Chinese Rural Consumers' Online Shopping

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Abstract

This study attempts to investigate Chinese rural consumer online expenditures and factors explaining their purchasing decisions. Through a survey of rural consumers in China, we investigate their perceptions and attitudes on online shopping, such as the most often purchased items, reasons of shopping online, the most favorite online store, the most often used payment method, online expenditures, online shopping frequencies, and daily online viewing activities. Our results show that if consumer incomes are mainly from migrant labors or local non-agriculture related small businesses, they will shop online more frequently. If consumers' main monthly expenditures are medical expenses and clothing, they will spend 74 and 57 yuan less per month, respectively, to shop online. The more time consumers spend on online activities, the more frequently they will purchase online, and the more money they will spend on online shopping.

Key words: Expenditure, Online shopping, Rural consumer

Introduction

Online shopping in China has overtaken traditional retail stores to become consumers' most favorite marketplace. During the biggest sales event of online shopping in China − anti-Valentine's day, total gross sales approach to nine billion dollars in both 2014 and 2015. This Alibaba Group introduced event has become the world's largest online shopping day. Many studies show that the business of online retailing targeted toward urban consumers is competitive, and urban consumers' purchasing capacity is approaching its limit. However, little attention has been devoted to understanding rural residents' online shopping behavior. Despite the large gap in disposable income and consumption patterns between China's urban and rural residents often observed in the past, the process of urbanization in rural area has significantly increased the disposable income of rural residents. Rural residents' living conditions have been improved drastically as well as their access of internet. As their urban counterparts, rural consumers have increasing demands for merchandise with more variety and better quality. Compared to traditional retail stores, online retail websites are easier to access, and provide rural consumers with more choices of affordable merchandise. In addition, online retailers can respond to market trends and customers' preferences more effectively and rapidly than traditional retail stores. Therefore, online markets for rural consumers can be more profitable, and may provide retailers with the much needed potential growth in the future.

Our research attempts to investigate Chinese rural consumers' online expenditures and factors explaining their purchasing decisions. It also contributes to the general literature of understanding rural consumers' online shopping. We conducted face-to-face interviews with rural consumers between July and September 2015 in five regions of China including over 20

provinces. Rural consumers are defined by their government issued personal identity card (Hukou). The first section of our survey investigated rural consumers' perceptions and attitudes on online shopping. The section also included questions on consumers' most often purchased items, reasons of shopping online, the most favorite online store, the most used payment method, and comments on any negative experiences. The other section asked respondents' socioeconomic characteristics and their daily online activities.

Statistical summaries show that clothing is rural consumers' most purchased item online. The time-saving aspect, the ease of accessing and browsing, and the variety of merchandise available are the top three reasons to shop online. The Consumer-to-Consumer (C2C) retail website, such as Taobao marketplace, is the most favorite retailer for rural consumers. The most used payment method is the third-party online payment platform. Respondents rate that the unexpected long period of return and refund processes are the worst experience of online shopping. Finally, more than 70% of respondents stated they would continue to shop online in the future.

We employ ordered probit and OLS models to respectively estimate frequencies and expenditures of rural consumers' online shopping as well as factors affecting their decisions. Results show that if consumers' incomes are mainly from migrant labor or local non-agriculture related small businesses, they will shop online more frequently. If consumers' main monthly expenditures are medical expenses and clothing, they will spend 74 and 57 yuan less per month, respectively, to shop online. The more time consumers spend on online activities, the more frequently they will purchase online, and the more money they will spend on online shopping. If consumers consider their budgets are tight, they will reduce their online purchasing in both frequencies and expenditures.

Literature

In earlier research, most studies find that consumer attitudes of the e-commerce as well as information of product and service determine their online shopping decisions (Limayem, Khalifa, and Frini 2000; Teo 2002; Park and Kim 2003; Wu 2003). Li and Zhang (2002) investigate 35 empirical analyses to develop a conceptual model of online shopping. They conclude that there are the five dependent variables mostly used in the study of online shopping including attitude towards online shopping, intention to online shopping, decision making, online purchasing, and consumer satisfaction. They also categorize five groups of independent variables explaining the dependent variables: external environment, demographics, personal characteristics, service or product characteristics, and website quality.

As e-commerce has become a common shopping style in the retail market, numerous of studies start to focus on the effect of website characteristics, purchases of apparel items online and information presentation on consumer online shopping behavior (Hong, Thong, and Tam 2004; Ethier, Hadaya, Talbot, and Cadieux 2006; Seock and Bailey 2007). Lian and Lin (2008) argue that previous studies of online shopping ignore product types. They find that innovativeness of information technology, perceived Web security, personal privacy concerns, and product involvement all affect consumer acceptance of online shopping, but the effects varied across different types of product and service. In addition, Liu, He, Gao and Xie (2008) examine factors affecting Chinese customers' online shopping satisfaction, and these factors include information quality, web site design, merchandise attributes, transaction capability, security/privacy, payment, delivery, and customer service. Their results show that all factors mentioned above are strongly predictive of online shopping customer satisfaction.

However, none of studies has explicitly investigated Chinese rural consumer online shopping. Customer preferences between rural and urban areas are different from each other due to their income gaps, culture differences, geographic locations, and living styles. Studies and conclusions without specifying the target group may lead retailers to conduct failing marketing strategies to the rural market. In addition, the internet technology has grown rapidly, and the e-commerce has become more accepted by the rural residents. Previous policy implications and marketing strategies in the early stage cannot be applied in the Chinese rural market today. Therefore, our research aims to contribute to the general literature of understanding rural consumer online shopping.

