopping experience. Our objective is to design products that keep users engaged and coming back for more, ultimately helping consumers have a better and more satisfying shopping experience.

To do this, we will look at various aspects of app design, such as visual appeal, user interface, and ease of navigation. By understanding what Chinese consumers want and expect from their shopping apps, we can suggest improvements that will make these platforms more attractive and user-friendly. In the end, the success of fresh food e-commerce apps depends on their ability to meet and exceed our expectations. By enhancing the visual and functional aspects of these apps, we can make shopping for fresh food online a more enjoyable and seamless experience. This approach will not only attract new users but also keep existing ones happy and loyal. As a result, fresh food e-commerce will continue to grow and remain an important part of the retail market in China for years to come.

Literature Review

Research Status of Fresh Food E-commerce Apps: An Experience Perspective

In recent years, China's fresh food e-commerce apps have gained significant attention, and research on these apps from an experience perspective has been particularly insightful. This research focuses on three main aspects: interaction design, visual design, and platform development. Ma Bing (2019)provided a thorough analysis of the current state of fresh agricultural product platform apps, shedding light on their development trajectory. He emphasized the importance of user experience, exploring key methods and elements in app design. His work culminated in practical interaction design strategies tailored specifically for fresh food e-commerce apps. Building on this, Wang Hong and Chen Jinyu examined the interactive experiences of users on fresh food e-commerce apps (H. Wang & Chen, 2021). They highlighted the critical link between user experience and UI design. By analysing the UI interface of Shilaiyou, a virtual fresh food shopping app, they demonstrated how user-centred design principles can enhance the overall user experience.

Liu Feng took a different approach, focusing on the visual design of the "Mitao Fresh Fruit Delivery" app (Feng Liu, 2018). Liu's research started with a comprehensive market analysis, considering both current market conditions and competitor products. By developing detailed user personas, Liu crafted a visual identity for the "Mitao" app that directly informed its design, ensuring it met user needs and preferences. Chen Ting explored the broader landscape of China's fresh food supermarkets, investigating the shift towards mobile internet integration through the O2O (Online-to-Offline) model (Chen, 2017). Chen's work led to the development of an Android app designed to enhance the efficiency and effectiveness of fresh food supermarkets, demonstrating the potential of mobile platforms in transforming traditional retail models. Moreover, Zeng Fanying and her team focused on a fresh product ordering applet. They conducted user demand surveys to understand what keeps customers returning to these platforms (Zeng, 2019). Their insights guided the redesign of the applet's development process, aiming to boost user engagement and satisfaction.

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While existing research has significantly advanced our understanding of visual and platform design, there's a notable gap in the depth of analysis regarding interaction design aimed at enhancing user experience. To address this, our study will employ the Experience Economy Interface (EEI) model, which focuses on the user's entire journey. This model aligns with how users interact with fresh food e-commerce apps, aiming to optimize every touchpoint for a seamless, enjoyable experience (Quadri-Felitti & Fiore, 2012; Seo, 2013). By focusing on the complete user journey, we hope to elevate the consumption experience, offering users a smooth and delightful process from start to finish.

Feasibility Analysis

Theoretical Analysis

The purpose of this study is to analyse and obtain the goals, motivations, and expectations of the user group through actual research on the current users of fresh food e-commerce APPs, as well as user needs, experience, application environment, etc., and thereby propose fresh food e-commerce APP users—critical points in the design of e-commerce APPs. Based on the guidance of relevant theories of experience design and interaction design, combined with the level of user experience needs, relevant design methods and tools are used to improve the use experience of existing fresh food e-commerce APPs and summarize the fresh food e-commerce that gives users a good experience. APP-like interaction design plan. To this end, the study uses the EEI experience model as a theoretical basis to improve the design of fresh food e-commerce APPs. In 2019, Xin Xiangyang published "From User Experience to Experience Design," which explained the EEI experience model as the specific content of "three parts: Expectation, Event, and Impact." Each part contains more minor elements that affect it (Figure 1) and is inseparable (Xin, 2019).

EEI believes that experience is a unique experience, and users can create experience processes and memories under specific guidance and emotional drive (Xin, 2019; Xu, 2023). Before design thinking, such as user experience and experience design, gradually entered the design market, it may be considered unnecessary to generate corresponding experience processes due to reasons such as small product scale, clear product goals, and short product task time. This theoretical model innovatively breaks inertial thinking when designing products and believes that both internal and external factors should be considered user shock. Therefore, through the application of the EEI experience model, this study can better focus the design on the user experience level of fresh food e-commerce.

