The Impact of Discount Information Design on Consumer Purchase Intention in the Live Commerce Context

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Abstract. Discount information is an essential component of live commerce platforms, playing a crucial role in attracting users in various promotion scenarios. Inappropriate design of discount information, such as displaying discount information ambiguously or in a complex manner in the live-stream room, may negatively confuse consumers in the company's current promotional activities or products. This study, based on Nielsen's ten principles of interaction design, combined with previous researches in the e-commerce field, explores the relationship between three dimensions of discount information design and consumer purchase intentions in the live commerce field. Through an online questionnaire survey, a total of 1001 valid responses were collected, and structural equation modeling and linear regression were employed to verify and test the model and hypotheses. The principle findings indicate that three dimensions, namely "Usefulness," "Readability," and "Aesthetic," have a significant impact on consumer's purchase intentions. Meanwhile, the "Readability" dimension plays the most role. This paper have potential contribute to the literature studying the effect of discount information design within the context of live commerce in the information design field. Practically, the findings will also assist platforms in designing their marketing strategies more consumer-friendly, catering to the consumer's need for efficiently capturing discount information.

Keywords：Live commerce, Discount information design, Consumer purchase intention, Usefulness, Readability, Aesthetic

1   Introduction

Since the launch of the live streaming channel on Kuaishou in 2016, China's live commerce industry has been rapidly growing. Fueled by the rapid development of mobile communication and the trend toward smartphone adoption, the live commerce industry reached a tipping point in 2021, signaling the onset of the "era of universal e-commerce." According to the "2022 Annual Chinese Live Commerce Market Data Report" published by the Chinese Ecommerce Research Centre[1] in 2022, China's live commerce industry saw a total of 18,700 enterprises, a transaction volume of 3.5 trillion RMB, and a user base of 473 million people in 2022. Currently, the major live

e-commerce platforms in China include Taobao Live, Jingdong Live, Pinduoduo Live, among others. Additionally, there are some smaller live streaming platforms such as Mogu Live   and Kuaishou Live. Competition among these platforms is intensifying, with companies increasing their investments and enhancing their capabilities to capture market share. Traditional e-commerce companies have also ventured into the live e-commerce industry, applying their product interface design principles to their live e-commerce products. However, the design principles from traditional e-commerce products cannot be directly transplanted into this emerging industry.

Discount information is an essential component of e-commerce products, playing a crucial role in attracting users in various scenarios such as websites and short video platforms. If companies make mistakes in the design of discount information, such as displaying discount information ambiguously or in a complex manner on the live streaming interface, it may negatively confuse consumers in the company's current promotional activities or products, consequently affecting business performance. As of the end of 2022, 14 e-commerce platforms have already folded, including previously highly valued companies like Missfresh and Secoo, as well as giants' backed companies like Tenhua Tuan and Xiao'e Pinpin [8]. In such a fiercely competitive environment, the challenge for many companies is how to design discount information (i.e., discount information design) that allows users to intuitively access and understand it, reducing confusion, and thereby increasing consumer purchase intentions.

Many researchers focus on user intentions in the traditional e-commerce domain, such as factors influencing decision-making in live streaming users[3], fluctuations in the user experience during live shopping[11], addiction models in live streaming[13] and others. These served as indicators to measure which dimensions can impact user intentions. Furthermore, they also pay much attention to various aspects, including user experience and consumer decision-making, in both traditional e-commerce scenarios and mobile contexts. For instance, they explored the impact of web design on user experience[2], short video information design [7], and principles of information design for mobile applications[14]. In the context of live commerce, some scholars argue that the design of live streaming interfaces is crucial as it serves as the entry point for knowing products [16]. It can be observed that current research in this industry primarily focuses on the overall interface design, with limited studies examining the impact of activities, marketing, or discount information on user intentions from an information design perspective. Live promotional events are identified as a significant factor influencing consumer purchases[13], and the design of various elements on the live streaming interface represents one of the most direct touchpoints for users, playing a crucial role in enhancing the consumer marketing experience[14].It is notable that the role and impact of discount information design on the live streaming interface in the live commerce domain have not been extensively explored. While answering this question may assist live commerce platforms in designing their marketing strategies more appropriately, enabling users to access and understand discount information more efficiently. Consequently, this study focuses on

the following question within the context of live commerce: What is the impact of different discount information design strategies on consumer purchase intentions?