Survey and Data

We conducted face-to-face interviews with rural consumers between July and September 2015 in five regions of China including north, northeast, south, west and the central region, in over 20 provinces. Rural consumers are defined by their government issued personal identity card (Hukou). The response rate is about 50%, and there are 493 valid observations after excluding observations without answering all key questions. These key questions in our survey consist of consumers' frequencies and average expenditures of online shopping. One section of our survey asked respondents' socioeconomic characteristics and their daily online activities. Another section of the survey investigated rural consumers' perceptions and attitudes on online shopping.

Table 1 shows the statistical summary of demographic information. The summary shows that most of respondent incomes are from migrant labors and other jobs. In "other jobs", about 62 respondents state that they are students without income or they are currently sponsored by their

family members. As a result, we put these 62 respondents to the no income group. In our survey, financial conditions of respondents are not very strong but are nevertheless not atypical for Chinese rural residents. A total of 61.3% of respondents report that their monthly incomes are below ¥ 2000[1]; 76.5% of respondents state that their monthly living expenses range from ¥ 500 to 2000 Yuan. Furthermore, we find that about 30% of respondents' monthly expenditures exceed their monthly incomes. Unsurprisingly, a later question find that a total of 75.5% of respondents consider themselves as not wealthy (normal, poor or very poor). Finally, main monthly expenses of respondents reported include living expenses, and internet and wireless fees. All of above findings imply that most of rural respondents may not be well off in terms of their financial conditions, but they are still willing to enjoy online activities.

Although most of respondents realize that their budgets are rather tight, their average online expenditures per month are about ¥ 200.[2] Table 2 shows the frequency of rural consumer online shopping. A total of 44% of respondents shop online at least once a week to a month, and 12% of consumers shop online at least once a week. Figure 1 shows about 47% of respondents would spend above 2 hours per day on online activities, and a total of 80% of respondents will spend above 1 hour online per day. Figure 2 specifies main online activities of our respondents: watching movie and TV series, and listening to music, while about 27% of respondents use the internet particularly for shopping.

In addition to the online shopping behaviors, our survey also asks questions about perceptions and attitudes on online shopping including consumers' most often purchased items, reasons of shopping online, their most favorite online stores, and the most used payment method. Figure 3

[1] The symbol ¥ represents the Chinese currency. At the time of study, ¥1 is equal to roughly USD 0.16.
[2] We rescale category responses of online expenditures into cash values, and then we summarize the mean of the online expenditures. The rescaled values are summarized in Table 3.

displays that in our survey, the three most purchased items online are clothing, transportation fees, and wireless prepaid cards; and the three least purchased items are agricultural related items, items related to kids, and jewelries and watches. Figure 4 summarizes the reasons why rural consumers would like to shop online. The top three reasons include: (1) the time-saving aspect; (2) the ease of accessing and browsing; (3) the variety of merchandise available. In opposite, the three least important reasons include: (1) better quality; (2) advertisement from online retailers; and (3) shopping for friends and relatives. Figures 5 and 6 show that the most favorite online retailers are C2C retail website such as Taobao, and the most used payment method is the third party payment tool such as Alipay. The Alipay and the Taobao website both belong to the Alibaba group, and implies that Alibaba group has a strong market influence on rural consumers in China. Finally, respondents rate that the unexpected long period of return and refund processes are the worst experience of online shopping. More than 70% of respondents stated they would continue to shop online in the future.

Model

The dependent variables are obtained from key questions in our survey including consumers' frequencies of online shopping and their average online expenditures.

Our empirical model is grounded from the latent variable method to explain frequencies of rural consumers' online shopping. y^* is an unobserved utility determining consumer shopping decisions, and can be written as follows:

$$y^* = X'\beta + \varepsilon$$

where X is a vector of observed variables in individual utility function; β is the coefficient vector associate with variables X; ε is the $i.i.d.$ random variable with zero mean. y is an observed

consumer behavior - frequencies of online shopping. In our survey, the shopping frequency is an ordered variable which ranges from 0 to 4 indicating never shopped online before, at least once a season to a year, at least once a month to a season, at least once a week to a month, and at least once a week, respectively. The observed shopping frequency is determined by the unobserved utility y^*, such as,

$$\begin{array}{ll} y = 0 & if \;\; y^* \leq \mu_1 \\ y = 1 & if \;\; \mu_1 \leq y^* \leq \mu_2 \\ y = 2 & if \;\; \mu_2 \leq y^* \leq \mu_3 \\ y = 3 & if \;\; \mu_3 \leq y^* \leq \mu_4 \\ y = 4 & if \;\; \mu_4 \leq y^* \end{array}$$

where μ's are unknown parameters to be estimated with β. Following Greene (2007), we can derive the probability of online shopping frequencies as follows:

$$\text{Prob}(y = 0|X) = \Phi(\mu_1 - X'\beta)$$

$$\text{Prob}(y = 1|X) = \Phi(\mu_2 - X'\beta) - \Phi(\mu_1 - X'\beta)$$

$$\text{Prob}(y = 2|X) = \Phi(\mu_3 - X'\beta) - \Phi(\mu_2 - X'\beta)$$

$$\text{Prob}(y = 3|X) = \Phi(\mu_4 - X'\beta) - \Phi(\mu_3 - X'\beta)$$

$$\text{Prob}(y = 4|X) = 1 - \Phi(\mu_4 - X'\beta)$$

Therefore, we model online shopping frequencies using an ordered probit model. The independent variables include demographic characteristics, financial characteristics, and online characteristics.

