How the Age Impact WOMEN'S Rating on Clothing Based on WOMEN'S Clothing E-Commerce Review

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Abstract. The research focuses on the increasing need in mature women's clothing when they shop online. Clothing has both psychological and social meanings for consumers, therefore, our research attempt to find multidimensional aspects of consumers' perceptions and evaluations through reviews, and accordingly put forward some marketing suggestions for online women's shop. Data analysis and text analysis were both used in the research. The quantitative results include descriptive analysis in age, rating, and clothing categories.; the cross tables between age, clothing categories and rating. In addition, age and rating were analyzed in the correlation. In qualitative results, this research found that there are five factories that will affect women's satisfaction: (1) size (2) service (3) style (4) quality (5) price, and carries on the corresponding analysis to the text content of these 5 aspects. Among these factors, price affects women's review the least and size affects the reviews most towards an item of clothing. Our research has revealed the possible factors the mature women consider which may hope to give some useful suggestions to the online shops.

Keywords: Women's clothing · E-commerce · Consumer satisfaction

1 Introduction

Due to the impact of the Covid-19 on the global offline stores, the demand for online consumption is growing, which means that online retail has an unprecedented development. Therefore, the women clothing industry has put much more efforts on the online shops than before. Meanwhile, because the clothing has both psychological and social meanings for consumers, understanding consumers' satisfaction with clothing is more complex than simply finding satisfied garments. However, few studies to date has attempted to investigate multidimensional aspects of consumers' perceptions and evaluations through reviews.

1.1 Previous Studies

In previous relevant studies, some researchers conducted research on clothing consumption of 20 to 40-year-old women, and drew a conclusion through cross-analysis of age and clothing types, evaluation attitude and clothing types(Chen Bao lin (2013) [1]).Some researchers analyzed the influencing factors of e-commerce adoption by consumers grouped by age variables, an obtained the possible influence of E-commerce in consumers' purchase.(Liu Man cheng & Shi Wei xing & Zhang Hua dong (2015) [2]) There are also studies on young consumer groups and clothing size fit, and paper questionnaires are used to measure demographic characteristics and participants' satisfaction or dissatisfaction with clothing fit (Eonyou Shin & Mary Lynn Damhorst (2018) [3]). In previous relevant studies, there are few studies on women's clothing consumers in terms of research objective. Meanwhile, most of the studies on women's clothing consumers focus on the consumer group of young women and ignore the huge demand in middle-aged women. In terms of research methods, most of the researchers adopt the questionnaire survey method to ask relevant directly to find out the consumers' preferences. Few of them analyzed consumer comments texts to find the details that under what circumstances will consumer post negative or positive comments.

1.2 Research Questions

Therefore, our research choose rating as the sign of the consumers' evaluation and our research question is that what are the differences in preferences between different age and how does the age of women impact their rating on clothing they purchased.

RQ1: What are the differences in preferences between different age.

RQ2: How does the age of women impact their rating on clothing they purchased.

This paper will take the online purchase data set of a women's clothing brand store in the United States as the object to observation and research. To respond to above question, the hypothesis we propose is the relationship between the age and rating, precisely, the age might impact the judgement on women's view of a cloth, which establish a significant result.

H1: The age impact the judgement on women's view of a cloth.

As for the paper organization, the first part is abstract and introduction. And the second part will be main body, including research design and findings. Then it comes to the third part where we will give our suggestions on the development about women's clothing.

2 Method

For research design, our research has been separated into three parts, sampling, data analysis, and text analysis. We use the software SPSS to do the data analysis including descriptive analysis, cross-tab analysis and correlation analysis [4]. We use the software LIWC to analyse the reviews that consumers post on the website including positive and negative words analysis and key words analysis [5]. We adapt the research method combining data analysis and text analysis to evaluate and analyze the after-sale feedback of consumers of the women's clothing store with middle-aged women as the main

consuming group. Hope to put forward valuable suggestions for online marketing and development strategies of women's clothing stores [6].

Before we use the SPSS to do the data analysis, the initial motivation was that it seems interesting how merchants apply the feedback to have a better understanding on their targeted audience, and thus that's why the relationship between age and ratings was chosen to be studied. Secondly, as the table below shows, the researchers have noticed that different people rate the same cloth differently, which is also an interesting deriving factor to be studied.