This article firstly review current mainstream live commerce platforms, such as TikTok, Taobao, and Kuaishou, extracting the interface framework of some live-stream rooms on these platforms. Secondly, four contexts are redesigned, which correspond to three major dimensions of discount information design and a baseline based on Nielsen's ten principles of interaction and information design. Subsequently, questionnaires were sent online to 1,135 subjects via Credamo (https://www.credamo.com/#/), an online survey platform supporting for academic researches. After collecting the data, some statistical methods are employed to identify significant effects. Via exploring the relationship between discount information design and consumers' purchase intention, this paper have potential contribute to the literature studying the effect of discount information design within the context of live streaming interfaces in the information design field. Practically, the findings will also assist live commerce platforms in designing their marketing strategies more consumer-friendly, catering to the consumer's need for efficiently capturing discount information.

This study is organized as follows. In the second section, two streams of literature about information design and users' purchase intention is reviewed. In the third section, three hypotheses are proposed and the theoretical model is developed. The forth part presents the research methodology and study process designed to test our hypotheses. The fifth section presents statistical results, and finally discussions regarding the findings and conclusions are drawn in the last part.

2   Literature Review

As an emerging field, the live commerce possesses distinct characteristics in the interaction with consumers and design style compared to traditional e-commerce platforms. Moreover, there is currently a lack of literature to investigate these designs in this domain. Scholars have conducted a series of studies on e-commerce platforms from various perspectives, and this study is related to two streams of literature.

Firstly, from the perspective of users' purchase intention, it has been found that boredom prompts consumers to prefer watching live streams. Consequently, e-commerce platforms should focus on enhancing the entertainment elements and allure of live streams to stimulate positive emotions among consumers. This, in turn, can increase their viewing duration and shopping behaviors on the live-stream platform[13]. Besides, from a psychological perspective, strategies such as limited-time and limited-quantity promotions can induce a sense of urgency, thereby igniting consumers' purchasing desires and influencing their shopping decisions[4]. Furthermore, from the perspective of user stickiness, Shen et al. (2022)   found that practicality and readability have the most significant impact on consumer satisfaction based on the Expectation Confirmation Theory (ECT). Improving satisfaction through some intermediary variables can indirectly enhance user platform stickiness [6].

Secondly, literature in the traditional e-commerce platform domain have various theoretical frameworks and authoritative scales to support and measure design elements. For instance, in the field of information design, Lu and Yao (2021) suggest that information designers should be audience-oriented, systematically organizing, transforming, and presenting information to meet audience needs[15]. In the mobile domain, short video applications provide engaging experiences to users through features like live streaming, and information credibility plays a crucial role in this context[7]. In terms of interface design, Wells et al. (2005) suggest that using easily understandable visuals can facilitate user understanding of business operations and decision-making, as seen in scenarios such as flash sales, shopping carts, and marketing activities in the e-commerce domain [9]. Additionally, in the field of traditional website design, factors such as information quality, content, design, and layout all can impact user experience and usage [2].

In summary, it can be observed that current researches primarily focus on the overall interface design and traditional e-commerce context. There are limited studies examining the impact of discount information design on users' purchase intention in the live commerce dmain. Therefore, this paper will fill this gap based on traditional theoretical foundations drawing from existing literature.

3   Hypothesis Development

3.1   Jakob Nielsen's Ten Usability Heuristics

Prevalent researches on interface design are mostly based on Jakob Nielsen's Ten Usability Heuristics, which were proposed by Jakob Nielsen, a PhD holder in Human-Computer Interaction from the University of Copenhagen. These heuristics are widely used for evaluating the quality of interface design. This theory provides a reliable set of dimensions to measure the effectiveness of design elements in e-commerce live-stream interfaces. Given that live commerce scenarios primarily exist on mobile devices and share similar elements with short video platforms, there is a connection between short videos and live streams. Therefore, we also draw some inspirations about design principles from the short video field[7]. Since both short videos and live commerce are information-intensive media, some dimensions of the information design framework, such as the usefulness, is equally applicable to live commerce interface design. Apart from the short video domain, traditional web-based e-commerce platforms also serve as valuable sources because this industry has been in development for several years. In web interface design, the whole webpage often involves numerous information elements, making information readability a critical factor influencing user experiences [2]. This principle is equally applicable to contemporary live commerce platforms and serves as an important reference for our subsequent dimension development.

