

Research on Consumers' Perceived Value of Online Garment Customisation

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Abstract

With the development of the Internet, consumers began to pursue personalised services and products. However, little systematic research on consumers' online garment customisation behavior has been conducted. Garment customization enterprises rely on consumer behaviour which is difficult to accurately judge. In order to better understand online consumers' purchase intention of garment customization, this paper studies consumers' perceived value. Through literature reading, group discussion and other methods, this paper constructed a theoretical model of eight measurement dimensions, and conducted factor analysis on the 321 questionnaires collected. Five key dimensions were obtained: the website comprehensive function, personalised service, product quality, emotional demand and social value. To test the comprehensive attitude of consumers to the results of this model, a fuzzy comprehensive evaluation was carried out. The results show that consumers have a high degree of recognition of the research results and acceptance of the research model, among which the recognition of product quality and website comprehensive function are the highest.

Keywords

online garment customisation, perceived value dimension, consumer perceived value, fuzzy comprehensive evaluation.

1. Introduction

With the advent of the digital, intelligent and networked era, the old business model has been reversed and new business models have emerged [1]. Consumers' life, work, study and entertainment behaviours are becoming more and more digital [2, 3]. At the same time, the limitation of consumption in consumer behaviour is basically ending, and consumer behaviour tends to be varied. The digital transformation of the garment customisation industry has become an inevitable trend. In recent years, the consumer's perceived value has received widespread attention [4]. It plays an important role in predicting purchasing behaviour, achieving sustainable competitive advantage, and influencing relationship management [5]. Consumer perceived value was the strategic priority of producers and retailers in the 1990s, and continues to be of great significance in the 21st century. It refers to the consumer's evaluation of product (or service) utility, which is based on consumers' perception of the "gain" and "give" of products [6]. Consumers' perceived value is not unilateral: it is a multi-dimensional concept. Therefore, most scholars use

multi-dimensional methods to divide it [7]. Sheth et al. put forward a theory to explain why consumers make choices [8], and divided consumer perceived value into five dimensions, including social value, emotional value, functional value, cognitive value and conditional value. Wan et al. examined the perceived value of online customisation experience from the perspective of customer experience [9], and believe that perceived value includes service value, product quality, currency price and time cost. Petrick established a multi-dimensional service perceived value measurement scale [10]. According to its structure and dimensions, perceived value includes emotional value, quality value, price value and social value. The existing references for research on online consumer perceived value are limited. Sullivan et al. revealed how to strengthen the online trading relationship by considering the perception of product quality and product value, so as to increase the trust perception of online buyers [2]. Pham et al. believe that access convenience, search convenience, evaluation convenience, transaction convenience and ownership/post-purchase convenience are important factors affecting customer perceived

value [3]. Jiang et al. concluded through research that holding brand marketing communication activities in the pre-consumption stage will trigger positive emotional reactions of consumers, thereby enhancing brand preference, which directly contributes to perceived value and indirectly to brand loyalty [11].

At present, there are few studies on consumers' perceived value of online garment customisation, but the market for online garment customisation is growing. Obviously, for different consumers, the perceived value of online garment customisation consumption behaviour is different. With the prevalence of online garment customisation, consumer demand tends to be varied. Therefore, research on consumers' perceived value is more urgent. Based on the consumption behaviour of different consumers as the breakthrough point, in this paper a research model of perceived value was constructed and comprehensively analyses conducted of the perceived value of online custom garment consumers. Moreover, the literature analysis and data collection methods were used to obtain the constituent elements of the customer perceived value of online

garment customisation, then a consumer questionnaire survey was conducted, and next the customer value dimension was extracted through statistical analysis of the survey data. Different perceived value dimensions as reference factors for online garment customisation are put forward, helping to improve consumers' purchasing efficiency, and supplementing existing online clothing customisation theories. Also, it can enrich research data on online clothing customisation, and understand consumer needs more clearly to improve the experience of the consumption process. It also provides a reference theoretical basis for enterprises conducting online garment customisation business.