Demographic characteristics include age, education, gender, and regions where the consumers live. Financial characteristics include income sources, income levels, expense levels, main

expenses, budget levels, and their financial conditions − whether respondents' expenses exceed their incomes. Online characteristics include time spent online per day, and main online activities.

The second part of empirical model is to investigate factors affecting rural consumers' online expenditures. The dependent variable is the consumer online expenditure per month. The expenditure data are categorical values representing six ranges, and are summarized in Table 1. In order to improve coefficient interpretation, we convert expenditure categories into continuous values by using the midpoint of each corresponding category. Since the dependent variable is converted to continuous values, our study uses OLS regression to explain rural consumer online expenditures. The independent variables are the same as the frequency model. In addition, variables such as income and expense levels are also converted to continuous variable for the interpretation, and are summarized in Table 3.

Empirical Result

Table 4 reports results of the ordered probit model for frequencies of rural consumer online shopping. Results in demographic characteristics show that younger consumers are more likely to shop online, and consumers with higher education are less frequent to shop online. However, no evidence is found that genders are related to shopping frequencies.

For financial characteristics, income sources and budget levels affect rural consumer online shopping frequencies. Results show that if consumers' incomes are mainly from migrant labors or local non-agriculture related small businesses, they will shop online more frequently. If respondents consider their budgets are tight, they will shop online less frequently.

For online characteristics, online time and activities all impact rural consumer online shopping frequencies. To be specific, if consumers spend more time on the internet per day, they are more

likely to shop online. Furthermore, if respondents browse the internet for reading news or game, they are less frequent to shop online.

Table 5 shows results of OLS regression for rural consumer online expenditures. Holding other factors constant, on average, the woman spends 42 yuan more per month than the man, and consumers located at the north region spend 42 yuan less per month than the ones in the middle region.

For financial characteristics, monthly income and expense levels, monthly main expenses, budget levels, and financial conditions all play a role in rural consumer online expenditures. Holding other factors constant, on average, if monthly incomes of rural consumers increase 1000 yuan, their online expenditures per month are predicted to increase 17 yuan; if respondent monthly expenses increase 1000 yuan, they would like to shop 78 yuan more online. If consumer monthly main expenses are medical expenses and clothing, they will spend, on average, 74 and 57 yuan less per month, respectively, to shop online. If rural consumer expenses exceed their incomes per month, on average, they spend 75 yuan less for online shopping.

For online characteristics, online time and online activities have significant effects on rural consumers' online shopping. Holding other factors constant, the more time consumers spend on online, and the more money they will spend on online shopping. If respondents browse the internet for movie, TV or music, and for online game, they will spend, on average, 72 and 61 yuan less per month to shop online, respectively.

Conclusion

This paper explores Chinese rural consumer online expenditures and the factors explaining their purchasing frequencies. A face-to-face survey to Chinese rural consumers was conducted

between July and September 2015 in five regions including north, northeast, south, west and the central region across 20 provinces.

The survey includes two parts. The first part is to investigate respondent socioeconomic characteristics and their daily online activities. The second part is to examine their perceptions and attitudes on online shopping. Statistical summaries show that clothing is rural consumers' most purchased item. The time-saving aspect, the ease of accessing and browsing, and the variety of merchandise available are the top three reasons to shop online. The most used payment method is the third-party online payment platform. Respondents rated that the unexpected long period of return and refund processes are the worst experience of online shopping.

We also use the OLS and the ordered probit models to respectively estimate factors affecting rural consumer online expenditures as well as factors affecting their shopping frequencies. Results show that if consumer incomes are mainly from migrant labors or local non-agriculture related small businesses, they will shop online more frequently. If consumer main monthly expenditures are medical expenses and clothing, they will spend 74 and 57 yuan less per month, respectively, to shop online. The more time consumers spend on online activities, the more frequently they will purchase online, and the more money they will spend on online shopping. If consumers consider their budgets are tight, they will reduce their online purchasing in both frequencies and expenditures.

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Table

Table 1 Sample Characteristics Statistical Summary (N=493)

Variable		Numbers	Percentage
Male		218	44.22%
Age	Below 18	32	6.49%
	18 -24	276	55.98%
	25 -30	58	11.76%
	31-40	57	11.56%
	41-50	59	11.97%
	Above 50	11	2.23%
Education	College or above college	267	54.16%
	High school or professional school	122	24.75%
	Middle school	88	17.85%
	Primary school	16	3.25%
	No school	0	0.00%
Region	East area	133	26.98%
	Central area	233	47.26%
	West area	95	19.27%
	Northeast area	19	3.85%
	Others	13	2.64%
Income sources	Crop	55	11.16%
	Livestock	13	2.64%
	Local non-agriculture related small businesses	60	12.17%
	Migrant labor	106	21.50%
	Other	224	45.44%
Monthly income level (Yuan)	Below 1000	180	36.51%
	1000-2000	122	24.75%
	2000-3000	86	17.44%
	3000-5000	67	13.59%
	5000-10000	28	5.68%
	Above 10000	10	2.03%
Monthly living expense (Yuan)	Below 500	74	15.01%
	500-1000	230	46.65%
	1000-2000	147	29.82%
	2000-3000	34	6.90%
	3000-5000	6	1.22%
	Above 5000	2	0.41%
Consider his/her budget is tight	Very wealthy	8	1.62%
	Wealthy	113	22.92%
	Standard	304	61.66%
	Poor	50	10.14%