3.2   Usefulness

Xue et al. (2023) argues that incorporating useful information elements on the interface to provide substantial functional advantages encourages consumers to interact with the product and live streamers, and stimulates their quest for more information [10]. This perspective is highly relevant to common information elements found in live-stream rooms, such as one-click flash sales and coupon redemption. Xu (2023) also supports this viewpoint: a monotonous click feedback from user-screen interaction fails to improve user experiences. Having a positive psychological feeling for users during the interaction in the live stream, facilitating emotional expression, and evoking resonance are crucial[17]. Based on it, this paper proposes the following hypothesis:

H1: The usefulness of discount information elements on live commerce platforms positively influences consumers' purchase intention.

3.3   Readability

In Wells' research, it was found that more intuitive and easily understandable images, as opposed to text, can significantly facilitate user comprehension of business processes and reduce reading costs[9]. Zhang and Li (2022) argues that most existing live stream interfaces suffer from problems related to the vague recognition and poor identifiability of icons. In information design, designers should adhere to the characteristics of simplicity and clarity when designing these information modules[13]. Xue et al. (2023) also shares the viewpoint that information elements should be designed to be easily understood by users and less confused, minimizing any learning costs for users[10]. Based on these claims, this paper proposes the following hypothesis:

H2: The readability of discount information elements on live commerce platforms positively influences consumers' purchase intention.

3.4   Aesthetic

Aesthetic appeal undoubtedly constitutes the first impression that any visual element makes on users. Zhu suggests that combining information with aesthetically pleasing design is more conducive to fostering a positive attitude toward products and increasing purchase intention compared to monotonous information elements[12]. Visually pleasing design and style not only attract users' attention but also provide aesthetic enjoyment, generating positive emotions such as delight and pleasure among customers, thereby enhancing their experiences[17]. Additionally, it helps customers cultivate a sense of enjoyment[5]. Based on these findings, this paper proposes the following hypothesis:

H3: The aesthetic of discount information elements on live commerce platforms positively influences consumers' purchase intention.

Based on the theoretical hypotheses mentioned above, we have summarized three significant dimensions that may impact consumer purchase intention: usefulness, readability, and aesthetic. The theoretical model in this study is shown in Figure 1.
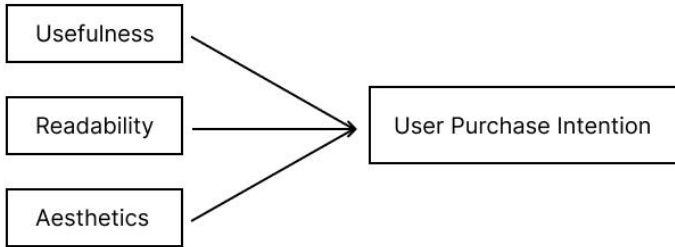

Fig. 1. Theoretical Model

4 Methodology

4.1 Questionnaire Design

The questionnaire in this study primarily consists of two parts: user demographic information and interest variables. Demographic information is self-reported by the participants based on their actual situations. The research variables are measured using a Likert 5-point scale, ranging from 1 (completely disagree) to 5 (completely agree). Participants rate the statements in the items. The dimensions and the number of items in each dimension are as follows: usefulness (cite [10], 2 items), readability (cite [10] and [2], 7 items), aesthetic (cite [5] and [2], 3 items), as well as the consumer purchase intention (cite [11], 3 items). For a detailed description of all the items, please see in Table 1.

Table 1. Items collected and descriptions in the questionnaire

Item	Description	Source
X1	I think this prototype is easy to use	
X2	I think this prototype is useful in buying what I want	
X3	I think this prototype is clear and understandable	[6]
X4	I think all product options, product attributes and product information are well presented	[2]
X5	I think the discount intensity of the product has been well presented	
X6	The information provided at this site is complete.	[2]
X7	The information provided at this site is sufficient.	
X8	The information provided at this site is unambiguous.	

X9	The website adequately meets my information needs.	
X10	The screen design (i.e. colors, images, layout etc.) is attractive.	
X11	The colors that are used on the site are attractive	
X12	Overall, I find that the site looks attractive	
X13	I will likely buy the products recommended in the live streaming shopping.	[10]
X14	I would recommend live streaming shopping to my friends.	
X15	I would prefer to use the products recommended in the live streaming shopping.	

