Analysis on Customer Behavior and Interest in Mining on WeChat Business

Xi Zhang

Department of Business Administration, DaeJeon University, DaeJeon 34520, South Korea

Abstract: In recent years, with the increasing number of WeChat users, a new shopping mode has emerged in the social platform of WeChat, which is what we call WeChat business. It can share goods and publicly display goods information to social friends. Since WeChat's origin is social rather than marketing tools, WeChat business can find user groups and interconnected big data more than traditional e-commerce. However, with the advent of the era of big data, WeChat business has generated huge customer behavior data, and with the strong demand of microbusiness dealers to convert massive amounts of data into useful information, how to dig out users' shopping in huge behavioral data. Interest, and thus the personalized recommendation service in the microbusiness model, is particularly urgent.

Keywords: wechat business; consumer behavior; interest in mining

0 Introduction

Statistics showed that >20 million people conducted WeChat business in China in 2017, approaching 30 million, according to the Development Report of WeChat Business 2017 in China released by Weimob. Its market capitalization stood at 683.58 billion yuan, an increase of 89.5% compared with that in 2016. WeChat business outpaced traditional e-commerce and a wide range of other areas of business. The market capitalization of WeChat business is expected to be about several trillion yuan with the introduction of laws and regulations concerning[1].

WeChat business agencies are in urgent need to recommend user-friendly and targeted services to users with more satisfying shopping experiences by finding out interests of WeChat users among numerous data.

1 Analysis on purchasing behavior of WeChat customers

Purchasing behavior of WeChat customers means data on WeChat customer behavior from selecting goods to completing a deal. This paper initiated a survey on consumption habits of WeChat customers through WeChat. A total of 147 effective responses were collected. Based on these data, the paper counted and analyzed parts of purchasing behavior of these customers.

1.1 Survey and statistics of WeChat customers' basic information

Among those surveyed, male participants accounted for 59.86% while female made up 40.14%. In terms of age group, people aged between 19 and 25 represented 85.71%, the largest portion; those under 18 made up 6.12%; then, those between the ages of 26and 35 and over 18 registered 4.76% and 3.4%, respectively.

It suggested that young groups dominated the age group. There are two reasons behind this. First, the survey is done through WeChat, in which young people represent a larger part. Second, WeChat is a new model of shopping, which appeals to young people most[2].

In conclusion, the survey of WeChat customer behavior through social internet reflects reality, and data collected are to the point. It demonstrates that the results of the questionnaire are effective and useful.

1.2 Varieties of WeChat business

WeChat business, a new type of shopping model as it may be, still shares similarities with traditional e-commerce in that consumers can not feel these goods as it is. However, we can also single out the categories of goods WeChat users show interest in by talking about the rankings of items WeChat users like.

The rankings of goods WeChat users interested in are as follows: Clothing, shoes, and overseas purchase of cosmetics and skin care products lead the ranking. Leisure foods, life necessities (books and other items), and decorations come next. At the end of the list stands slimming, health products, and luxury goods.

However, the analysis shows that there is a great difference between goods provided by WeChat business and those by traditional e-commerce. We have learnt that WeChat users are prone to buy specific, quality goods[3].

1.3 Varieties of goods that spam

Frequent occurrence of goods ads on moments is tiring. In spite of this, we are forced to learn something about these products. At the same time, it discloses shopping hobbies of consumers[4].

On WeChat, as much as 80.95% of goods advertised are cosmetics and skin care products bought overseas, which means ads on cosmetics and skin care products are everywhere, making it difficult to avoid. Clothing and shoes rank second registering 53.74%. 20% of ads are products for losing weight, health, and leisure. Daily necessities and decorations make up about 11% and luxury goods account for only 6.12%.

The study tells that the analysis on goods consumer buy reflects the purchasing orientation to a certain extent. Studies have shown that goods that frequently advertise reflect consumers'purchasing intentions to some extent. For example, cosmetics and skin care products advertise the most, and the people who buy them are the most. Therefore, frequent advertising has a certain impact on consumers'purchasing behavior.

1.4. Ratio of shopping spending by consumers

The share of shopping spending on daily supplies in the whole income can show us consuming ability of consumers. The ratio of shopping online can help us determine which shopping model, online shopping or offline shopping, is more favorite[5]. How people regard WeChat rests on the proportion of online shopping.

We can see that the share of spending on daily necessities in total income remains low. >40% of people spend <10%

of their income on daily expenses, <20% spend 10–20% or 20–40% of their income, and fewer than 5% of people consume 80–100% of their income for shopping. For as many as 24.49% of people, their online shopping accounts for 20–40% of daily shopping. The proportion of shopping online for 23.81% and 21.09% of people stands at 10% and 10–20% of their daily expenses. The share of 15% of people's online shopping in daily shopping is >60%. We can conclude that the share of online shopping in everyday purchase remains low. >46.94% of people have never bought on WeChat, surpassing 45%; as many as, 27.89% of people use <10% of their income in online shopping, which is approaching 30%; <30% of people spend >10% of their income on online shopping. In this sense, we have learnt that shopping on WeChat represents a small portion of online shopping.