	Very poor	18	3.65%
Online expenditure per Month (Yuan)	Below 100	147	29.82%
	100-200	202	40.97%
	200-500	106	21.50%
	500-1000	26	5.27%
	1000-1500	10	2.03%
	Above 1500	2	0.41%
Monthly Main Expense (Multi-choices)	Living expense	380	77.08%
	Medical cost	75	15.21%
	Education	146	29.61%
	Cloth	146	29.61%
	Wireless fees	213	43.20%
	Entertainment	146	29.61%
	Other	33	6.69%
Whether have smartphone or computer (=1)		469	95.13%
	Very familiar	100	20.28%
Familiar with smartphone or computer	Familiar	243	49.29%
	Normal	116	23.53%
	Not familiar	30	6.09%
	Don't know how to use	4	0.81%
Learning to use the internet is a hard thing	Very easy	83	16.84%
	Easy	226	45.84%
	Normal	142	28.80%
	Hard	35	7.10%
	Very hard	7	1.42%
Time spent online per day	Above 2 hours	232	47.06%
	1 - 2 hours	157	31.85%
	0.5 to 1 hours	45	9.13%
	Occasional	50	10.14%
	Never	9	1.83%
Reason for using the internet (Multi-choices)	Reading	220	44.62%
	Learning	130	26.37%
	Movie, TV series, or music	320	64.91%
	Game	102	20.69%
	Shopping	135	27.38%
	Communicating	196	39.76%
	Other	23	4.67%

* A total of 13 respondents do not answer where they are living. We recoded the missing region as other regions. We conducted the empirical analysis with other regions but will not report and explain the result of other regions.

Table 2 Distribution of Online Shopping Frequency (N=493)

Online Shopping Frequency	Category Order	Numbers of Observation	Percentage
Never	0	5	1.01%
Online shopping at least once a season to a year	1	76	15.42%
Online shopping at least once a month to a season	2	135	27.38%
Online shopping at least once a week to a month	3	217	44.02%
Online shopping at least once a week	4	60	12.17%
Summary			
Mean	2.51		
Standard deviation	0.93		

Table 3 Rescaled Categorical Variables

Variable Category	Rescaled Value	Frequency
Online expenditure (Yuan)		
Below 100	33.3	147
100 – 200	150	202
200 – 500	350	106
500 – 1000	750	26
1000 – 1500	1250	10
Above 1500	2000	2
Monthly Income (Yuan)		
Below 1000	333	180
1000 – 2000	1500	122
2000 – 3000	250	86
3000 – 5000	4000	67
5000 – 10000	7500	28
Above 10000	16667	10
Monthly Expense (Yuan)		
Below 500	167	74
500 – 1000	750	230
1000 – 2000	1500	147
2000 – 3000	2500	34
3000 – 5000	4000	6
Above 5000	8333	2

Table 4 Ordered Probit Model for Frequency of Rural Consumer Online Shopping

	Coefficient	Standard Error
Demographic characteristics:		
Age	-0.1214**	0.0518
Education	-0.1442**	0.0739
Male	-0.0325	0.1147
East region (= 1)	0.0761	0.1241
West region (= 1)	-0.0713	0.1434
Northeast region (= 1)	0.7817***	0.2804
Financial characteristics		
Main income from livestock (= 1)	0.3711	0.3333
Main income from migrant labor work (= 1)	0.3206*	0.1714
Main income from small business (= 1)	0.4435**	0.2012
No income	-0.0586	0.2037
Main income from other sources (= 1)	0.2828*	0.1612
Income level	0.0000	0.0000
Expense level	0.0001	0.0001
Own cellphone or computer (= 1)	0.4365	0.3111
Main expenses are medical costs (= 1)	-0.0041	0.1563
Main expenses are education (= 1)	-0.0751	0.1210
Main expenses are clothing (= 1)	0.1740	0.1191
Main expenses are wireless fees (= 1)	-0.1479	0.1076
Main expenses are entertainment and leisure (= 1)	0.0728	0.1235
Main expenses are others (= 1)	0.0096	0.2255
Consider his/her budget is tight	-0.2547***	0.0752
Whether expense exceeds his/her income (= 1)	0.0080	0.1423
Online characteristics		
Online time per day (category level, ascending order)	0.2649***	0.0565
Reasons for online: Reading (= 1)	-0.2391**	0.1131
Reasons for online: Learning (= 1)	-0.0263	0.1264
Reasons for online: Movie, music and TV series (= 1)	-0.1104	0.1156
Reasons for online: Game (= 1)	-0.2209*	0.1332
Reasons for online: Shopping (= 1)	0.3785***	0.1255
Reasons for online: Chatting (=1)	0.0913	0.1145
Other reasons (=1)	0.2053	0.2664
μ_1	-2.2882	0.6234
μ_2	-0.6893	0.5989
μ_3	0.3042	0.5958
μ_4	1.8478	0.6026

Standard errors in parentheses; *, **, and *** imply significant at the 10%, 5%, and 1% significance levels, respectively.