4.2   Discount Information Design

In order to enable the subjects to intuitively perceive the above three dimensions including usefulness, readability and aesthetic, we redesign three new high fidelity renderings based on the three dimensions according to the benchmark interface. Before the design, we first analyzed the interface of five platforms in China's live commerce industry, including Douyin, Taobao, Kuaishou, JD.com and Pinduoduo, and extracted their overall interface framework, as shown in Figure 2 and Figure 3. It can be seen that the overall design idea of the interface in the current live commerce industry has certain norms and homogeneous style, which is of course the most familiar design routine for current consumers. We thus pruned each of these information elements, leaving only the elements that communicate discount information for latter analysis and experimental design.
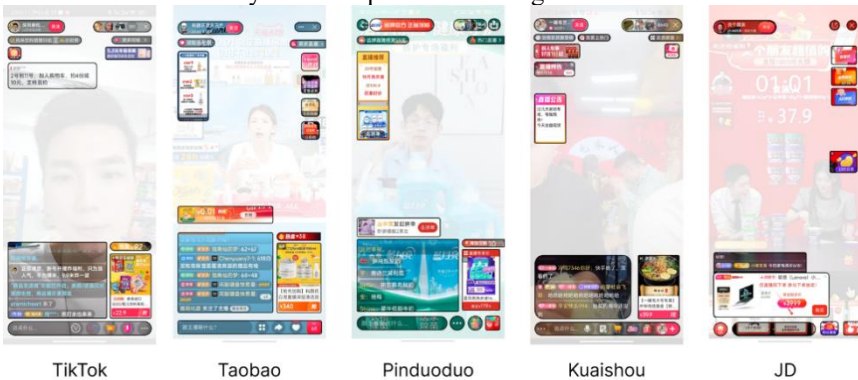

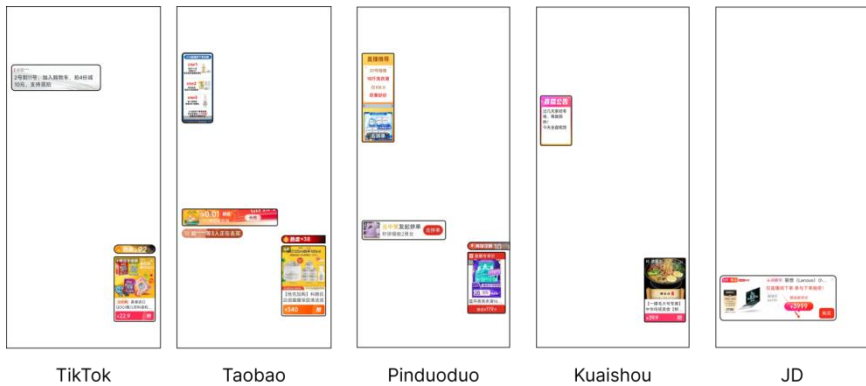**Fig. 2.** Framework Extraction from Various Platforms

Fig. 3. Extracted Framework

It can be seen that the current mainstream product discount information design scheme mainly includes three modules. The first module is the promotion activity notice bar at the top left of the interface, which mainly presents the marketing information of the products. The second is the commodity window at the bottom right of the interface mainly displays the price, characteristics and other information of the main products in the current interface (jd.com is at the bottom left, and also presents the information of discount intensity). Meanwhile, the pop-up window at the middle left side of the interface mainly presents the current popularity of goods in the live-stream room and plays a role in guiding consumers to purchase impulsively. Based on this information, we reviewed the current design rules in this industry, and redesigned these interfaces with the three dimensions mentioned above, achieving high fidelity. The redesigned interfaces are shown in Figure 4. Compared with the benchmark, the interface representing usefulness has a coupon picking button at the coupon, and a prompt for the second kill of popular products and an add purchase button at the middle left of the interface. These designs give practicability to discount information. The commodity display module in the interface representing readability has a larger area and presents more detailed information, such as discount strength, historical low price, etc., which endows the discount information with readability and more transparency. Moreover, all the information modules in the interface representing aesthetic are uniform and homogeneous in color, and the layout is also aligned. There is no abrupt composition structure, which endows beauty to the discount information.
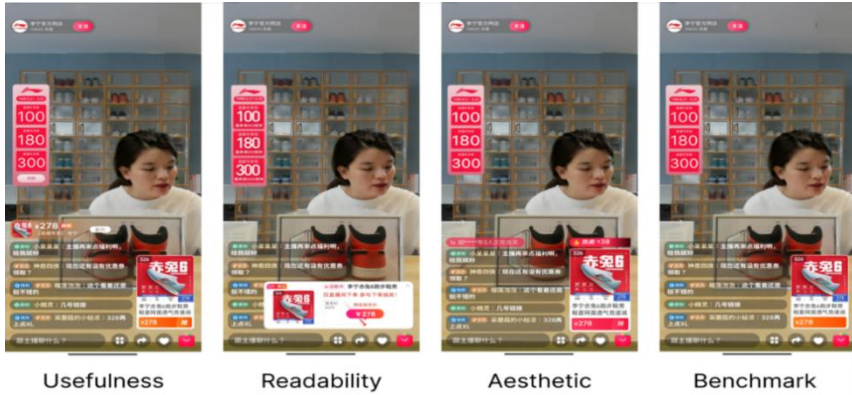
| Usefulness | Readability | Aesthetic | Benchmark |