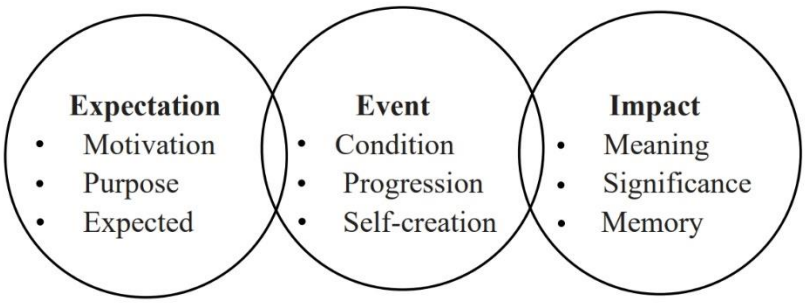

Figure 1: EEI Experience Model

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In the design process, on the one hand, the form, impact, and method of the experience can be comprehensively considered to ensure that the interactive experience between the APP product and the user is smoother and more pleasant by increasing the functionality of the product, improving its convenience, and paying attention to the user's emotional and psychological experience. In this way, a more attractive and modern fresh food e-commerce APP product can be created; on the other hand, through the application of the EEI experience model, it can be more systematically thought about and solved in the design process. Problems at the experience level provide good theoretical guidance and practical support for the future development of fresh food e-commerce APPs.

Applied Analysis

In the design practice of fresh food e-commerce apps, user experience theory is significant at the application level. First, through the intervention of the EEI experience model, the form, influence, method, and other factors of the APP experience can be comprehensively considered in the design application process, and they can be converted into design factors for design application. Secondly, introducing the EEI experience model clarifies user needs and expectations in the design process. Through careful consideration, the design needs can be grasped more accurately to design more attractive and satisfactory fresh food e-commerce APPs; thirdly, through the EEI experience model, the balance between various elements of user experience can be explored in multiple designs. This means that this study not only needs to pay attention to the visual beauty and functionality of the product itself but also needs to consider the experience generated by the user's interaction with the design, environment, and product. Finally, by comprehensively considering the above factors, it will be possible to create an experience that makes a pleasant feeling for users. This lovely feeling is a combination of material and spiritual, which enables users to obtain a richer user experience when using fresh food e-commerce APPs.

Correlation Analysis

Reasons For Using The EEI Experience Model To Design Fresh Food E-Commerce Apps

The needs of users themselves will continue to change with the advent of the experience era (Dorrestijn, van der Voort, & Verbeek, 2014). In daily life, as the living standards of users improve, demand-oriented design will continue to be promoted. The entire fresh food e-

commerce APP design process will also be related to the user experience. The experience and feelings generated by users in the interaction process, relying on the precipitation of time and the reflection of users, make the fresh food e-commerce APP's layout design resonate in the users' hearts. Therefore, the design of the experience, environment, and fresh food e-commerce app are closely linked. The differences between different individuals will also form different user experiences for the same design (Jens F. Jensen, 2013; Pucillo & Cascini, 2014). Therefore, first of all, we rely on analysing the demand factors between other individuals, such as behaviour, physiology, etc., to find commonalities to carry out the corresponding fresh food e-commerce APP design to achieve the user's expected goals; then, at the experience level, we rely on new media such as plane, space, and products for redesign to strengthen the interaction between users and products; finally, after the user has formed a complete experience of the design, he will review the event based on his memory, which will affect the user for a long time and arouse the user's memory of the fresh food e-commerce APP to promote the formation

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of a new experience process. In summary, the EEI experience model can include the construction of the entire user experience, that is, the design process of fresh food e-commerce apps, including user expectations, event progress, and the impact of events on users.

The Correspondence Between The EEI Experience Model And The Design Of Fresh Food E-Commerce Apps

The EEI experience model is closely related to the target user positioning, redesign process, and specific application parts of the early stage of fresh food e-commerce APP design at the experience level. The expected experience stage corresponds to the early target user positioning and design positioning. For fresh food e-commerce APPs, the needs and motivations of the target user group are the primary influencing factors. Through observation, we can understand users' exact needs and thus realize the product design of fresh food e-commerce APPs. The corresponding event process experience stage includes the path, form, carrier selection, and experience form of the fresh food e-commerce APP product design. Of course, the event also includes interactive behaviours in which users participate, a manifestation of the connection between users and design. The impact experience stage corresponds to the impact of the fresh food e-commerce APP product design on users' memory. Users review the experience of fresh food e-commerce APPs, form their unique memory materials in their minds, and fill in the missing parts by themselves to achieve application and dissemination.

Design Model Of Chinese Fresh Food E-Commerce APP Based On Experience EEI Model

Expectation Experience Stage

The expectation experience stage refers to users' emotional expectations before using fresh food e-commerce apps (C. Wang, Liu, & Zhang, 2021; Xin, 2019). In the early stages of product design, the designer needs to have an in-depth understanding of the target users' habits, spending power, and other factors. By understanding the users' preferences, behaviors, and expectations, the designer can better understand the users' needs and provide them with fresh food purchase expectations that are more in line with their expectations (Figure 2).

Preliminary research on user expectations is crucial to ensure product success and user satisfaction. Only by conducting in-depth research on user expectations can we ensure that fresh food e-commerce apps can meet user expectations. This provides preliminary user research data for the design of fresh food e-commerce apps. Based on this standard, we can clarify the design positioning, design usability, and how to meet user expectations. In addition, the user's expectations and judgments about the design style are expected by the user for fresh food e-commerce app products before the user contacts and uses the product. If the expected results are not achieved in the experience stage after contact, the user's feedback on the product design will not be optimistic.