The above data indicate that consumers have a long road to go to improve their consuming ability. In other words, there is much room for the growth of WeChat business.

2 Finding out and studying customers shopping interest based on customer behavior data

2.1 Pearson correlation model in the analysis of correlation

Pearson correlation model requires that X and Y should be random variables that follow normal distribution. That means when X is set as a fixed value, the conditional distribution of Y should be normal distribution. Likewise, when Y is set as a fixed value, the conditional distribution of X should follow normal distribution.

Correlation coefficient is defined as follows:

$$r = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 (Y_i - \bar{Y})^2}} = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{n\sigma_X \sigma_Y} 6$$

Where, n is sample size; $\bar{X}$ and $\bar{Y}$ are mean value of variables X and Y, σ_X is the standard deviation of variable X, and σ_Y is the standard deviation of variable Y. Plus and minus sign of correlation coefficient r represents the direction of linear correlation; the absolute value of r means strength of linear correlation; when r is close to 0, it shows that linear correlation does not exist, but nonlinear correlation may exist; when the absolute value of r is approaching 1, it suggests that two variables are linearly dependent.

It is due to sampling error that the r value of two variables X and Y may be larger or smaller. To determine interdependency between the variables, it takes significance

Table 1. Correlative shopping behaviors and significance

	Product customer satisfaction on WeChat		
	Pearson correlation	Significance (two-sided)	*n*
Age distribution	0.165*	0.046	147
Attitudes toward span	0.162*	0.049	147
Spend more on home textiles and cloth made products	0.166*	0.044	147
Frequently visited website (Taobao)	0.171*	0.039	147
Actively seek information on goods to be sold on regular basis	0.163*	0.048	147
Turn to better service supplier when buying tourism service	0.206*	0.012	147
Forward promotion activities	−0.184	0.026	147
Favorite way of payment	0.204	0.013	147
Quick spread of information, multiple varieties, reasonable price, quick return of payment	−0.164*	0.047	147

Table 2. Significance

	Product customer satisfaction WeChat		
	Pearson correlation	Significance (two-sided)	*n*
Online shopping accounts for <10% of daily shopping	0.252**	0.002	147
Buy goods that are just on the market	0.223**	0.007	147
Pay more for similar goods with better service	0.245**	0.003	147
Discount and promotion	−0.217**	0.008	147
Check time that goods are tweeted	0.319**	0.000	147
Whether or not to share goods information	0.219**	0.008	147
Prospects of WeChat business	0.271**	0.001	147

test and practice test. Significance test requires that variables X and Y must conform to normal distribution. In line with statistical hypothesis theory, previously, we assume that population correlation coefficient is 0, that is:

H0:ρ=0
H1:ρ≠0

If H0:ρ=0, it is likely to create statistics t.

$$t = r\sqrt{\frac{n-2}{1-r^2}}$$

Then, we get to test significance of correlation coefficient. n stands as sample size of sampling unit. When absolute value of t is larger than critical value $t_{\alpha/2}$, meaning former assumption H0:ρ=0 is rejected, it indicates that two variables are correlated. It is generally believed that when α=0.05, two variables X and Y are significantly correlated. When α=0.01, significant correlation of X and Y is highly related.

2.2 Correlation analysis of behavior data of WeChat customers and online shopping satisfaction

We use Pearson model to analyze statistical data and select shopping behavior related to shopping satisfaction of WeChat. Then, correlative factors are available in the following tables.

Table 1 shows that the value of α is <0.05 but >0.01, which means that shopping behavior in the table is positively or negatively correlated to product customer satisfaction on WeChat. In particular, the values of Pearson in the item "forward discounts and sales" and "fast spread of information, varieties, reasonable price, and quick return of cost" are both negative, so the two shopping behaviors are negatively correlated to product customer satisfaction. On the contrary, given the fact that Pearson value is positive, other shopping behaviors are positively correlated to product customer satisfaction.

Table 2 suggests that the value of α is <0.01, meaning that shopping behavior is highly positively or negatively correlated to product customer satisfaction. Among these, the item "discounts and sales" is highly negatively correlated to product customer satisfaction. There is highly positive correlation among other shopping behaviors.

In conclusion, a total of 16 shopping behaviors are correlated to product customer satisfaction on WeChat.

Table 3. Final cluster center

	Cluster	
	1	**2**
Age (X1)	2	2
Attitude toward spam (X2)	3	2
More willing to spend more on home textiles and cloth goods (X3)	0	0
Frequently visited website (Taobao) (X4)	1	1
10% the share of online shopping is <10% of total daily expenditure (X5)	4	3
Buy goods that are just on the market (X6)	3	2
Actively seek information on goods to be sold on regular basis (X7)	3	2
Pay more for similar goods with better services (X8)	4	2
Turn to better service suppliers when buying tourism services (X9)	3	2
Discounts and sales (X10)	1	1
Forward promotion activities (X11)	0	0
Check the time that goods are tweeted (X12)	4	3
Whether or not to share goods information (X13)	3	2
Favorite way of payment (X14)	2	2
Quick spread of information, multiple varieties, reasonable price, quick return of payment (X15)	0	1
Prospects of WeChat business (X16)	3	2

Table 4. Final results of fast clustering

Cluster	
1	104
2	43
Valid	147
Missing	0

2.3 Customer cluster based on consumption behavior

Customer cluster based on 16 relevant shopping behavior indexes.