Table 5 OLS Regression for Rural Consumer Online Expenditure

	Coefficient	Standard Error
Demographic characteristics		
Age	3.347092	10.61903
Education	6.786615	15.11394
Male	-42.08768*	23.4857
North region (= 1)	-42.35281*	25.30517
West region (= 1)	5.860408	29.39276
Northeast region (= 1)	-76.09904	54.8131
Financial characteristics		
Main income from livestock (= 1)	-13.61064	67.8122
Main income from migrant labor work (= 1)	45.53309	35.20428
Main income from small business (= 1)	-46.2531	41.14668
No income = if they stated that they are students or their Income are sponsored by their family (= 1)	-1.840522	41.98555
Main income from other sources (= 1)	27.48505	33.14818
Income level	0.0171662***	0.00479
Expense level	0.0784683***	0.014611
Own cellphone or computer (= 1)	26.24356	63.33585
Main expenses are medical costs (= 1)	-74.39219**	31.95887
Main expenses are education (= 1)	24.44222	24.75776
Main expenses are clothing (= 1)	-57.87473**	24.30523
Main expenses are wireless fees (= 1)	4.39279	21.98669
Main expenses are entertainment and leisure (= 1)	7.700397	25.18871
Main expenses are others (= 1)	78.53681*	46.06563
Consider his/her budget is tight (from feel very wealthy Small order to feel very poor in ascending order)	-31.25467**	15.32039
Whether the expense exceeds his/her income (= 1)	-75.18767***	29.06299
Online characteristics		
Online time per day (category level, ascending order)	49.51218***	11.43175
Reasons for online: Reading (= 1)	-24.14697	23.12217
Reasons for online: Learning (= 1)	24.63666	25.85513
Reasons for online: Movie, music and TV series (= 1)	-72.45333***	23.68171
Reasons for online: Game (= 1)	-61.17326**	27.13173
Reasons for online: shopping (= 1)	111.6915	25.45592
Reasons for online: chatting (=1)	17.14555	23.40891
Other reasons (=1)	-126.8018**	53.93605
Constant	25.20316	122.6932

Standard errors in parentheses; *, **, and *** imply significant at the 10%, 5%, and 1% significance levels, respectively.