2.1 Data Analysis

The qualitative research focuses on the aspects of age, rating, and clothing categorizations as object of data analysis. For sampling, a total of 4526 samples were rearranged. And the data with incomplete basic information were screened as invalid sample. Within 4525 valid sample, 99% were effective. 1472 cases got selected from the age group 0 to 30, 1555 cases got selected from the age group 31 to 60, and 1498 cases got selected from the 61 plus age group. To increase the validity of the final result, the total numbers of samples in each group were at a similar amount. The specific data analysis for each variable will be described in detail in the following tables and charts.

2.2 Text Analysis

In the section on text analysis using the LIWC, we first extracted the keywords in consumers' reviews text for manual classification into four types including size, service, style/design and quality. Keywords classification was the next step taken. Words such as "big", "small", "fit", "tight" were sorted in the "size group"; Words such as "online", "store" were sorted into the "service group"; Words such as "elegant" "classic" were sorted into the "style/design group"; Words such as "silky", "smooth" were sorted into the "quality group"; And words such as "expensive", "cheap" were sorted into the "price group".

After above work, a custom dictionary named "keywords in reviews" was created, all the keywords were then downloaded into LIWC as samples to form dictionaries, a custom dictionary was created and through this dictionary we can quantized comments for text analysis. So that the attitude of each consumer were easier to be analyzed.

3   Results

3.1 Data Analysis

3.1.1 Age

In order to control for variables, the number of people in each age group is controlled to be roughly the same, The mean value of woman' age was calculated and compared with the quantity and proportion of the three age groups (Table 1).

Table 1. Percentage of woman' age groups

	Frequency	Percent	Cumulative Percent
1.00	1472	32.5	32.5
2.00	1555	34.4	66.9
3.00	1498	33.1	100.0
Total	4525	100.0	

(Table credit: Original)

Table 2. The mean and percentage each rating level take place

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Rating	4525	1	5	4.24	1.096

(Table credit: Original)

Woman age below 30 got sorted in the first group that represents young in general, and woman age between 30 to 60 got sorted into the second group 2 that represents middle age in general, and those who are over 60 got sorted into the third group that contains most of the elders in general.

Among buyers, the average age is 45.44. It can be seen that the main buying crowd of this store is older women. After the classification was done, there is no invalid data after they get processed.

Understand the age group structure of consumers, it is more conductive for shop to launch products and services in line with the needs of consumers' age.

3.1.2 Rating

The mean of rating was calculated, and the percentage each rating level take place was examined. The lowest rating level is 1, and the highest is 5 (Table 2 and Fig. 1).

As shown above, the mean rating is 4.24, which reveals quite a lot of positive feedbacks from the consumers. Within 4525 cases, 3% of the consumers rated 1, 7% of the consumers rated 2, 12% of the consumers rated 3, 20% of the consumers rated 4, and 58% of the consumers rated 5. More than half of consumers left full marks after purchase, with 78% leaving a high rating of 4–5, with only 10% leaving a low rating of 1–2. Hence, the result once again suggests a range of favorable comments.

After-sales ratings are an important factor in evaluating customer feedback, which directly and intuitively convey the buyer's attitude to the product. The rating also provide a reference for buyers to compare shop around. A good rating can increase the potential user's confidence in the purchase of goods and the purchase probability, while promoting the popularity of businesses, forming a good reputation.
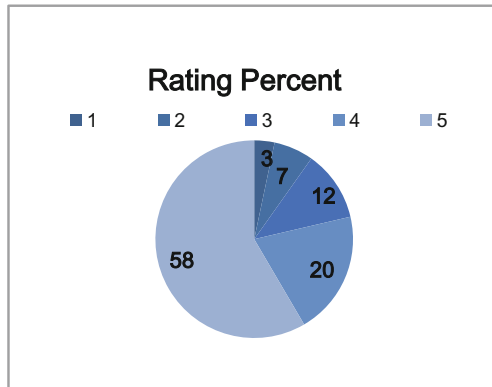
Fig. 1. The mean and percentage each rating level take place. (Photo credit: Original)
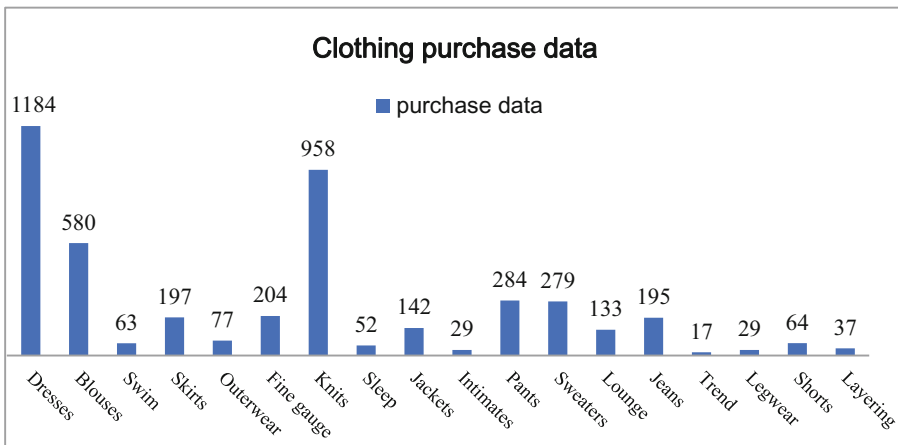

