



AHP-Based Research on the User Experience of Clothing Sales Live Broadcasts

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Abstract. This study aims to explore user preferences for clothing sales live broadcasts and identify the key factors influencing the user experience. Utilizing the Analytic Hierarchy Process (AHP) method, the research focuses on evaluating the user experience of clothing sales live broadcasts. By assessing and scoring various aspects of the user experience, the study derives the weight of each layer in the hierarchical structure of the evaluation metrics. This provides a foundation for subsequent optimization and improvement of the live streaming experience in the clothing sales category. In the first level weighting, live broadcast scenes> Platform factors> live broadcast> host image, and in the secondary weights, the relatively higher qualities are background music, room layout, text and symbols, platform dependence, platform praise, and platform guarantee, which shows that the above qualities are the main qualities affecting live broadcasts of apparel sales, and they need to be given higher importance.

Keywords: Clothing Sales Live Broadcasts, Analytic Hierarchy Process, User Experience, Live Broadcasts

1 Preface

In recent years, e-commerce live streaming has demonstrated strong momentum and vitality. Consumers are increasingly shifting from traditional purchasing behaviors to online shopping, with live shopping becoming more prevalent. Platforms like "Jitterbug" have successfully explored new business models, combining innovative marketing with high-quality content. This has not only attracted significant traffic but also established live shopping as a key growth driver for the platform. As a result, Jitterbug has become a vital channel for brands and individual clothing merchants to engage in live marketing. Live streaming plays a significant role in apparel marketing. It offers users a professional shopping guide-like experience, characterized by interactivity and entertainment. Live streaming bridges the gap between sellers and consum-

ers, visually showcases clothing products, and attracts a large number of apparel consumers [1].

This study focuses on clothing sales live broadcasts, employing the AHP method to evaluate the user experience across different categories. By scoring the user experience, the research aims to determine the weight of each factor influencing the live broadcast experience. This will provide a reference for optimizing and enhancing the user experience in clothing sales live streaming.

2 Literature Review

2.1 Clothing Sales Live Broadcasts

Clothing, being an experience-based product, typically requires consumers to try it on to assess fit, style, and suitability. Live streaming with goods addresses this issue to some extent. Jin Qi, in their paper "The influence of interactive marketing features on user perceived attributes in mobile live e-commerce," highlighted that compared to traditional e-commerce, live video broadcasting through anchors enhances user participation, interaction, and decision-making speed. For designers and developers of mobile live-streaming e-commerce platforms, it is crucial to recognize the impact of interactive marketing on user-perceived attributes, particularly its types and manifestations. Selecting the appropriate type and form of interactive marketing can enhance user experience and attitudes. Designers should emphasize information guidance to help users quickly identify key points amidst the vast amount of content in live streams[2].

Wang Yan and other scholars, in their research on the impact of live e-commerce on consumer purchasing decisions, focused on consumer purchase intentions, behaviors, and loyalty. Their analysis of psychological and behavioral changes during live broadcasts provided valuable insights for the operation of live e-commerce platforms [3].Chen Luocho studied the elements of webcasting that influence audience psychology, including credibility, professionalism, attractiveness, and interactivity, from a social psychology perspective [4].

2.2 User Experience

In August 2000, the International Ergonomics Association defined ergonomics as a discipline that studies the interaction between humans and system components, applying theories, principles, and methods to optimize system efficacy and human well-being [5]. He Zifei points out that from the perspective of user needs, webcasting satisfies five major needs of the audience: information needs, entertainment needs, emotional needs, interactive needs, knowledge needs [6]. Li Lingling addresses the current research on evaluation indicators for B2C e-commerce websites. She points out that, overall, there are two main issues: first, the problem of the evaluation subject, where the design of the indicators tends to focus more on the perspective of the designers, neglecting the viewpoint of the consumers; second, the constructed index

system contains too many qualitative indicators, and the selection process is highly subjective, lacking integration with various quantitative analysis methods [7].

The modern consumer trend demands product diversity to cater to different needs. Beyond basic material needs, consumers increasingly seek psychological satisfaction [8]. Fu Rao and Liu Mingzheng (2022) summarized the webcast attractiveness assessment model, providing guidelines for designing user experience evaluation metrics for clothing sales live broadcasts. The primary indicators include live broadcast scenes, platform factors, live interaction, and host image, with secondary indicators such as background music, room layout, text and symbols, platform dependency, platform praise, platform protection, anchor verbal behavior, anchor reward mechanism, audience interaction, anchor media image, anchor natural image, anchor live broadcasting style, and anchor gender [9]. Among these, the Anchor Media Image primarily refers to their fame and credibility, while the Anchor Natural Image mainly includes their height, appearance, physique, and voice. The Anchor Live Broadcasting Style refers to characteristics such as humor, sensitivity, or exaggeration, and the Anchor Gender primarily relates to the appeal of hosts of the opposite sex (Table 1).

Table 1. User Experience Evaluation Metrics for Clothing Sales Live Broadcasts.