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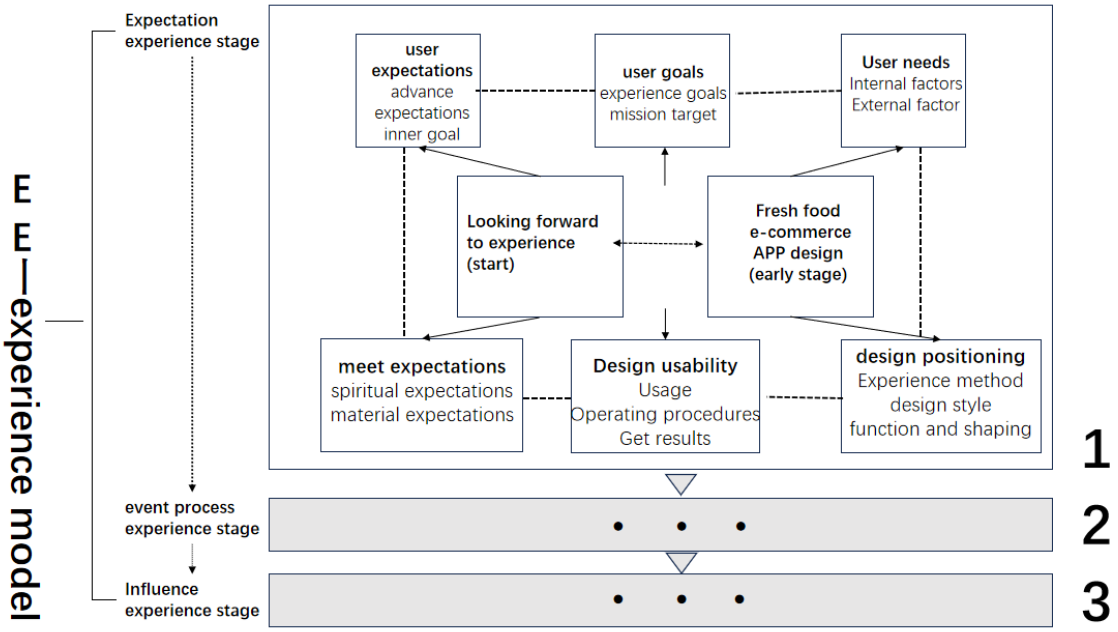

Figure 2: Schematic Diagram Of The Expected Experience Stage In The EEI Experience Model

The Experience Phase Of The Event Process

The event process experience stage is a specific link in the design and application of fresh food e-commerce apps. As participants in the design factors, users participate in the design process and gain rich experience (C. Wang et al., 2021). Therefore, a series of comprehensive factors in this process must be considered in the design strategy of fresh food e-commerce apps, including the layout, copywriting, artistic features of pictures, cultural connotations, and usage scenarios of fresh food e-commerce apps (Figure 3).

The design of the event process experience stage should concentrate on the three significant levels of theme experience, sensory experience, and interactive experience. Through multi-level experience design, a full range of experience feelings and experience processes should be constructed for users. The first is theme experience, which builds a coordinated and unified design form. Through the selection of carriers and communication media, a set of experience processes with clear themes are established for users so that they can immerse themselves in the product through contact with different media; the second is a sensory experience, through the experience of vision and touch, the way of user experience acceptance is enriched, andusers are given multi-level sensory experience; the last is interactive experience, creating interactive multi-faceted experience, through the interaction between people and products, people and people, people and environment, environment and products, interactive behaviours between people, objects and environment are generated. A complete event process experience is formed in this interactive process.

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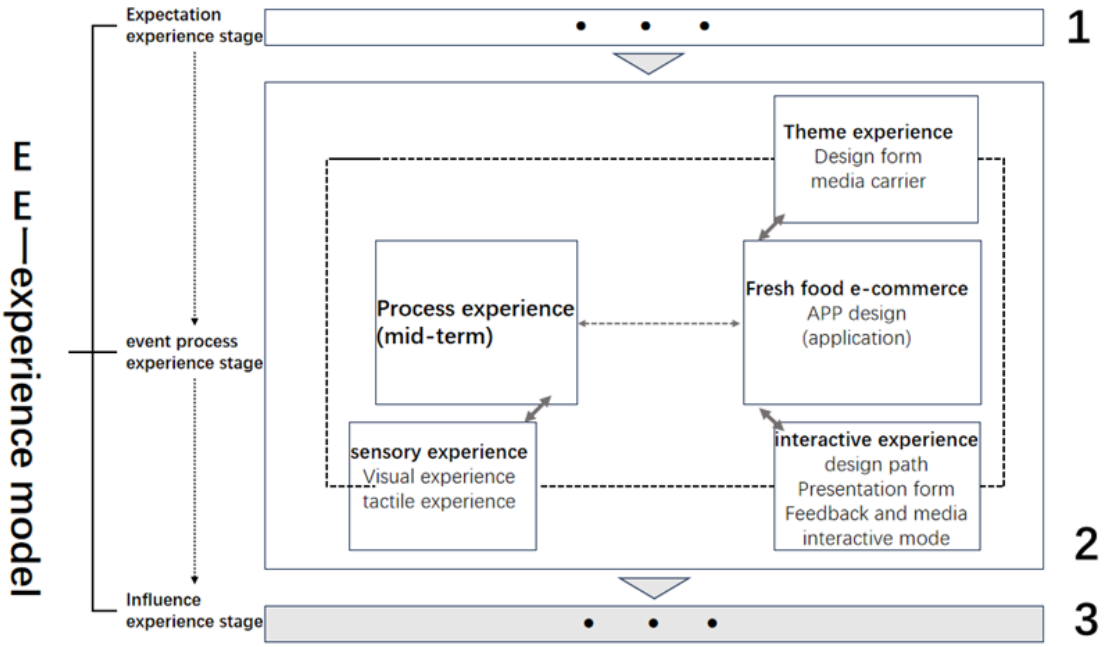