Fig. 2. Numbers of each types of clothing out of a total of 4525 samples. (Photo credit: Original)

3.1.3 Classification of Clothing

In order to analyze the clothing category of the shop, the cloth got classified into 18 groups.

As shown below, the numbers of different types of clothing are analyzed, and the result reveals that dresses and knits are the most popular merchandise, clothing sales figures for swim, outerwear, sleep, intimates, trend, leg wear, shorts and layering are not doing well. In this shop, we can find that the sales differences between the various categories of clothing are still relatively large.

According to the classification of different clothing types, the shop can better understand the popular clothing categories, and eliminate or upgrade the unpopular clothing categories (Fig. 2).

Table 3. The mean and percentage each rating level take place

		Age group						Total	
		1.00		2.00		3.00			
Rating	1	50	33%	51	34%	49	33%	150	100%
	2	94	32%	115	39%	85	29%	294	100%
	3	191	37%	177	34%	154	29%	522	100%
	4	314	34%	324	36%	277	30%	915	100%
	5	823	31%	888	34%	933	35%	2644	100%
Total		1472		1555		1498		4525	

(Table credit: Original)

3.1.4 Cross Tables

Age and Rating After completing the analysis of the individual variables, we combine them for cross-analysis. In Table 3, the columns of the table indicate ratings with the 5 levels, and the rows indicate the three age groups [7].

From the Table 3, it can be examined that the age groups distribution in 5 grades of rating are average and not obvious. You can see that the number of people rated from 1 to 5 increases gradually. 39% of customers who rated 2 were from the second age group, 37% of customers who rated 3 were from the first age group. 35% of customers who rated 5 were from the third age group. Also, after analyzing the comments, female with a younger age tend to be more critical on rating while older women tend to give the highest rating among all age groups. In terms of results, there are 2 possibilities for older women to give higher rating, one is that the clothing store's products and services are more in line with the psychological expectation of older women, the other is that older women are more inclusive when buying clothes online.

Age and Clothing Choice The columns of the table indicate the 18 different types of clothing choices, and the rows indicate the three age groups. Through the cross-analysis of age and clothing category, the age preference data of clothing type can be obtained more clearly (Table 4).

Based on the result, dresses and knits are the most popular items purchased by the consumers. Among them, the first group of youngest women bought dresses, swim, intimates, lounge, leg wear and layering were the most, the second group of middle age women bought skirts, sleep, pants, jeans and shorts were the most, the third group of order women bought blouses, outerwear, fine gauge, knits, jackets, sweaters and trend were the most. We can roughly infer that the group 1 prefers decorative and matching clothing types, the group 2 prefers practical clothing and bottoms, and the group 3 prefers thick clothing and pay attention to warmth.

Table 4. Clothing category and age group Cross tabulation

Clothing category	Age group			Total
	1.00	2.00	3.00	
Dresses	434	399	351	1184
Blouses	176	201	203	580
Swim	38	21	4	63
Skirts	63	78	56	197
Outerwear	22	23	32	77
Fine gauge	54	69	81	204
Knits	301	306	351	958
Sleep	15	20	17	52
Jackets	41	45	56	142
Intimates	16	6	7	29
Pants	83	107	94	284
Sweaters	65	100	114	279
Lounge	46	42	45	133
Jeans	63	85	47	195
Trend	5	3	9	17
Leg wear	13	7	9	29
Shorts	21	31	12	64
Layering	15	12	10	37
Total	1471	1555	1498	4524

(Table credit: Original)

Table 5. Correlations between age and rating

		Rating	Age group
Rating	Pearson Correlation	1	.040**
	Sig. (2-tailed)		.007
	N	4525	4525