Primary indicators	Secondary indicators
Live Broadcast Scenes	Background Music
	Room Layout
	Text and Symbols
Platform Factors	Platform Dependency
	Platform Praise
	Platform Protection
Live Interaction	Anchor verbal Behaviour
	Anchor Reward Mechanism
	Audience Interaction
Host Image	Anchor Media Image
	Anchor Natural Image
	Anchor Live Broadcasting Style
	Anchor Gender

2.3 AHP Hierarchical Analysis

The Analytic Hierarchy Process (AHP), introduced in the 1980s, is a practical multi-criteria decision-making method. It combines qualitative and quantitative decision-making, hierarchizing and quantifying the decision-making process based on psychological and thinking patterns. AHP breaks down complex decision-making scenarios into smaller parts, organizes them into a hierarchical structure, assigns weights to each part, and analyzes them to determine priorities [10].

This study employs AHP to evaluate the elements of the user experience in clothing sales live broadcasts. This innovative approach aims to provide new insights for optimizing and enhancing the user experience in this domain.

3 Research Methodology

In this study, the AHP method was used to analyze the research problem. A standardized questionnaire was prepared and distributed to five experts with doctoral degrees or higher in design. Their responses were converted into quantitative data based on the relative importance of pairwise comparisons of indicators (Table 2). The weights of the experts and the weights of the various levels of constructive criteria for the apparel sales live streaming user experience evaluation metrics were calculated. The consistency index (CI) and consistency ratio (CR) were also calculated to ensure the consistency of the pairwise comparison matrix. If $CI < 0.1$ and $CR < 0.1$, the matrix is considered consistent. The weights of the overall hierarchy were calculated using expert judgments and the consistency index proposed by Saaty [11], as shown in Figure 1 and Figure 2.

Table 2. AHP Expert Rating Results Table.

	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Average Score
Live Broadcast Scenes	0.22	0.42	0.47	0.28	0.4	0.36
Platform Factors	0.52	0.27	0.18	0.38	0.23	0.32
Live Interaction	0.12	0.15	0.23	0.22	0.14	0.17
Host Image	0.14	0.16	0.12	0.12	0.23	0.15
Background Music	0.14	0.26	0.67	0.3	0.28	0.33
Room Layout	0.43	0.11	0.18	0.56	0.32	0.32
Text and Symbols	0.43	0.63	0.15	0.14	0.4	0.35
Platform Dependency	0.28	0.2	0.45	0.2	0.45	0.32
Platform Praise	0.08	0.6	0.21	0.6	0.21	0.34
Platform Protection	0.64	0.2	0.34	0.2	0.34	0.34
Anchor verbal Behaviour	0.26	0.4	0.45	0.65	0.45	0.44
Anchor Reward Mechanism	0.63	0.48	0.21	0.16	0.21	0.34
Audience Interaction	0.11	0.12	0.34	0.19	0.34	0.22
Anchor Media Image	0.32	0.12	0.41	0.36	0.38	0.32
Anchor Natural Image	0.08	0.2	0.23	0.23	0.19	0.18
Anchor Live Broadcasting Style	0.22	0.42	0.23	0.14	0.14	0.23
Anchor Gender	0.38	0.26	0.13	0.27	0.29	0.27

4 Analysis and Discussion

4.1 Apparel Sales Live Streaming User Experience Weighting

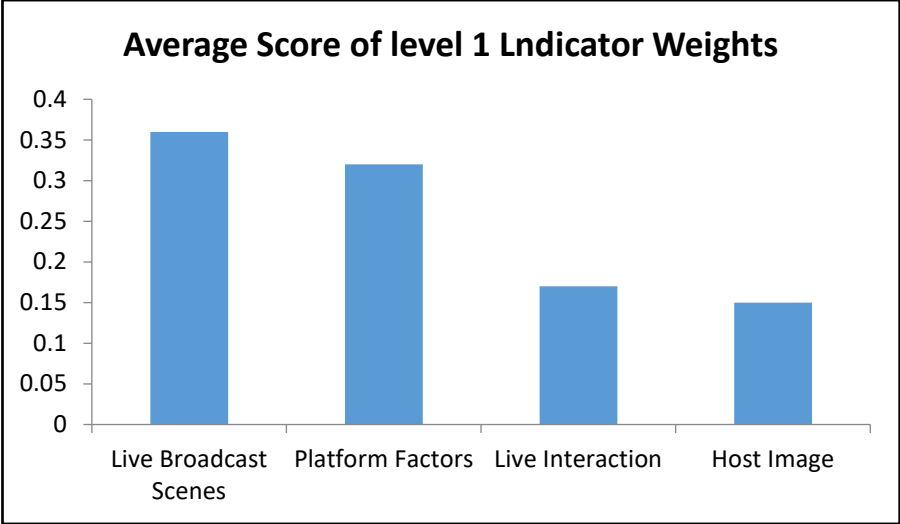


Fig. 1. Clothing sales category live streaming user experience level 1 indicator weights