2. Method

2.1. Theoretical Model Design

Through a literature review, the factors affecting consumers' perceived value of online garment customisation are summarised, which are divided into eight dimensions: quality value, price value, service performance, website function, personalised demand, emotional value, social value and supply chain factors. In order to explore the influence of each dimension on consumers' purchasing behaviour, this paper puts forward a research model framework (Figure 1).

2.2. Scale Construction and Optimisation

Before the questionnaire was formally issued, interviews were conducted with professional teachers and custom consumers in garment related fields. Inaccurate expressions and semantic duplication were eliminated, and the study finally set 34 measurement elements. The final measurement elements and codes are shown in Table 1.

2.3. Questionnaire Design

Based on the theoretical model constructed in this paper, a questionnaire

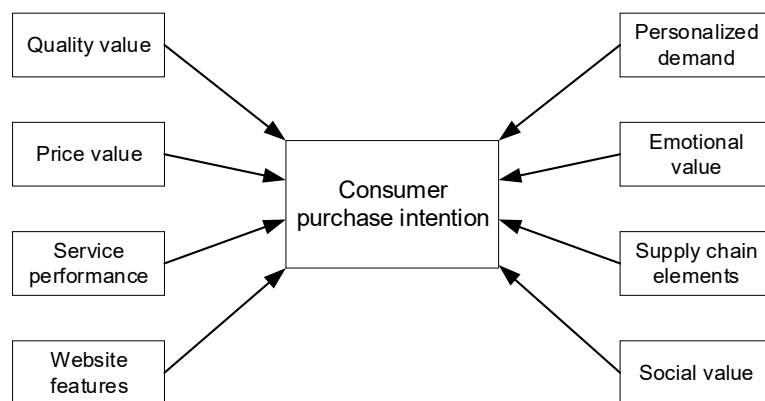


Fig. 1. Research theoretical model

was designed. The survey questionnaire included the elements of all dimensions in Table 1. According to the respondents' recognition of each element of each dimension and the degree to which they consider them important, each element was analysed to extract the dimension of customer perceived value.

The questionnaire was issued online to the target consumer and potential consumer groups customised online. Therefore, the research method adopted in this paper was the online issuance of questionnaires. The questionnaires were distributed and collected through a website called "Questionnaire Star". The survey was conducted in Xi'an, Shaanxi, China, and adopted intentional sampling in non-conceptual sampling close to the target customers of online customisation. The interviewees were 20-55 year-old consumers with a college degree or above, and the survey time was from October 15, 2021, to October 19, 2021.

The questionnaire was evaluated by the Likert 5 scale method, where 1 represents very insignificant, 5 represents very important, with 1-5 representing the degree of importance in turn. A total of 362 questionnaires were collected. The questionnaires were screened through the answer time and answer situation. After removing 41 invalid questionnaires that did not meet the requirements of the questionnaire, 321 valid ones were obtained. The effective recovery rate was 88.67%.

3. Results

3.1. Descriptive analysis

The final data collected were imported into SPSS statistical software, and 321 valid questionnaires were statistically analysed. First, descriptive analysis was carried out, the results of which are shown in Table 2. All the mean values in the table are greater than 3, indicating that the 34 elements have a certain influence on consumers' purchase behaviour towards online customised garments.

3.2. Factor analysis

In order to clarify the impact of each element on consumers' perceived value, factor analysis was conducted on the data. Using SPSS software for reliability analysis, the Cronbach Alpha coefficient was found to be 0.932, and the result was greater than 0.8. This indicates that the reliability of the questionnaire is good. Kaiser-Meyer-Olkin (KMO) and Bartlett tests were performed on the data. The KMO value was 0.906, which was greater than 0.5. The Bartlett test chi-square value was 5620.012, the degrees of freedom were 561, and P was 0.000, indicating that the data were suitable for factor analysis.