**Correlation is significant at the 0.01 level (2-tailed).
(Table credit: Original)

3.1.5 Correlation

From the result of the parameter test in the table, we know that the progressive Sig(2-tailed) value between rating and age group is less than 0.05, accept the null hypothesis,
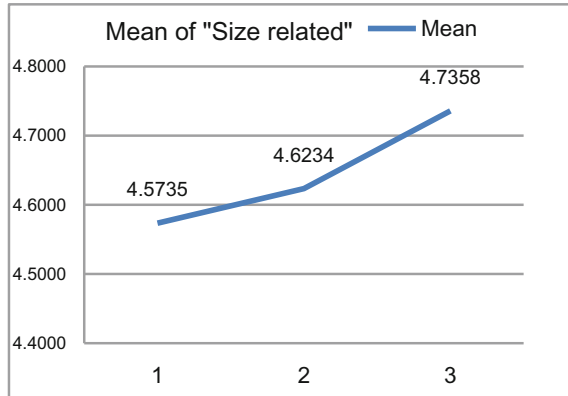
Fig. 3. mean of the frequency that words about sizes appear in the sentences. (Photo credit: Original)

indicating that there is a significant difference between the rating and age group (Table 5).

3.2 Text Analysis

According to our findings during the research and some studies carried by Baolin Chen [1] and Mudambi, and M Susan[2], our research divided the topics in to five categories: (1) size (2) service (3) style (4) quality (5) price [8].

3.2.1 Words About Size

The result shows that the age group 1 talk about sizes 4.57% in average, the age group 2 talk about it 4.62% in average, while the age group 3 talk about sizes 4.74% in average. Hence, it can be concluded that older women are more likely to talk about sizes when they review a piece of clothes they buy (Fig. 3).

3.2.2 Words About Service

The result shows that the age group 1 talk about services 1.43% in average, the age group 2 talk about it 1.44% in average, while the age group 3 talk about services 1.50% in average. Hence, it can be concluded that older women are more likely to talk about services when they review a cloth they buy (Fig. 4).

3.2.3 Words About Style/Design

The result shows that the age group 1 talk about style of the cloth 3.15% in average, the age group 2 talk about it 3.32% in average, while the age group 3 talk about it 3.39% in average. Hence, it can be concluded that older women are more likely to talk about the style when they review a piece of clothes they buy (Fig. 5).
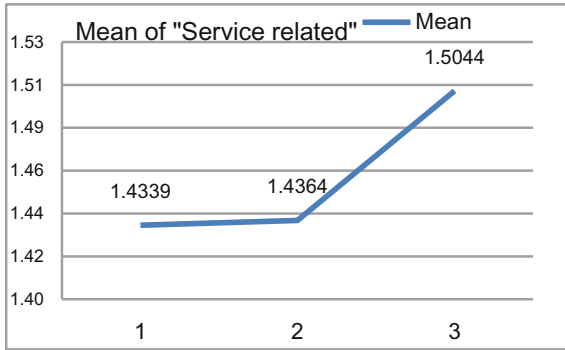
Fig. 4. mean of the frequency that words about service appear in the sentences. (Photo credit: Original)
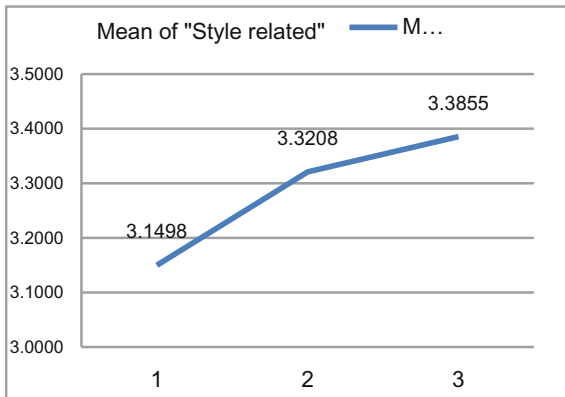

Fig. 5. mean of the frequency that words about style/design appear in the sentences. (Photo credit: Original)

3.2.4   Words About Quality

The result shows that the age group 1 talk about quality 2.61% in average, the age group 2 was alomst identical to the group 1, while the age group 3 talk about sizes 2.86% in average. Hence, it can be concluded that older women are more likely to talk about quality when they review a piece of clothes they buy (Fig. 6).

3.2.5   Words About Price

The result shows that the age group 1 talk about prices related ideas 0.93% in average, the age group 2 talk about it 1.00% in average, while the age group 3 talk about these ideas 1.07% in average. Hence, it can be concluded that older women are also more likely to talk about prices when they review a piece of clothes they buy (Fig. 7).