Fig. 4. Redesigned Interfaces

4.3   Data Collection

We design a field experiment with three treatment groups, corresponding to these three dimensions above, and one control group, which is the benchmark interface. To collect our data, we develop the questionnaires for each group with different interfaces. Subjects will answer the same questions after seeing the interface subject to their own group. Subsequently, we send Our questionnaires to people aged 15-60 vie Credamo platform, and collected a total of 1,135 samples eventually. We take some quality control measures to ensure the data quality in online surveys, such as excluding the response time less than 45 seconds or more than 7 minutes and two screening questions. In addition, we have conducted a manual review of each questionnaire, excluding the questionnaires with the same continuous answers, strong regularity of the answers, and logical conflicts between the answers (for example, the occupation is a student, but the monthly income is more than 30000, etc.), so as to ensure the reliability and validity of the questionnaire to the greatest extent. Finally, we filtered 134 invalid questionnaires and received 1001 valid answers. The average response time was about 3 minutes (178.99s), and Cronbach α The coefficient is 0.901 and the KMO value is 0.940 ($P<0.001$ for Bartlett's test), which proves that the reliability and validity of this questionnaire are ideal.

4.4   Descriptive Analysis

We first collected the participants' demographic characteristics, including gender, age, occupation, income, education level, usage of live commerce platforms and the number of live commerce platforms being used, as shown in Table 2. Among all participants, 46.95% (470/1001) were male and 53.05% (531/1001) were female. Participants' ages are concentrated in the age group of 15-45 years old, of which 0 is under 15 years old, 26.07% (261/1001) is in the age group of 15-25 years old, and 68.53% (686/1001) is in the age group of 26-45 years old, which is also the most

popular subgroup. About 3/4 of the participants had a bachelor's degree of 74.33% (744/1001), followed by a graduate degree of 13.69% (137/1001). More than half of the participants were enterprise/company employees 62.84% (629/1001), followed by students 15.98% (160/1001). The monthly income is mainly concentrated in the interval of 4001-15000, accounting for 60%. The number of people with 4001-8000 is 31.47% (315/1001), and the number of people with 8001-15000 is 32.77% (328/1001). Surprisingly, as an emerging industry, the popularity of live commerce has been very deep. 68.03% (681/1001) of users have used such products for more than one year. Among all participants, TikTok's usage rate is overwhelmingly ahead, with 93.6% (937/1001), indicating a considerably prevalent condition. The data of Taobao and KuaiShou were 75.2% (753/1001) and 50.1% (502/1001), respectively.

Table 2. Characteristics of the remaining sample (n = 1001)

Variable	Value
Gender	
Male	470(46.95%)
Female	531(53.05%)
Age	
15-25 years	261(26.07%)
26-45 years	686(68.53%)
46~60 years	49(4.90%)
61 years and above	5(0.50%)
Education degree	
Senior high school and lower	33(3.30%)
Junior college	87(8.69%)
College degree	744(74.33%)
Postgraduate degree and higher	137(13.69%)
Employment status	
Student	160(15.98%)
Staff in governmental agency	84(8.39%)
Staff in an enterprise	629(62.84%)
professional and technical personnel	70(6.99%)
Staff in manufacturing and production enterprises	35(3.50%)
Retirements	5(0.50%)
Unemployed	1(0.10%)
Others	17(1.70%)
Monthly income (RMB)	
under 2000	102(10.19%)

2000 - 4000	119(11.89%)
4001 - 8000	315(31.47%)
8001 - 15000	328(32.77%)
15001 - 30000	130(12.99%)
above 30000	7(0.70%)
Usage duration	
less than a month	33(3.30%)
1 - 6 months	132(13.19%)
6 months - 12 months	155(15.48%)
more than a year	681(68.03%)
Livestream shopping apps usage(Multi)	Selected samples as a percentage of total samples
Tiktok	937(93.6%)
TaoBao	753(75.2%)
KuaiShou	502(50.1%)
JD	378(37.8%)
PinDuoDuo	279(27.9%)
Others	13(1.3%)

4.5   Statistical Analysis

After obtaining the filtered data set, we calculated the scores of each extracted factor on these items by applying the factor score matrix to all 1320 participants. We will apply the structural equation model (SEM) to determine which dimension of discount information design can influence consumer purchase intention. We use IBM SPSSAU for all data analysis, such as CFA to evaluate the goodness of fit index, including approximate root mean square error (RMSEA), comparative fit index (CFI), Tucker Lewis index (TLI) and incremental fit index (IFI). We also applied the average variance extraction (AVE) and comprehensive reliability (CR), and calculated the correlation coefficient between each two factors to test the convergence effectiveness and discriminant effectiveness. In addition, we adjust the model by using the modified index (MI) reasonably.