Figures

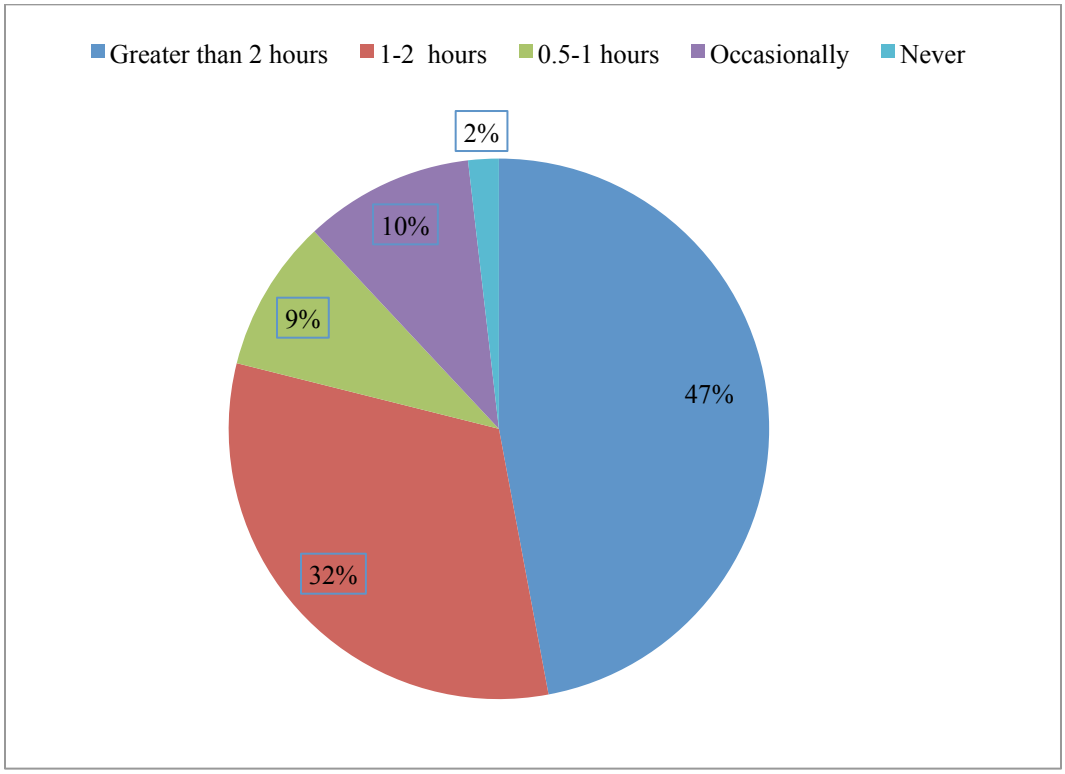

Figure 1. Hours Spent Online Daily

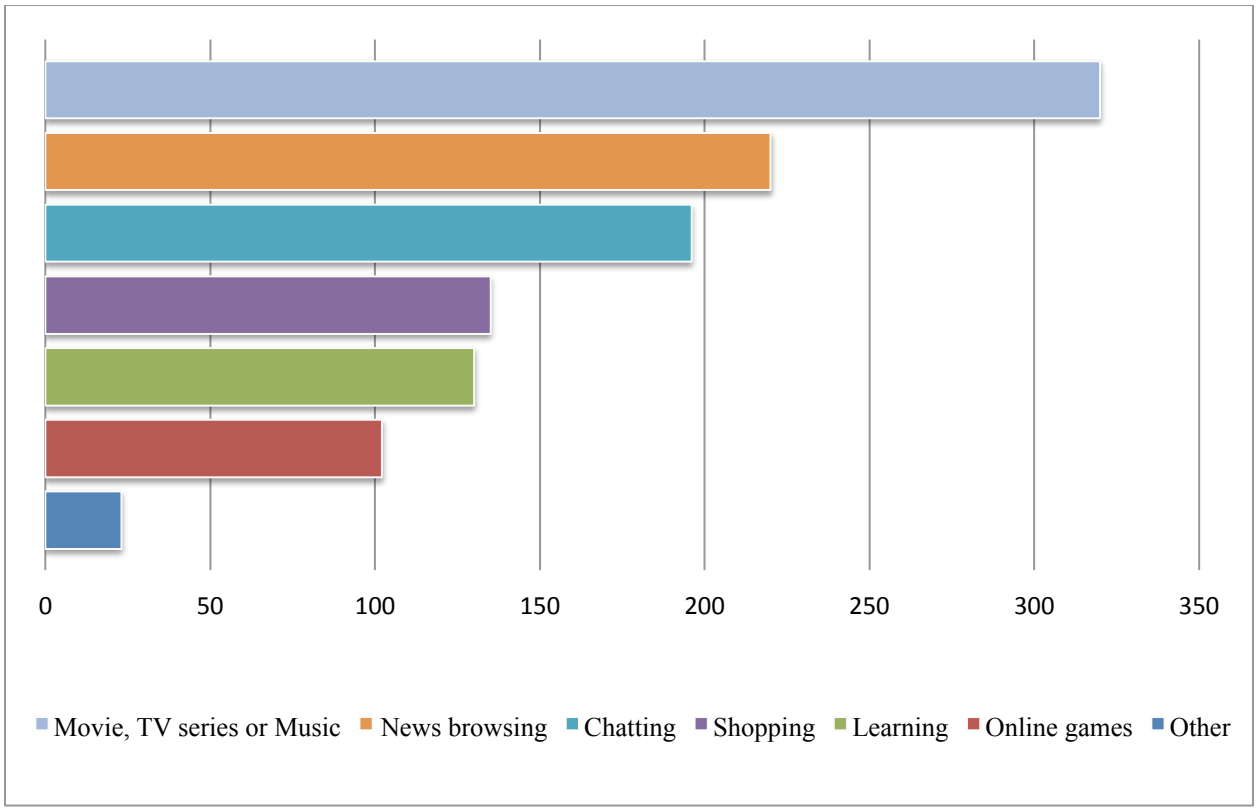

Figure 2 Main Online Activities