Common factors were extracted by principal component analysis, and 5 common factors with characteristic values greater than 1 were extracted. The cumulative explanatory variable was 68.225%, as shown in Table 3. In order to understand the components of the

Construct	Items	Code	Reference
Quality value	Craftsmanship	QUA1	[6,12]
	Quality of accessories	QUA2	
	Comfort	QUA3	
	Easy to take care of	QUA4	
	Wear resistance	QUA5	
Price value	Reasonable price	PRI1	[3]
	Good value for money	PRI2	
	Discount intensity	PRI3	
Service performance	Service attitude	SER1	[13]
	Online one-to-one customer service	SER2	
	Measure body size at home	SER3	
	Intelligent measurement services (3D anthropometry, etc.)	SER4	
	Style recommendation service	SER5	
	Exclusive after-sales service	SER6	
Personalised demand	Fitness	IND1	[14]
	Dress for your body type	IND2	
	Participation (experience design, production, etc.)	IND3	
	Have exclusive identification (initials, etc.)	IND4	
	Self-selection of accessories	IND5	
Website features	Interface aesthetics	WEB1	[2,3]
	Convenient operation	WEB2	
	Provide comprehensive information	WEB3	
	Payment security	WEB4	
Emotional value	Pursue individuality	EMO1	[15]
	Curiosity driven	EMO2	
	Bring happiness	EMO3	
	Easy experience process	EMO4	
Supply chain elements	Production cycle	SUP1	[11]
	Merchant reputation	SUP2	
	Logistics speed	SUP3	
	Logistics networking	SUP4	
Social value	Dress occasion needs	SOC1	[16]
	Symbolic status	SOC2	
	Obtain social recognition	SOC3	

Table 1. Corresponding indicators of the scale

five common factors, this paper used the maximum variance method to perform Kaiser normalised orthogonal rotation on the factors. The factor loading after rotation reflects the relationship between the factor and each element. The higher the load, the greater the correlation. The rotation converges after 9 iterations.

In the process of factor analysis, when the load is greater than or equal to 0.5, it can be considered that the factor can represent the indicator variable. The loads of PRI2, SER1, IND5, PRI3 and SUP1 are less than 0.5, which means that these five elements cannot dominate the indicator variables. Therefore, the good value for

money, service attitude, self-selection of accessories, discount intensity and production cycle were excluded from the scale. The final rotation component matrix is shown in Table 4.

Names of the five common factors:

The first factor: website comprehensive function (F_1). This factor has a large load in providing comprehensive information, convenient operation, payment security, merchant reputation, logistics networking, interface aesthetics, logistics speed, etc. In comprehensive consideration, the first factor is defined as the website comprehensive function.

The second factor: personalized service (F_2). This factor has a large load in providing measure body size at home, online one-to-one customer service, style recommendation service, exclusive after-sales service, participation and dress for your body type is available. Therefore, this factor is defined as personalised service.

The third factor: product quality (F_3). The load of this factor is mainly in the quality of accessories, comfort, craftsmanship, wear resistance and ease to take care of. This factor is defined as product quality.

The fourth factor: emotional demand (F_4). The load of the commodity attribute factor is mainly on the following four variables: curiosity driven, pursuing individuality, bringing happiness and having exclusive identification. This factor is defined as emotional demand.

The fifth factor: social value (F_5). This factor reflects information on the following three variables: symbolising status, obtaining social recognition and addressing occasion needs. It has a large load on these three variables. Therefore, this factor is defined as social value.

In summary, factor analysis removed the original 34 measurement variables, retained 29 measurement variables, and extracted five common factors. According to the results of factor analysis, five common factors were redefined, which are website comprehensive function,