Figure 3: Schematic Diagram Of The Event Process Experience Stage In The EEI Experience Model

The Experience Phase Of Impact

Based on the experience of fresh food e-commerce APP products, users form experience memories in their minds, which are solidified after a period of precipitation (C. Wang et al., 2021; Xin, 2019). When users face similar experiences again, these memories trigger a chain reaction, forming a complete memory record of using fresh food e-commerce APPs. These memory records become clues for users' memories, helping them relive their previous feelings (Figure 4).

If there are missing fragments in the user's memory, the user will fill in the remaining fragments in his mind to achieve the effect of complete memory. The above process will profoundly affect the user's feelings and emotions during the experience stage (Şeker & Unur, 2022). This forms a close connection between user memories and experiences. Through this way of recalling and reproducing, users can re-experience the excellent expertise brought by the product. Therefore, to create an unforgettable experience, it is necessary to pay attention to the user's experience memory and strive to create a pleasant and memorable experience that leaves a deep impression in the user's mind.

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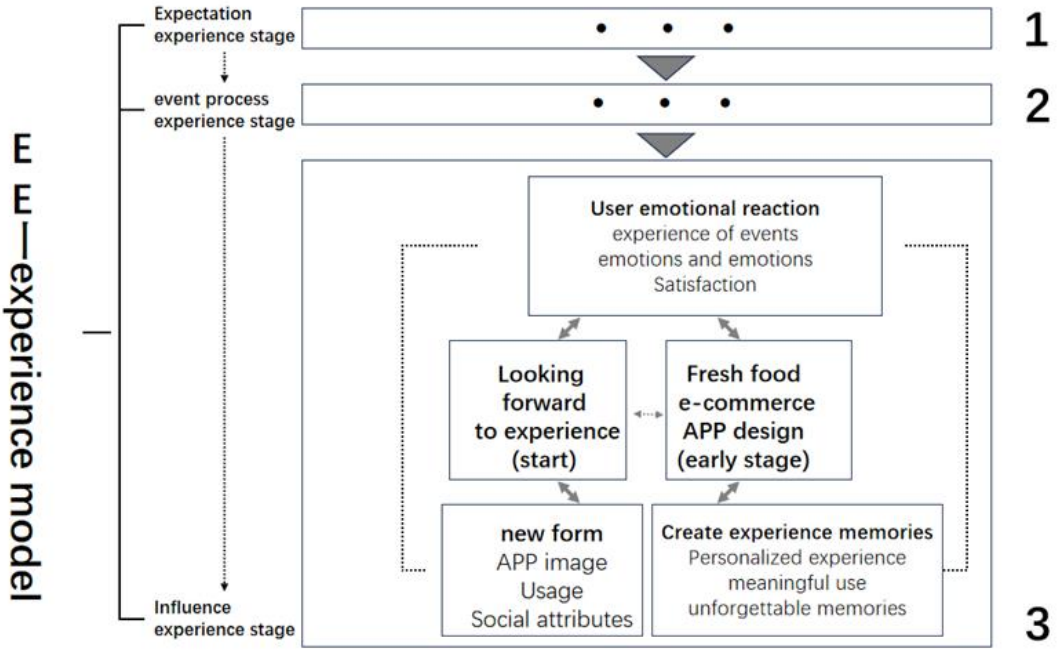

Figure 4: Schematic Diagram Of The Impact Experience Stage In The EEI Experience Model

User Experience Evaluation And Optimization Improvement

User experience runs through the entire product design of fresh food e-commerce apps. The day the design is completed is the day the experience begins. After that, evaluation is conducted based on user feedback and assessment information to optimize products and services. These evaluation factors are based on different levels of experience design. "The experience result is the user's satisfaction with the product, which can be used to analyse the user's satisfaction or dissatisfaction." Designers rely on continuous follow-up to improve the design results and create a better user experience.