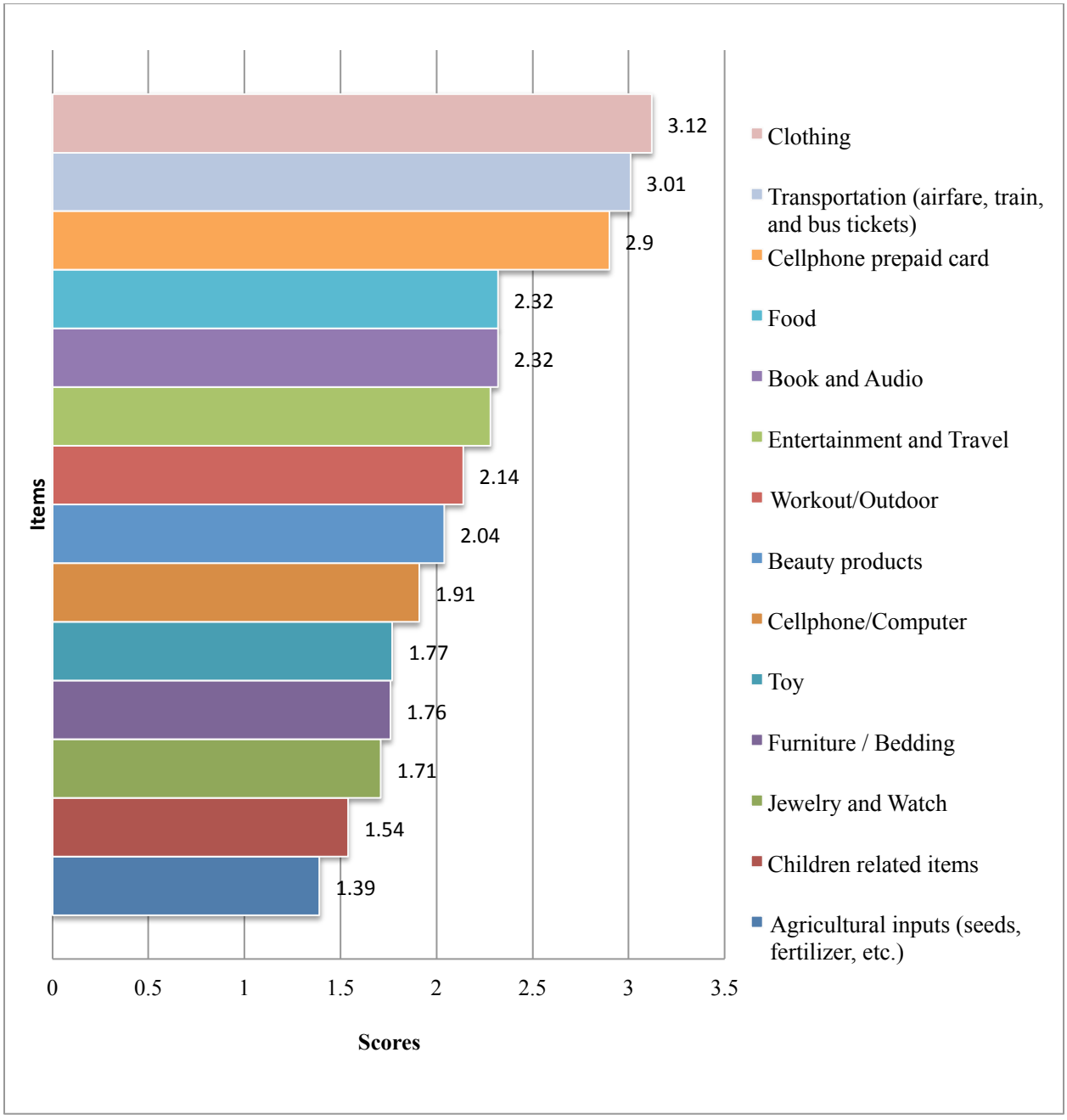

Figure 3 Preferred Items to Purchase Online

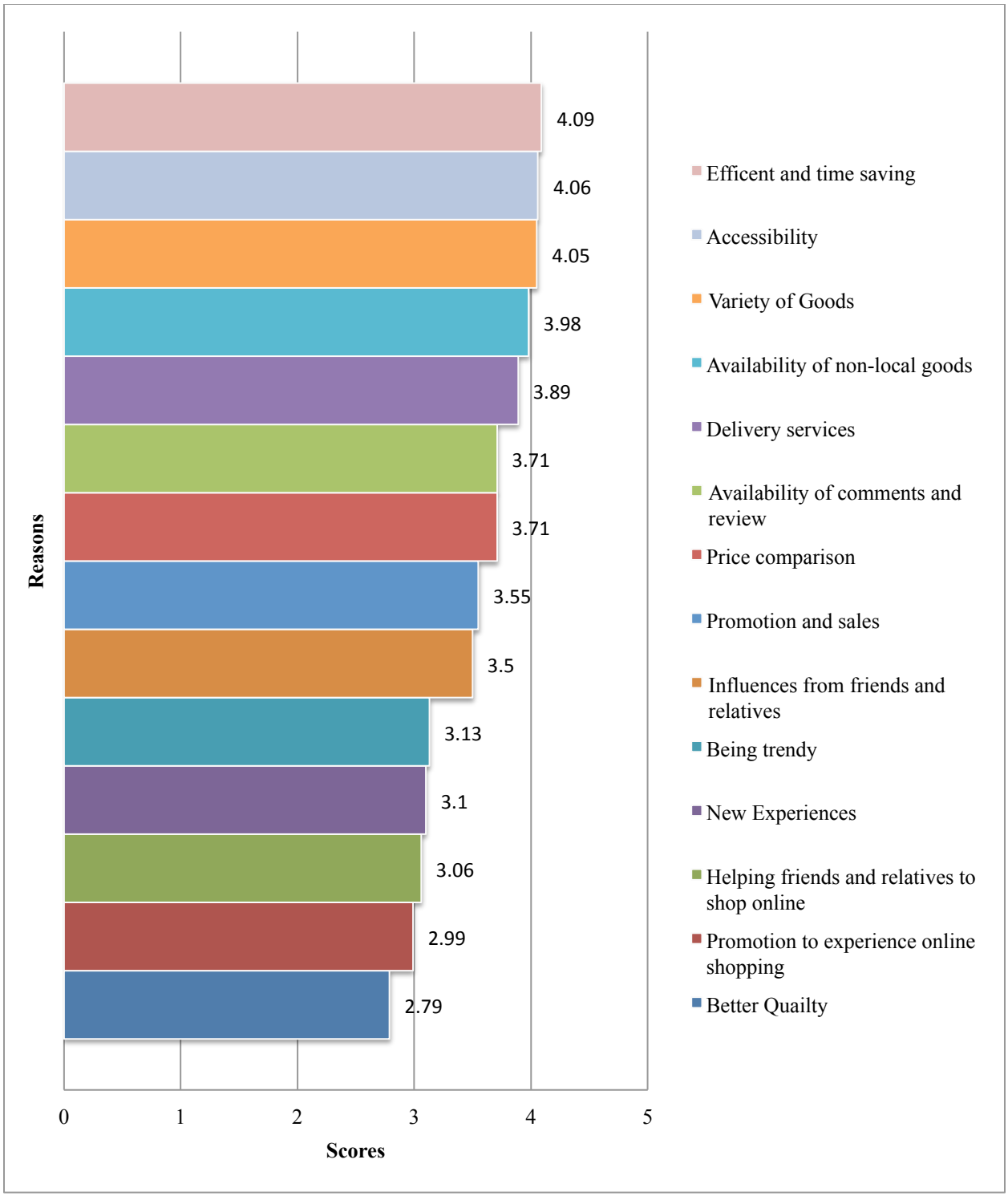

Figure 4 Reasons for Online Shopping