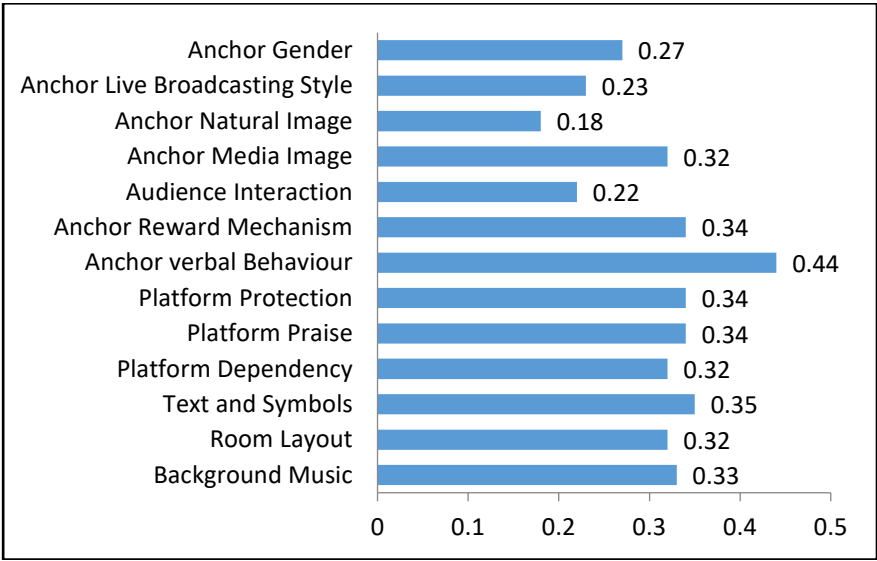


Fig. 2. Clothing sales category live streaming user experience secondary indicator weights

4.2 Equations

Analysing the results of AHP level 1 indicators of apparel sales live broadcast user experience, the weight of "live broadcast scenes" is 0.36, "platform factors" is 0.32, "live interaction" is 0.17, "host image" is 0.15, indicating that the qualities of "live broadcast scenes" and "platform factors" are important in apparel sales live broadcast. Therefore, it should be paid enough attention in clothing sales live broadcasts, and more resources should be allocated for clothing sales live broadcasts.

Analysing the results of the AHP secondary indicators for clothing sales live broadcasts, under the quality of "live scene", the weights of background music, room layout, text and symbols are 0.33, 0.32 and 0.35 respectively, with relatively balanced importance, and text and symbols are slightly more important. Under the quality of "platform factors", the weights of platform dependency, platform praise and platform protection are 0.32, 0.34 and 0.34 respectively, with relatively balanced importance. Under the quality of "live interaction", the weights of Anchor verbal behaviour, anchor reward mechanism and audience interaction are 0.44, 0.34 and 0.22 respectively, among which Anchor verbal behaviour is more important and can be improved by further training in the follow-up. Under the quality of "host image", the weights of anchor media image, anchor natural image, anchor live broadcasting style, and anchor gender are 0.32, 0.18, 0.23, and 0.27 respectively, of which anchor media image and anchor gender are more important, and we can give priority to selecting anchors with high quality media image and suitable gender. For example, when selecting hosts for sportswear live streams, it is advisable to choose those with a sporty media image, such as athletes or well-known fitness influencers. These types of hosts often achieve better live streaming results.

5 Conclusions and recommendations

Based on the results of the above research, the AHP interview results were summarised into Clothing Sales Live Broadcasts first-level indicator weighting chart and second-level indicator weighting chart, and the statistical AHP first-level weights for the live broadcast scenes, platform factors, live broadcasting, and host image were 0.36, 0.32, 0.17, and 0.15, respectively, and the second-level indicator weights for the background music, room layout, text and symbols, platform dependence, platform praise, platform guarantee, anchor verbal behaviour, anchor reward mechanism, audience interaction, anchor media image, anchor natural image, anchor live broadcasting style, and anchor gender are 0.12, 0.12, 0.13, 0.1, 0.11, 0.11, 0.07, 0.06, 0.04, 0.05, 0.03, 0.03, 0.04, respectively. In the first level weighting, live broadcast scenes > Platform factors > live broadcast > host image, and in the secondary weights, the relatively higher qualities are background music, room layout, text and symbols, platform dependence, platform praise, and platform guarantee, which shows that the above qualities are the main qualities affecting live broadcasts of apparel sales, and they need to be given higher importance.

In order to reasonably allocate the resources of clothing sales live broadcasting, and arrive at a better effectiveness of clothing sales live broadcasting, it is expected to

increase the number of experts in AHP hierarchical analysis, and expand the AHP expert analysis to expert analysis combined with user analysis, so as to arrive at a more reasonable research result. Later, questionnaire research can be conducted to check the validity of AHP weights, so as to provide a reference basis for the optimisation and enhancement of the user experience of live broadcasting of clothing sales in the later stage.

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