Code	Proportion, %					Mean	Standard deviation	Variance
	Very unimportant	Unimportant	Normal	Important	Very important			
QUA1	0.9	1.6	11.2	48.6	37.7	4.21	0.771	0.595
QUA2	0.6	1.2	7.8	44.9	45.5	4.33	0.727	0.529
QUA3	0.6	1.2	3.7	32.7	61.7	4.54	0.689	0.474
QUA4	0.6	1.6	14.3	43.6	39.9	4.21	0.787	0.620
QUA5	0.6	1.6	15.0	44.2	38.6	4.19	0.788	0.621
PRI1	0.3	0.9	11.5	46.7	40.5	4.26	0.720	0.519
PRI2	0.3	2.2	22.1	43.9	31.5	4.04	0.807	0.651
PRI3	0.3	2.8	32.7	38.6	25.5	3.86	0.840	0.706
SER1	0	0.6	13.1	49.2	37.1	4.23	0.690	0.476
SER2	1.6	5.3	30.5	40.8	21.8	3.76	0.906	0.820
SER3	1.2	14.0	38.0	30.8	15.9	3.46	0.961	0.924
SER4	1.6	9.3	35.5	35.8	17.8	3.59	0.938	0.880
SER5	0.6	4.4	30.5	42.7	21.8	3.81	0.848	0.719
SER6	0.3	3.1	15.6	40.5	40.5	4.18	0.827	0.684
IND1	0.3	0.6	9.7	46.7	42.7	4.31	0.695	0.483
IND2	3.1	12.5	42.1	26.2	16.2	3.40	1.001	1.003
IND3	2.2	15.3	35.2	31.5	15.9	3.44	1.001	1.003
IND4	5.0	14.3	36.1	27.1	17.4	3.38	1.083	1.173
IND5	0.9	10.6	28.0	37.7	22.7	3.71	0.966	0.933
WEB1	0.3	3.1	25.9	44.5	26.2	3.93	0.819	0.670
WEB2	0	1.6	11.5	47.0	39.9	4.25	0.717	0.514
WEB3	0	1.9	12.8	42.1	43.3	4.27	0.752	0.565
WEB4	0	0.9	7.2	29.6	62.3	4.53	0.671	0.450
EMO1	0.3	3.1	32.1	41.7	22.7	3.83	0.822	0.676
EMO2	0.6	8.1	42.1	33.0	16.2	3.56	0.879	0.772
EMO3	0.3	2.5	19.0	43.6	34.6	4.10	0.810	0.656
EMO4	0.3	1.9	14.3	44.2	39.3	4.20	0.774	0.599
SUP1	0.3	3.7	24.9	46.4	24.6	3.91	0.817	0.667
SUP2	0	0.9	10.3	32.1	56.7	4.45	0.714	0.510
SUP3	0	1.2	20.2	43.6	34.9	4.12	0.767	0.588
SUP4	0	0.9	14.3	44.5	40.2	4.24	0.726	0.527
SOC1	0	0.9	14.3	49.2	35.5	4.19	0.707	0.500
SOC2	0	6.5	33.0	36.1	24.3	3.78	0.889	0.790
SOC3	0	5.9	29.9	38.9	25.2	3.83	0.874	0.763

Table 2. Descriptive analysis

Factor	Eigenvalue	% of Variance	Cumulative %
1	10.898	43.891	43.891
2	3.083	9.069	52.960
3	2.186	6.429	59.389
4	1.655	4.867	64.256
5	1.174	3.969	68.225

Table 3. Total variance explained

personalised service, product quality, emotional demand and social value.

3.3. Fuzzy comprehensive evaluation

With the help of some concepts of fuzzy mathematics, fuzzy comprehensive evaluation allows to evaluate the actual comprehensive evaluation problems.

Code	Definition	Website comprehensive function	Personalised service	Product quality	Emotional demand	Social value
WEB3	Provide comprehensive information	0.769				
WEB2	Convenient operation	0.744				
WEB4	Payment security	0.738				
SUP2	Merchant reputation	0.703				
SUP4	Logistics networking	0.622				
IND1	Fitness	0.586				
PRI1	Reasonable price	0.575				
EMO4	Easy experience process	0.566				
WEB1	Interface aesthetics	0.515				
SUP3	Logistics speed	0.504				
SER3	Measure body size at home		0.805			
SER4	Intelligent measurement services		0.795			
SER2	Online one-to-one customer service		0.654			
SER5	Style recommendation service		0.648			
IND3	Participation		0.562			
IND2	Dress for your body type		0.552			
SER6	Exclusive after-sales service		0.528			
QUA2	Quality of accessories			0.797		
QUA3	Comfort			0.773		
QUA1	Craftsmanship			0.739		
QUA5	Wear resistance			0.712		
QUA4	Easy to take care of			0.698		
EMO2	Curiosity driven				0.749	
EMO1	Pursue individuality				0.622	
EMO3	Bring happiness				0.599	
IND4	Have exclusive identification				0.538	
SOC2	Symbolic status					0.764
SOC3	Obtain social recognition					0.713
SOC1	Address occasion needs					0.540