Spss is used to complete fast clustering to get final result and its final cluster centers in the following Table 3.

From Table4 we know that all consumers are divided into two groups,accounting for 71%and 29%of the total number of samples respectively.In the Table4, if probability value Sig. of statistics, F is compared with critical value 0.05, when Sig. $<\alpha$ (=0.05), original assumption HO is invalid. This indicates that there is marked difference among mean values, and correspondent factors matter a lot to observed value. Otherwise, when Sig. $>\alpha$ (=0.05), correspondent factors mean little to observed value. Given the probability value of X1, X2, X3, and X4 is over 0.05 in Table 5, these shopping behaviors make little difference to customer classification, which can be omitted. Table 4 demonstrates the position of final two cluster centers.

We also omit indexes that share the same position with cluster centers.

We have X2, X5, X7, X8, X9, X12, X13, X15, and X16 left after removing X1, X3, X4, X6, X10, X11, and X14.

2.4. How to single out customer shopping interests based on analysis of customer consumption

Here are parts of the classification of customer groups:

We know that the first group of customers dominates the total surveyed in Table 6. The reasons are as follows: (1) Showing negative attitude toward spam, (2) online shopping representing a larger part of daily shopping, (3) actively seeking information that is on the market on regular basis, (4) paying more for similar goods with better service, (5) turning to better service suppliers when buying tourism services, and (6) checking the time that goods are tweeted anytime[6].

In this case, the first group of customers is keen on online shopping and better services but is not optimistic about the status quo and future of WeChat business. These people represent a large group of potential customers. In contrast, the second group of customers, who hold positive attitude, is confident in the prospects of WeChat business and they are our current customers. However, these customers only represent 0.3% of the total consumers compared with current customer cluster which registers 29% of the total[7]. From above analysis, we know that there is ample room for WeChat business and lots of potential customers

	Cluster		Deviation		F	Sig.
	Mean square	df	Mean square	df		
Age (X1)	0.001	1	0.413	145	0.003	0.956
Attitude toward spam (X2)	21.039	1	0.732	145	28.760	0.000
More willing to spend more on home textiles and cloth made products (X3)	0.009	1	0.033	145	0.286	0.594
Frequently visited website (Taobao) (X4)	0.923	1	0.194	145	4.748	0.031
The share of online shopping is <10% of total daily expenditure (X5)	35.605	1	2.226	145	15.993	0.000
Buy goods that are on the market recently (X6)	16.727	1	0.813	145	20.586	0.000
Actively seek information on goods to be sold on regular basis (X7)	53.944	1	0.849	145	63.553	0.000
Pay more for similar goods with better service (X8)	48.491	1	0.706	145	63.826	0.000
Turn to better service suppliers when buying tourism services (X9)	31.395	1	0.767	145	40.912	0.000
Discounts and sales (X10)	0.074	1	0.233	145	0.316	0.575
Forward promotion activities (X11)	0.708	1	0.168	145	4.217	0.042
Check the time that goods are tweeted (X12)	70.526	1	1.046	145	67.396	0.000
Whether or not to share goods information (X13)	28.363	1	1.025	145	27.670	0.000
Favorite way of payment (X14)	0.004	1	1.151	145	0.003	0.956
Quick spread of information multiple varieties, reasonable price, quick return of payment (X15)	4.022	1	0.226	145	17.827	0.000
Prospects of WeChat business (X16)	8.047	1	0.874	145	9.209	0.003

Table 6. Members of cluster

Number of case study	Cluster	Distance
1	1	3.007
2	1	2.242
3	1	3.071
4	1	2.975
5	2	2.350
6	1	2.880
7	1	2.313
8	1	2.044
9	1	2.867
10	2	3.765
11	1	4.577
12	1	2.250
13	1	2.867
14	1	2.100
15	1	1.794

questionnaires on consumption habits of WeChat customers on www.sojump.com. Then, these questionnaires have been sent and collected through may social media. Furthermore, there is a general overview of analysis on customers' behavior and data mining. We find out the laws of consumers' behavior using some of consumer behavior data and studying these data. Last, we employ SPSS to perform correlated analysis on all collected consumers' behavior data. We select shopping behavior that is correlated or highly related to product customer satisfaction on WeChat and classify these customers into two groups to single out their shopping behavior. This paper is crucial for We Chat businesses to recommend customized services for customers and improve shopping experience and satisfaction.

remain there. At the same time, we will focus on quality of commodities, related services, and appropriate way of promotion.

3 Conclusion

We get data of consumers' behavior on WeChat by resorting to numerous references and produce

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