Fresh Food E-Commerce APP Design Model Based On User Experience

Through the analysis of the design of fresh food e-commerce apps at different experience stages, this study obtained a strategic model for the design of fresh food e-commerce apps (Figure 5). The initial stage of the experience and the product design of fresh food e-commerce APPs influence each other in the early stage. This can be used to distinguish user needs and correspond to the positioning of the product design of fresh food e-commerce APPs. This is the first point. Secondly, the mid-term of the experience corresponds to the specific design link of the fresh food e-commerce APP application. For different fresh food e-commerce APP product designs, we can carefully consider the three experience methods of theme experience, sensory experience, and interactive experience and integrate them into the design application. Thirdly, by participating in the overall event process of the fresh food e-commerce APP product

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design, users will form a more robust emotional response, thereby generating experience memory. Finally, based on practical user experience evaluation, users form feedback on the fresh food e-commerce APP product experience results.

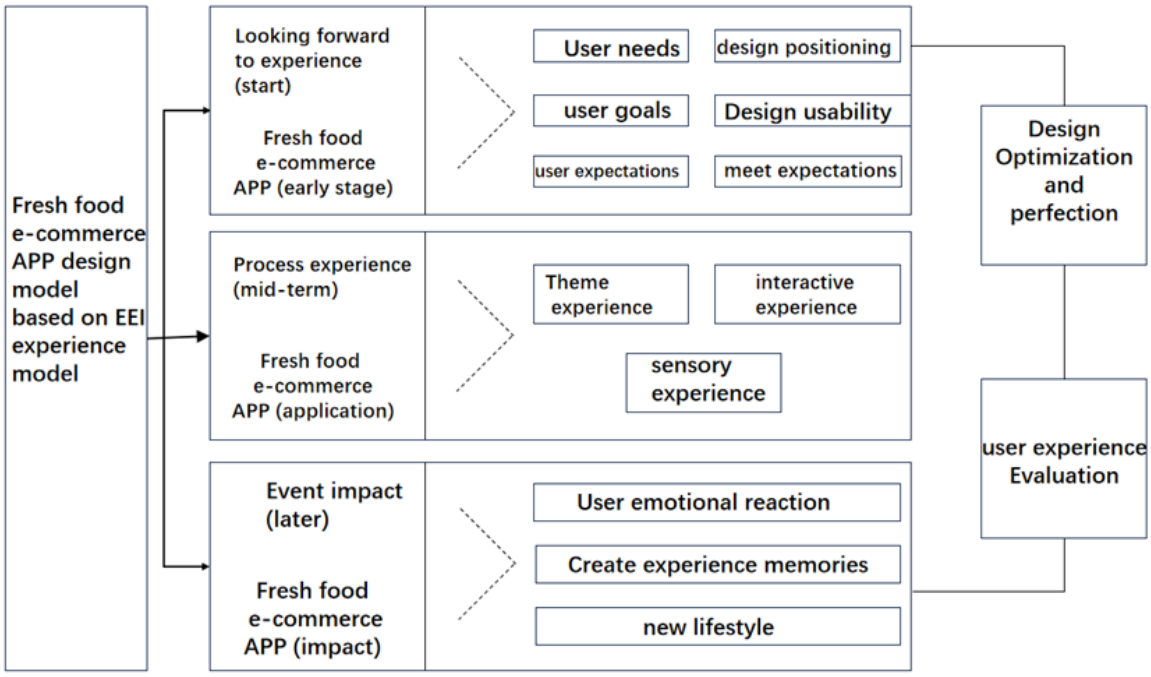

Figure 5: Schematic Diagram Of The Product Design Model For Fresh Food E-Commerce APP

Methods

Design Practice - Research and Analysis In The Expectation Stage

Based on the EEI experience model, the fresh food e-commerce APP is designed to meet the needs of the times and current users. Firstly,through effective user demand analysis, we can understand more deeply the accurate needs and expectations of users at this stage, and provide new ideas for fresh food e-commerce APP design. In this study, 214 valid questionnaires from different regions of China were collected by quantitative methods through questionnaire surveys, the questionnaires were collected online using the Questionstar application (https://www.wjx.cn/) and were distributed between September 10 and November 5, 2023. Questionstar is one of the most advanced online survey tools and is also widely used in academic research (Fang Liu, 2023; Zheng, 2020). This study employed random sampling to select the sample for the study. Since the population of the parent group could not be determined, Bentler and Chou's method of determining sample size was used in this study. According to Bentler and Chou, the sample size is 5-10 times the number of questionnaire items when the parent group of the population is unknown, and the sample size can be enlarged by 20% by considering the number of invalid samples(Bentler & Chou, 1987).

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Results

Demographic Statistics

Through the data analysis of the questionnaire, the study found that the respondents were mostly between 30 and 40 years old, with males accounting for 41% (N=88) and females accounting for 59% (N=126). During the survey, the study analysed the user's interest in the use of fresh food e-commerce APPs and found that (7 choose 2) 36.4% (N=156) of users were most concerned about the visual experience caused by the clarity of the APP layout (Figure 6), followed by virtual shopping experience (17.9%, N=77) and interactive and exciting product experience (14.4%.N=62). In addition, by analysing users' perceived focus on fresh food e-commerce apps, it was found that most users are more concerned about unified visual effects (42.9%, N=184) and rich graphics and patterns (32.2%, N=138),as shown in Figure 7.