5   Results

5.1   Reliability and Validity Test

In the MI index test between factors and items, all MI values were less than 20. While in the test among measurement items, only the MI value between X10 and X11 is greater than 20, with a value of 22.084. However, considering that X10 and X11 are both measurement items of factor 3, we did not adjustment them. Table 3 shows the standard load factor, AVE and CR of each measurement item. It can be seen that each factor has good convergence effectiveness, the AVE values of the four factors are above 0.45, and the CR values are above 0.6. The standard load of each measurement item is higher than 0.6, which also verifies the reliability of these measurement items to a great extent.

Table 3. Loadings of each item and AVE and CR tested

Item	Factor	AVE	CR	Loading
X1	Factor1	0.457	0.626	0.717
X2	Factor1			0.633
X3	Factor2	0.503	0.875	0.629
X4	Factor2			0.633
X5	Factor2			0.671
X6	Factor2			0.763
X7	Factor2			0.728
X8	Factor2			0.729
X9	Factor2			0.792
X10	Factor3	0.473	0.728	0.684
X11	Factor3			0.633
X12	Factor3			0.741

Through four rounds of exploratory factor analysis (EFA), we filtered a factor, and finally obtained 15 effective latent variable factors for rotation factor loading matrix, as shown in Table 4. All communalities are above 0.4, which proves that these dimensions can ideally explain each corresponding problem. The KMO value is 0.940, and the P value is less than 0.001. According to this result, we have defined these factors as follows: Factor 1 is usefulness, which is related to the practicability of discount information, including X1 to x2; Factor 2 is readability, which is related to the completeness and readability of discount information, including X3 to x9; Factor 3 is aesthetic, which is related to the beauty of discount information, including X10 to X12. The eigenvalues of these three factors were 3.73, 2.229 and 1.863, and the variance interpretation rates were 28.70%, 17.14% and 14.33%, respectively.

Table 4. Rotated component matrix and communalities

Item	Factor loading			Commun ality
	Factor 1	Factor 2	Factor 3	
X1	0.639			0.580
X2	0.853			0.791
X3		0.646		0.499
X4		0.616		0.477
X5		0.629		0.527
X6		0.77		0.664
X7		0.802		0.676
X8		0.651		0.589
X9		0.676		0.651
X10			0.687	0.581
X11			0.731	0.604
X12			0.816	0.734

Table 5 shows the discriminant validity analysis between each of the two factors. For Factor1, the square root of AVE is 0.676, which is greater than the maximum absolute value of correlation coefficient between factors of 0.608. For Factor 2, the square root of AVE is 0.709, which is greater than the maximum absolute value of correlation coefficient between factors of 0.608. For Factor3, the square root of AVE is 0.687, which is greater than the maximum absolute value of the correlation coefficient between factors of 0.584. This shows that the three factors have an ideal discriminant validity.

Table 5. Pearson correlation and AVE square root value

	Factor1	Factor2	Factor3
Factor 1	0.676		
Factor 2	0.608	0.709	
Factor 3	0.51	0.584	0.687

Note: Diagonal numbers are AVE square root values

The analysis of the overall model fitting validity is shown in Table 6. It can be seen that the commonly used measurement indexes of this model, such as chi-square

degree of freedom ratio, GFI, RMSEA, RMR, CFI, NFI and NNFI, meet the standards, which further proves that the fitting validity of this model is good.