Table 4. Rotated component matrix

Based on fuzzy mathematics, it quantifies some fuzzy factors and makes a comprehensive evaluation [17]. In order to test consumers' comprehensive attitude towards the research results of the evaluation scale proposed, the fuzzy comprehensive evaluation method was used to make a reasonable evaluation.

First, set the universe of discourse:

$$U = \{u_1, u_2, \dots, u_n\},$$

Sort the elements in U and publish m comments as:

$$V = \{v_1, v_2, \dots, v_m\}.$$

Where V_i is the i -th evaluation sequence, that is, a sorting of elements in U .

Let A be the fuzzy subset of the importance of factors in U , and R the fuzzy relation matrix from U to V derived from fuzzy value mapping f . Through the fuzzy linear transformation of R , A can be converted into a comprehensive evaluation subset for V

$$B = A * R = \{b_1, b_2, \dots, b_m\}$$

According to the comprehensive score of each evaluation object calculated, the comprehensive attitude of consumers can be obtained.

There are many factors involved in this paper. Factor set U can be divided into n subsets according to the number of factors obtained by factor analysis, which are recorded as U_1, U_2, \dots, U_n , where $n = 5$, $U_i = \{F_1, F_2, F_3, F_4, F_5\}$. In this study, the weight of each subset is equal, that is, A is the same.

Analyze the results of the factor analysis in the previous chapter. Taking the first factor as an example, the weight judgment matrix R_1 is constructed according to the above data, and the judgment result B_1 is obtained.

Factor	Proportion, %					Conclusion
	Very unimportant	Unimportant	Normal	Important	Very important	
F ₁	0.12	1.39	13.77	42.10	42.60	Very important
F ₂	1.51	9.13	32.49	35.47	21.41	Important
F ₃	0.66	1.44	10.40	42.80	44.68	Very important
F ₄	1.55	7.00	32.33	36.35	22.73	Important
F ₅	0.00	4.43	25.73	41.40	28.33	Important

Table 5. Fuzzy comprehensive evaluation result

$$R_1 = \begin{bmatrix} 0 & 0.019 & 0.128 & 0.421 & 0.433 \\ 0 & 0.016 & 0.115 & 0.470 & 0.399 \\ 0 & 0.009 & 0.072 & 0.296 & 0.623 \\ 0 & 0.009 & 0.103 & 0.321 & 0.567 \\ 0 & 0.009 & 0.143 & 0.445 & 0.402 \\ 0.003 & 0.006 & 0.097 & 0.467 & 0.427 \\ 0.003 & 0.009 & 0.115 & 0.467 & 0.405 \\ 0.003 & 0.019 & 0.143 & 0.442 & 0.393 \\ 0.003 & 0.031 & 0.259 & 0.445 & 0.262 \\ 0 & 0.012 & 0.202 & 0.436 & 0.349 \end{bmatrix}$$

$$A_1 = (1/10, 1/10, 1/10, 1/10, 1/10, 1/10, 1/10, 1/10, 1/10, 1/10)$$

then

$$B_1 = A_1$$

$$*R_1 = 0.0012, 0.0139, 0.1377, 0.421, 0.426$$

The results show that 0.12% of consumers think that the comprehensive function of the website is very unimportant for perceived value, 1.39% that it is not important, 13.77% that it is general, 42.1% that it is important, and 42.6% that it is very important. According to the principle of maximum subordination, the comprehensive function of the network is "very important".

Similarly, fuzzy comprehensive evaluation was carried out for the other four factors, the results of which are shown in Table 5.