Figure 6: Schematic Diagram Of Users' Interest In Fresh Food E-Commerce APP Products

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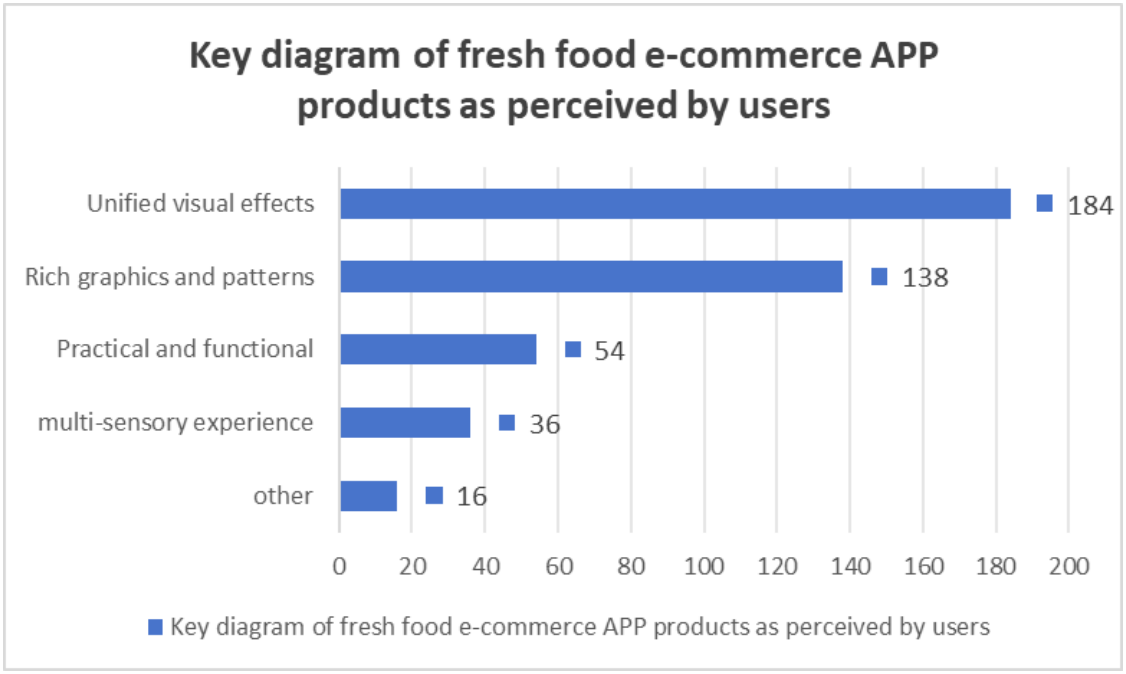

Figure 7: Key Diagram Of Fresh Food E-Commerce APP Products Perceived By Users

Therefore, users' demands for fresh food e-commerce apps can be divided into the following three levels: the first is the intuitive level, where the design focus is on the layout, material images, hierarchical structure, etc., of fresh food e-commerce apps that are modern and fashionable; the second is the behavioural level, where the design should pay attention to product functionality and interactive experience; the third is the reflective level, where the design should focus on strengthening the virtual shopping experience of fresh food e-commerce apps. The above survey and analysis provide a practical reference direction for the design of the event process stage.

Event Process Experience Stage Design

The first is the theme experience of fresh food e-commerce apps. Through the above user survey and analysis, the audience's needs for fresh food e-commerce are clarified. To enable users to have a good theme experience during this experience, the design practice targets the target users. It determines the theme design of fresh food e-commerce apps based on product functions (Figure 8).

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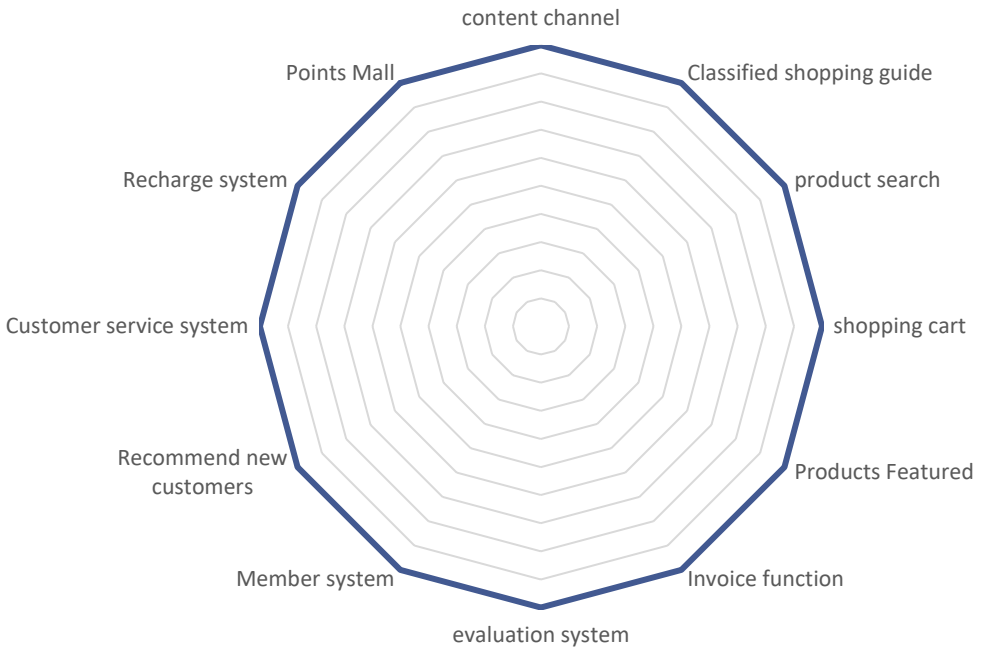