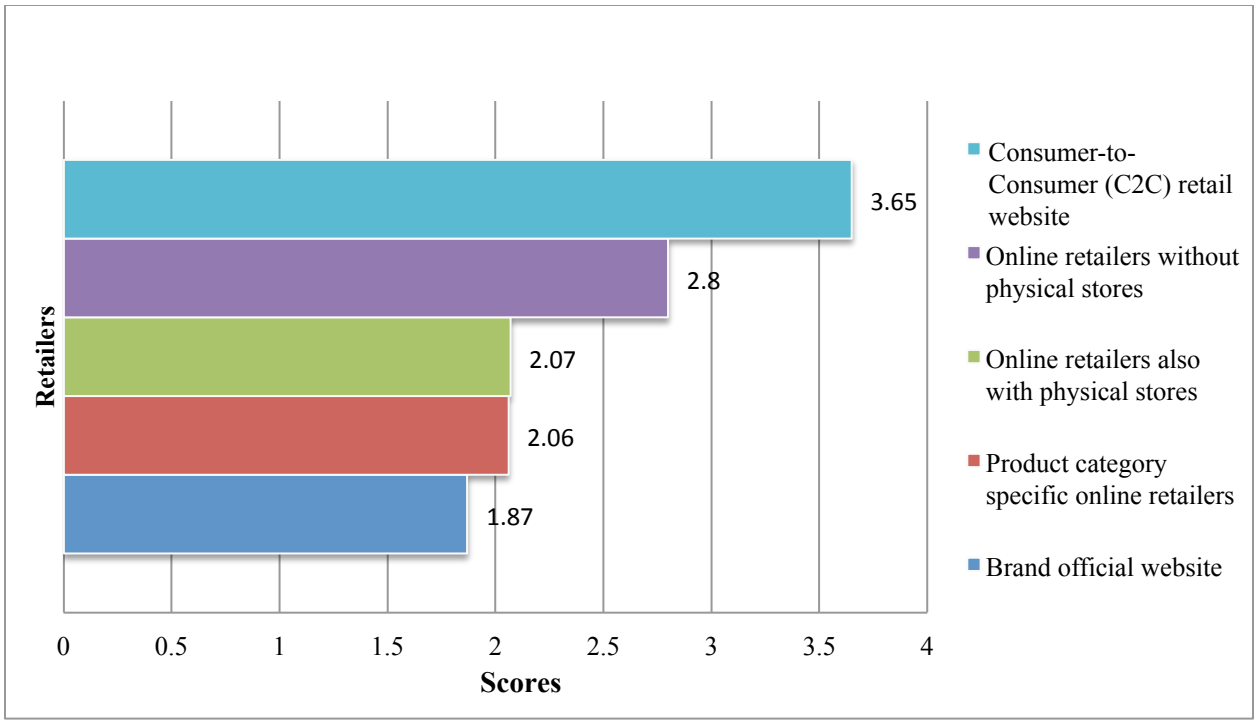

Figure 5 Preferred Retailers of Online Shopping

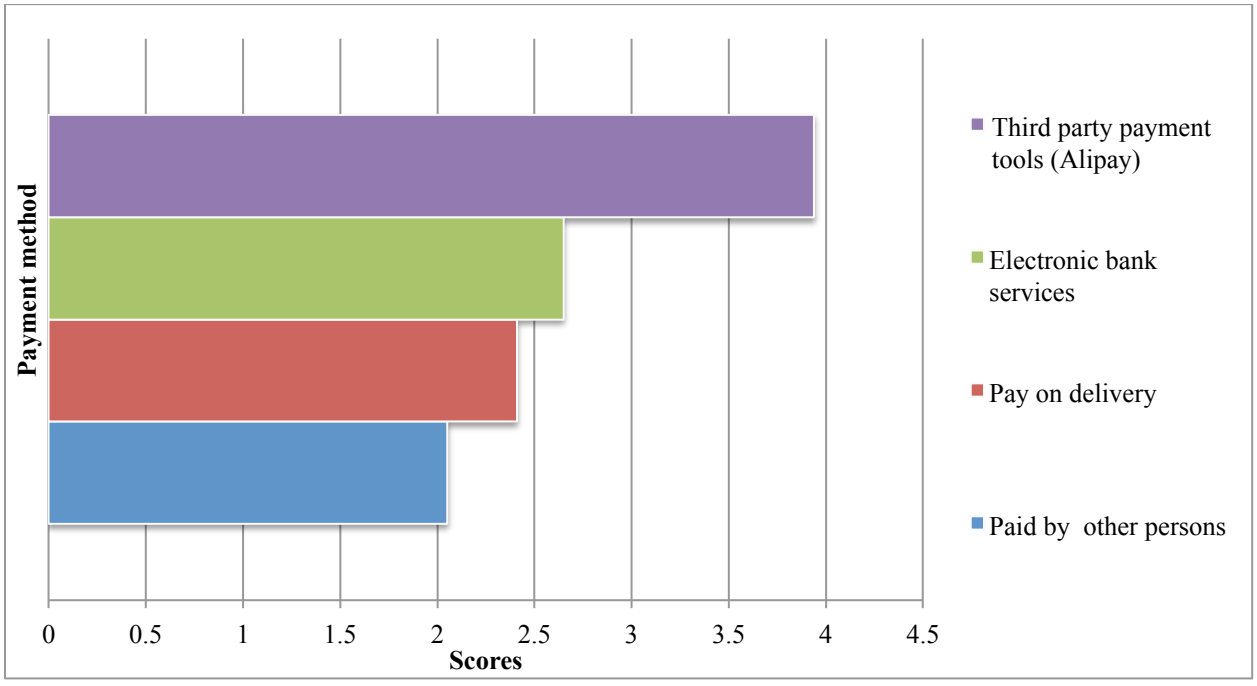

Figure 6 Preferred Payment Method for Online Shopping