The results show that consumers generally believe that the comprehensive function of the network is very important, and the data ratio of the comprehensive function of the website is 84.70%. These data fully illustrate that the comprehensive function of the website is an important part of consumers' perceived value. In the investigation of the quality value, the important data ratio of product quality reached 87.48%. Among the other three factors, according to the principle of maximum subordination, it is considered

that these three factors are important. The important proportions are personalized service 35.47%, emotional demand 36.35% and social value 41.40%, respectively. It shows that consumer recognition of these three factors is an integral part of their perceived value. This research results can be used to evaluate the perceived value of online garment customisation consumers.

4. Discussion

At present, as the epidemic continues, consumer entertainment and shopping activities are largely affected, and online shopping is the main way of shopping. For customised consumers, their shopping behaviour has been severely affected. When shopping offline, customised consumers can measure and select models in the store, and actually touch the fabrics, accessories, etc. of the clothing. And garment customisation companies have also suffered greatly from the epidemic. In this case, consumers and enterprises are turn to online at the same time. For online customisation enterprises, the perceived value of consumers has a great influence on them. Fully understanding and being familiar with consumers' perceived value can bring a unique and good shopping experience to customers as well as great benefits to enterprises. This study aimed to understand the perceived value of consumers, and give reference opinions for garment enterprises when it is difficult to judge the needs of customised consumers.

Through factor analysis and fuzzy comprehensive analysis, the factors affecting the perceived value of online customisation consumers were obtained. Five factors were proposed. It can be

seen that the three factors of product quality, emotional demand and social value are roughly the same as those in the establishment of the research model, indicating that these factors were properly considered in the establishment of the research model. In the fuzzy comprehensive evaluation, the website comprehensive function accounts for the highest proportion among the five factors, indicating that consumers think the website comprehensive function has the most important impact on their perceived value. Online garment customisation enterprises should pay attention to website functions. Personalised or simple interfaces should be designed for consumers to choose. Clothing displays should provide a comprehensive and intuitive display method, so that customers can easily understand the information they want to know. For the payment method and website security, enterprises should take the convenience of consumer payment and the protection of consumers' property security as the main requirements for website design.

5. Conclusion

This paper studied the perceived value of online garment customisation consumers and constructed eight measurement dimensions, which are product quality, price value, service performance, website function, personalised demand, emotional value, social value and supply chain elements. Then, a theoretical model was established. Based on the analysis of 321 valid questionnaires collected in the form of a questionnaire, the following conclusions are drawn:

1) Five key dimensions affecting consumers' perceived value were

extracted: integrated website functionality, personalised service, product quality, emotional demand and social value.

2) Through the cumulative contribution rate, it can be seen that each dimension has a great influence on consumers' perceived value, among which the comprehensive function of the website has the highest degree of influence. Garment customisation enterprises should focus on the dimension of the website function when building online platforms.

3) To test consumers' comprehensive attitude towards the research results, a fuzzy comprehensive evaluation was conducted. The results show that consumers have a high degree of recognition of the research results. Among them, consumers believe that product quality and the website comprehensive function have the highest impact on their perceived value. However, this study has some limitations, in view of which, there are also further prospects for future research. The specific performance of the study is as follows:

(1) Due to the limited manpower and material resources, this study had a small sample size and was only aimed at the population of Xi'an, Shaanxi, China. The geographical distribution was relatively concentrated, which is bound to ignore the fact that the perceived value of network consumers in different regions may be varied. In the future, we can target more and wider research samples.

(2) This study adopted the questionnaire survey method. The respondents may have felt bored with more questionnaire items, which affected the quality of the answer. Moreover, the questionnaire survey may have been affected by the emotions and attitudes of the respondents, and may not fully reflect the true answers in the minds of the respondents.

(3) This study lacks in-depth analysis on the demographic characteristics of online consumers. The perceived value of consumers of different ages, gender, income level and social status may be different. In future research, the demographic characteristics can be used as control variables to study the perceived value of the online garment customisation consumption behaviour of different consumers.

(4) This study does not focus on specific garment categories. In the future, we can more accurately study consumers' perceived value of online customised consumption of a specific garment category (such as shirts, dresses, etc.).

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