Figure 8: Schematic Diagram Of Fresh Food E-Commerce APP Product Functions

First, regarding theme determination, the practice uses green food as a healthy concept for creative design. The overall tone is a white background, with a small amount of gray and green elements for layout. The design practice integrates the original fresh food e-commerce APP functions into the existing design cases to form an overall unified green fresh food design theme. Subsequently, relying on the integration and application of unified elements, a plan is established for the later product design to form a complete and unified theme product.

The second focus is the interactive experience. Through the analysis and interpretation in the previous article, users attach great importance to the clarity of the design layout and the unity

of visual effects. Therefore, in the specific design practice, breaking away from the existing layout framework and improving the user's perception of product information is necessary.

Usually, when users open the selected product, they first see the layout of the product interface. Then, they look for information on product quality from the product interface. Therefore, whether the information on the product elements can attract users' attention is closely related to the layout of the interface. Good product interaction can attract users to perceive the information elements of the product interface effectively, promote information transmission and communication with users, and allow users to obtain the information they need efficiently. A product interface with a chaotic layout will prevent users from perceiving the information they need and reduce their desire to use the platform. Therefore, simplify the product interaction interface to reduce visual fatigue when creating. For example, simplify the most basic visual perception rights, combine everything the user sees into a structure that is as simple as possible, and combine different forms and rich content in the same structure so that the visual force can restore order (Figure 9).

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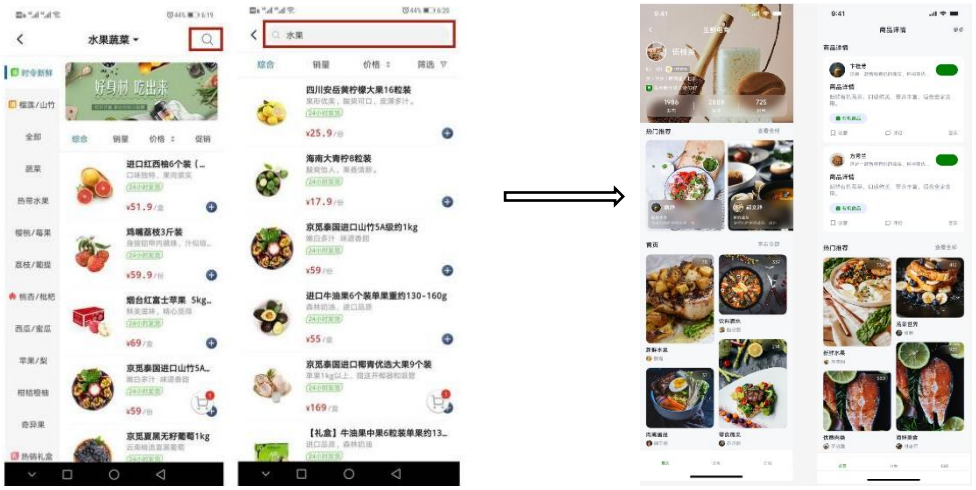

Figure 9: Schematic Diagram Of The Design Of The Existing Fresh Food E-Commerce APP Interaction Interface After Improvement Based On EEI (1)

On the other hand, the design process was carried out with the user as the center to let users understand product information more quickly. The layout logic was updated. The layout position of the standard product image elements was innovatively arranged, and the layout position of the homepage product image in the product interface was expanded to more than half of the product interface. The traditional product image slide design was retained, and dynamic videos and product introductions could be placed on the slide so that users could perceive the freshness of the product quality and green safety. The shopping cart and checkout pages were processed by the first and second-level standardization and enlargement of the product interface. This can improve users' ability to pay attention to the product while increasing specific interactivity and graphic richness (Figure 10).