The average frequencies of words in each related category appearing in comments of different age groups were compared, and this is how these graphs got created. Based
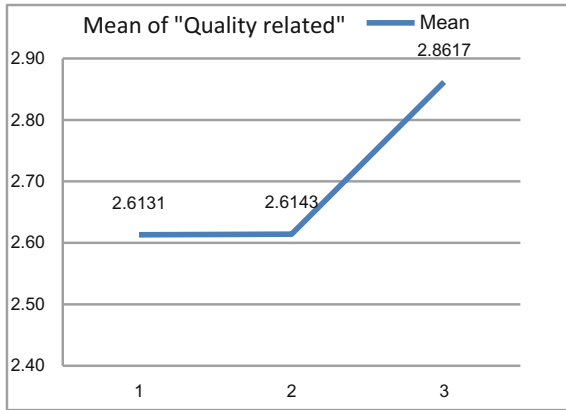
Fig. 6. mean of the frequency that words about quality appear in the sentences. (Photo credit: Original)
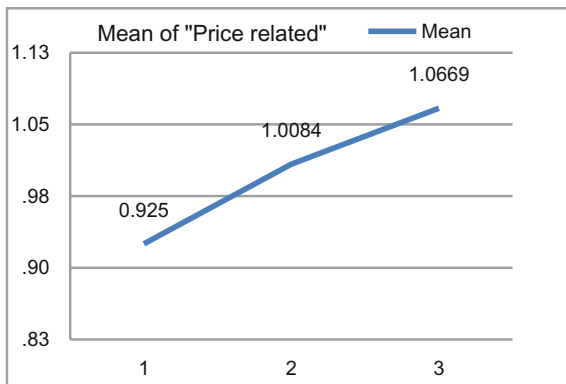

Fig. 7. mean of the frequency that words about price appear in the sentences. (Photo credit: Original)

on the analysis and explanation above, the research question has been answered, which is that the relationship between age and rating is indeed significant as predicted.

Also, after examining some potential factors such as "size","service","style/design","quality", and"price" were some common elements mentioned in woman' reviews. Within all, price affects women's review the least while size affects reviews the most.

Finally, all the above factors have a positive correlation with the age groups, suggesting a strong relationship between age and rating. Within each group, the elders group 3 tent to comment in all aspects in their reviews, in contrast, the younger group 1 commented less on all aspects. We can conclude that older women are more thoughtful about all aspects of buying clothes online. Meanwhile, combined with the possibilities we have analyzed (Table 3). Rating and age group Cross tabulation), older women are more inclusive when buying clothes online. We can draw a conclusion that the age impact

the judgement on women's view of a cloth actually. Therefore, the hypothesis for H1 is valid.

4   Discussion

We also find similar results to some previous studies. A significant relationship between age and results were also found in some studies. For example, in the study done by Chen baoling, she found that women' age affect their attitudes when they buy clothes online. A table about key points that consumers concerned was done by her and show that the size and style are the most essential points. A study carried out by Schewe, 1988 and Schewe and Meredith [9], 1994 referred that as people age, the response of the human body is to change physiologically, showing a number of changes. And when it comes to the research carried by Eonyou Shin&Mary Lynn Damhorts [3], they find a more specific results about young consumers' satisfaction and clothing fit. At first, the quantitative phase was con-ducted using a paper-based survey to measure demographic characteristics and the level to which participants were satisfied/dissatisfied with clothing fit in general. Then, focus group interviews were conducted to explore possible dimensions of consumers' perceptions of fit and gain a deeper understanding of consumers' experiences with and thoughts regarding clothing fit. Finally, they found that both female and male consumers were slightly satisfied with fit in general [10].

5   Conclusion

Overall, our study revealed that there is an important relationship between age and rating in women clothing industry. Besides, among all the five factors that women consumers interest in, the size occupy the most important part in consumers' evaluation.

However, there is still some limitations in our study.

First, the sample is small. We only chose one women clothes shop as our research objective. Therefore, our study has limitations in sample's variety.

Second, we only found the possible factors from our previous experience. There may be some key points that we may miss.

Third, the text analysis was done by computer. It may have some limitations in flexibility for the reason that the computer can only analyze the comments by the words which were set up already before.

Lastly, the shop also have some consumers who are from a younger age group(0–30)and an older group(60 +) and it may affect the results.

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