Table 6. Model fitting indicators

Common indicators	p	χ^2/df	GFI	RMSEA	RMR	CFI	NFI	NNFI
Judgment criteria	>0.05	<3	>0.9	<0.10	<0.05	>0.9	>0.9	>0.9
Value	0	2.458	0.974	0.038	0.017	0.981	0.969	0.976

5.2   Test of Representative Dimensions

To test whether these three interfaces designed in each group can indeed represent the corresponding dimension respectively, including the usefulness, readability, and aesthetic, we conduct an ANOVA analysis to examine whether there is a significant difference of ratings among these groups. The result is shown in Table 7. It can be seen that there are significant differences of usefulness, readability, and aesthetic ratings among these three groups as well as the benchmark ($P<0.001$). Especially, for the usefulness group, the average rating of usefulness dimension is significantly higher than the other three groups ($F=170.478$, $P<0.001$); for the readability group, the average rating of readability dimension is significantly higher than the other three groups ($F=77.483$, $P<0.001$); for the aesthetic group, the average rating of aesthetic dimension is significantly higher than the other three groups ($F=269.399$, $P<0.001$). It means that the three interfaces we have redesigned can represent their corresponding dimension well, and it is reasonable to conduct later analyses based on the representativeness of three dimensions.

Table 7. ANOVA Analysis Result

Dimension	Group				F	P
	Usefulness Group (n=250)	Readability Group (n=250)	Aesthetic Group (n=250)	Benchmark (n=251)		
Usefulness	2.88±0.58	1.87±0.57	1.89±0.58	1.82±0.57	170.478	<0.001
Readability	2.02±0.74	2.96±1.28	2.35±0.51	1.88±0.60	77.483	<0.001
Aesthetic	1.98±0.73	1.97±0.64	3.42±0.63	1.88±0.62	269.399	<0.001

5.3   Structural Equation Model

Figure 5 shows the testing results of SEM. As shown in Table 8, through the structural model regression verification, we can see that the P values of the three potential variables factor1, 2 and 3 for factor4 are all less than 0.05, showing a significant relationship overall. This means that the three dimensions of usefulness, readability and aesthetic all have a significantly positive impact on consumer purchase intention.

Table 8. Model Regression Coefficients

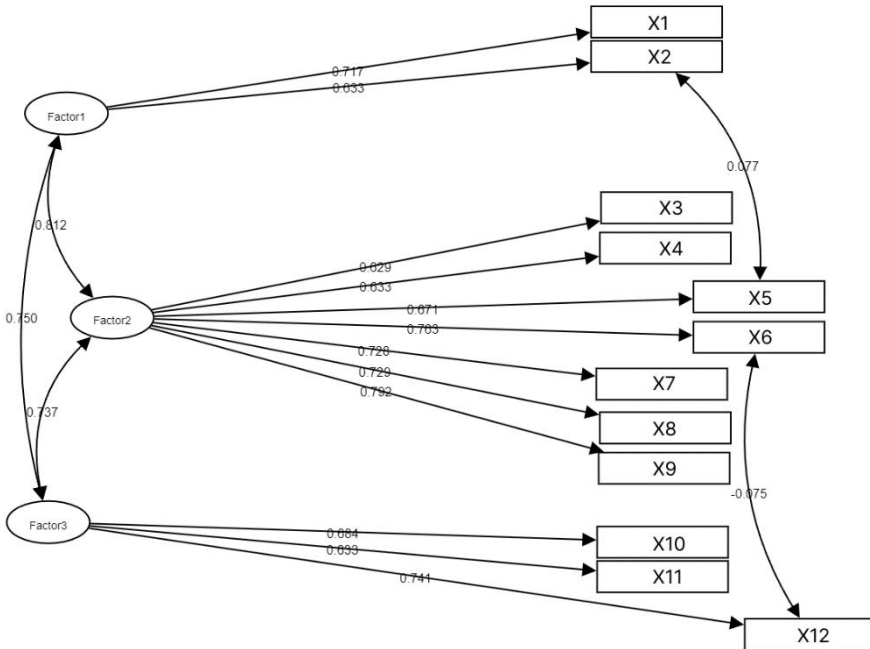| X	→	Y	Non standardized regression coefficient	p	standardized regression coefficient
Factor1	→	Factor4	0.234	0.046	0.164
Factor2	→	Factor4	0.645	<0.001	0.505
Factor3	→	Factor4	0.414	<0.001	0.359

Fig. 5. Structural equation modeling in CFA

5.4   Linear Regression Model

We then take usefulness, readability and aesthetic as independent variables and consumer purchase intention as the dependent variable for linear regression analysis. As can be seen from Table 9, the R-square value of the model is 0.383, which means that the use, readability and aesthetic can explain 38.3% of the change in consumer purchase intention. The F test indicates that the model is valid (F=206.112, P<0.001), which means that at least one of the factors among usefulness, readability and aesthetic will have an impact on the intention. In addition, the multiple collinearity test of the model found that the VIF values in the model were all less than 5, which means that there is no collinearity problem; And the D-W value is near the number 2, which indicates that the model has no autocorrelation, and there is no correlation between sample data, so the model perform well. The regression coefficient of effectiveness is 0.144 (t=5.176, P<0.001), which means that effectiveness has a significant positive impact on purchase intention. The regression coefficient of readability is 0.392 (t=10.563, P<0.001), which means that readability has a significant positive impact on purchase intention. The regression coefficient of aesthetic is 0.282 (t=10.857, P<0.001), which means aesthetic will have a significant positive impact on user intention. Overall, it can be observed that the readability dimension plays the most important role in affecting purchase intention.