Finally, the sensory experience of the design elements of fresh food e-commerce APP products. The sensory interaction experience between users and products is the most important in the design process. Users experience APP products through vision, hearing, touch, and other

senses. Therefore, it is necessary to redesign the product from the perspective of the senses. In the early research process, it was also found that users have specific requirements for the interactivity of products. For example, the design allows users to build good interactions with products through vision, touch, smell, and other means so that users can experience products at multiple levels and with various senses, thereby obtaining an excellent interactive experience. First, vision. Vision is one of the most direct and commonly used senses. In the design of fresh food e-commerce APPs, visual elements are not limited to the layout design of static images but should also include dynamic effects.

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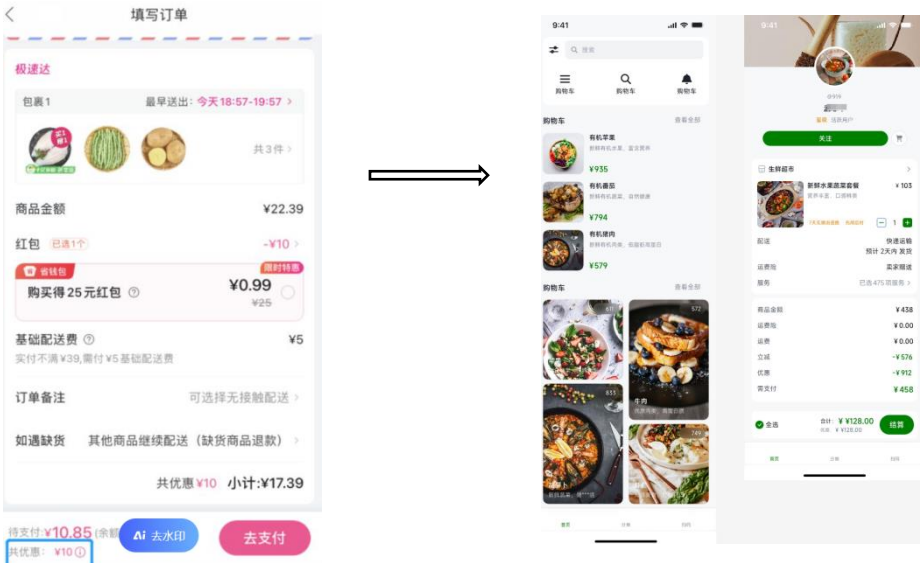

Figure 10: Schematic Diagram Of The Design Of The Existing Fresh Food E-Commerce APP Interaction Interface After Improvement Based On EEI (2)

Therefore, some video elements can be added to enrich the audience's ability to see more vivid, dynamic visual effects and enhance the attractiveness and expressiveness of fresh food e-commerce products. The second is hearing. Hearing also plays a vital role in the sensory experience. Adding music, sound effects, etc., can enhance the user's emotional experience and immersion when consuming. In the process of fresh food shopping, by reading the corresponding product information aloud, the audience can have a deeper understanding of the perception of the product while browsing the product shopping. Finally, there is the sense of touch. The sense of touch generates vibration frequency and amplitude through feedback after simulated selection, enabling users to trigger key information reminders or simulate critical scenarios when shopping, thereby further improving the interactivity and experience depth of fresh food e-commerce apps.

Impact Experience Stage Design

The key to influencing the experience stage is to give users a good impression of the experience so that users will have the urge to provide feedback after the experience process. To this end, coupons can be given to customers who offer comments and suggestions after each consumption experience so that users can get enough sense of ceremony and respect when using the product and have the desire to consume again after using it. So that users can often

consciously recall the process of consumption experience. Relying on the selection and issuance of consumption coupons, it can provide users with good follow-up design services during the use of the product, enable users to enter the experience process at the beginning of contact with the product, and promote new re-consumption emotions after consumption.

Conclusion

This study takes the EE experience model as the primary theoretical basis. It analyses in detail the feasibility of applying the model to the design of fresh food e-commerce APPs from the

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theoretical and application levels. Through the integration of theoretical data and field research, the relationship between the EEI experience model and fresh food e-commerce APPs is analysed, and the expectations, process, impact, and other stages of the EEI experience model are discussed in detail.

The results of this study can provide fresh food e-commerce companies and designers with ideas and design directions for improving related APPs. Firstly, the application of EEI experience model in fresh food e-commerce APP design provides an important theoretical basis and practical support for future design practice. Second, this study summarises the design strategy of Chinese fresh food e-commerce APP based on user experience. On the basis of the design strategy, design practice to meet user needs, combined with the overall design process, is conducive to improving the design quality of fresh e-commerce products. Finally, by applying the EEI experience model, this study ensures the coherence, structure and high quality of this type of APP design. At the same time, it also provides strong support for the design and innovation of fresh food e-commerce APPs. Overall, this study has certain reference value for the innovative design of fresh food e-commerce APPs at this stage.

This study also has some limitations. Due to time and financial constraints, a larger valid sample could not be collected. Therefore, the findings of this study only represent the attitudes and opinions of this population segment. Future researchers may consider increasing the number of samples to obtain more comprehensive results. It is necessary to consider the differences in demographic variables such as gender, age, education level, and area of specialisation in terms of user experience and demand for fresh food e-commerce APPs.

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