Table 9. Linear regression analysis results

	Non standardized coefficient		Standard ized coefficient			Collinearity diagnosis	
	B	standard error	Beta	t	p	VIF	Tolerance
Constant	0.746	0.142	-	5.267	0.000**	-	-
Usefulness	0.144	0.028	0.150	5.176	0.000**	1.354	0.738
Readability	0.392	0.037	0.316	10.563	0.000**	1.444	0.693
Aesthetic	0.282	0.026	0.308	10.857	0.000**	1.300	0.770
R^2				0.383			
Adjusting R^2				0.381			
F				$F(3,997)$=206.112,p=0.000			
D-W Value				1.926			

Dependent   variable: User mean

*P<0.05 * * P<0.01*

6   Discussion

6.1   Principle Findings

As the results show, as an emerging industry, the consumer group of live commerce also has the characteristics of "young". The proportion of people aged 15-45 is as high as 94%, and the income is mostly concentrated in the range of 4000-15000. This part of the group has a good acceptance of new things, and has a healthy economic ability. It has a higher acceptance of live broadcast e-commerce products, as well as higher requirements for aesthetic and experience comfort. Through the validation of regression model, we can see that the three dimensions of usefulness, readability and aesthetic are significantly related to consumer purchase intention. These three dimensions are in line with Nelson's top ten interaction design principles, and have been applied and verified in the field of discount information design of live commerce.

6.2   Contributions

Inspired by previous researches on the traditional e-commerce field and the anchor effect and brand effect of live commerce, this study successfully constructed a measurement model for the discount information design of live commerce industry by fully capturing the characteristics of the live commerce industry and integrating it with the traditional interaction design principles. The model has achieved good results after reliability and validity test, which verifies the applicability of the general interaction design principles in live commerce scenarios. At the same time, this study fills the blank of academic research in this field theoretically.

It is worth noting that, unlike the previous expectation that the audience of live commerce is mainly concentrated in low-income groups, the actual survey shows that its user characteristics are mainly concentrated in young and middle-aged groups, and the economic situation is good. This discovery provides an important reference for future research on the behavior of live commerce users. Another striking finding is that usefulness, readability, and aesthetic all can influence consumer purchase intention, while the readability plays the most role. Practically, It can be a guidance to assist live commerce platforms in designing their marketing strategies more consumer-friendly, catering to the consumers' need for efficiently capturing discount information. By combining the design of discount information with consumer purchase intention in the context of the live commerce industry, this novel perspective and understanding contribute to the field by offering fresh insights into the interplay between discount information and consumer behavior within the industry.

6.3   Limitation

However, it is worth noting that this study also has some limitations. First of all, the recruitment of subjects is limited to Credamo platform users. This user group has more network usage experience and understanding than other groups, so there may be

a certain degree of bias. Secondly, this study only focuses on the discount information in the live-stream room interface. Future research can be further extended to the entire consumers' decision process to carry out a comprehensive analysis of their behaviors. Third, the sample language used in this study is Chinese. In view of regional differences, the generalizability of these findings in other language contexts or regions should be considered, or use other ethnic samples to retrain the model.

In the future, researchers can carry out further researches based on this model to explore the design issues of other information modules in live commerce, such as interactive information, purchase experience and other consumer behaviors. This will contribute to a more comprehensive understanding of consumer decision and marketing promotions in the field of live commerce.

6.4   Conclusion

In this research, we successfully constructed a measurement model and verified its reliability, convergence and discriminant validity. Through many revisions and adjustments, we made the model fit the actual survey data better. At the same time, we also profiled consumer characteristics in the field of live commerce. Finally, we clearly tested that in this field, the three dimensions of "usefulness", "readability" and "aesthetic" have a significant impact on consumer purchase intention, with readability playing the most role.

These results provide an empirical support for our in-depth understanding of the driving factors of consumer decision in the live commerce industry, and provide useful guidance for enterprises in designing and improving the live commerce platform. At the same time, it also provides a solid foundation for future researchers to further explore and enrich this research topic in this emerging field.

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