ISSN: 2710-0170

Investigation and Research on the Current Situation and Development Path of Community Group Buying in Rural Areas from the Perspective of "Rural Revitalization" Strategy

-- Taking Bengbu City, Anhui Province as an Example

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Abstract

In February 2021, the "National Rural Revitalization Bureau" was officially launched, which indicates that the fight against poverty has won a comprehensive victory, and the comprehensive implementation of "rural revitalization" has become the general focus of the "three rural" work in the new era. With the development of the rural community group buying mode, it has also become a new way to help, benefit and rejuvenate agriculture under the background of "rural revitalization". Many places sell farmers' own products through community group buying platforms to achieve poverty alleviation and rural revitalization. With the overall promotion and development of "rural revitalization", the rural consumer market is changing rapidly. Nowadays, community group buying in many first tier and second tier cities has become increasingly competitive with the help of capital. In contrast, most rural areas are still in the initial stage. In combination with the consumption habits of rural residents, consumption pain points and the demand of production side and demand side connection, we found that the rural community group buying has a high degree of fit with the rural consumer market. With the market sinking and the introduction of a series of inclusive policies, the promotion and use of community group buying in rural areas will receive more help. Rural community group buying is becoming a new direction and new force to revitalize rural development. It has broad prospects and is worth looking forward to. In this regard, this paper starts with the investigation and research on the current situation and development path of group buying in rural communities of Bengbu City, collects relevant data, visits the cooperative points of group buying in rural communities, effectively combines various analysis methods such as statistics and machine learning, deeply discusses the development of group buying in rural communities under the perspective of the "rural revitalization" strategy, and analyzes the adaptability of the rural consumer market of group buying in rural communities. Dialyze the development of the industry, insight into the future trend, put forward strategic suggestions for the healthy development of the rural community group buying market, promote the development of the industry, drive economic growth, and benefit the people's livelihood.

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Keywords

Rural Vitalization; Machine Learning; Supply Side; Community Group Buying in Rural Areas.

1. Introduction

Since the outbreak of COVID-19, the community group buying platform has relied on new Internet technologies and emerging logistics systems to optimize the development path of traditional e-commerce, and further improve the supply chain of agricultural products. individual needs. This also enables community group buying to flow up to first-tier cities and sink to 18th-tier townships. However, looking at the moment, the competition of community group buying in many first- and second-tier cities is intensifying with the help of capital, while in rural areas, most of them are still in the initial stage.

As the development of community group buying in rural areas gradually attracts attention, rural community group buying is becoming a new way of helping, benefiting and revitalizing agriculture under the background of "rural revitalization". Therefore, it is particularly necessary to investigate the current situation and development path of community group buying in rural areas of Bengbu City from the perspective of the "rural revitalization" strategy.

In contrast, in recent years, scholars at home and abroad have carried out research on community group buying in many directions, but rural areas are often neglected due to regional issues, and in this context, research on the strategy of “rural revitalization”, which is an emerging topic, is rare. By revealing the positive significance of rural community group buying combined with the "rural revitalization" strategy, this paper gradually explores an effective way to support this model, and strives to provide reliable reality and theory for the practice of combining the development of the rural community group buying industry with the "rural revitalization" strategy. Based on this, it will provide good experience support for the follow-up development of community group buying in the vast rural areas.

2. Literature Review

Regarding the research on the development of community group buying in rural areas, scholar Chen Yongqing (2020) [1] believes that the rural consumption environment is relatively closed, and the consumer circle shows the "acquaintance economy" characteristic of word-of-mouth. Under the "acquaintance economy" model, people show the behavioral characteristics of following the trend, which fully fits with the marketing model of community group buying. Scholar Chu Yuanyuan (2021) [2] believes that the field of community group buying in rural areas is still in the initial stage, and the consumer demand and consumption potential of this sinking market need to be developed. It is not difficult to see that most of the domestic scholars' research only focuses on "community group buying" or "rural revitalization strategy", while there are few studies on the development, how to develop, and development suggestions of community group buying in rural areas based on the "rural revitalization" strategy. The literature on the group buying industry of rural communities in a region is even rarer.

Scholar Demirgüç (2008) [3] pointed out that most developing countries have financial exclusion in the eyes of rural areas, and the development of commerce and trade in rural areas is restricted by many factors; scholar Mohammad Alamgir Hossain (2021) [4] believes that as the online group buying business is increasingly facing fierce competition To compete, it is crucial to understand the beliefs, attitudes and behaviors of its customers. The research of such scholars in this field is more concerned with the rural consumer market and the analysis of customer behaviors and attitudes, while less research has been done on the development of the "community group buying" model in rural areas.

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3. Source and Processing of Data

3.1. Pre-investigation

Based on the results of previous field investigation and data mining, combined with the content of this project, we have made a pre-investigation questionnaire for related issues. The questionnaire mainly includes the following aspects[5]:

1. Collect various basic information of rural residents in Bengbu City, including gender, age, education level, occupation, monthly income, monthly consumption amount, etc. Fully explore the differences caused by factors such as gender, age, income, and education level on the status quo of community group buying and the status quo of consumer behavior.

2. From the perspective of Bengbu residents, collect the influencing factors and consumption situation of rural residents in Bengbu on the use of community group buying, including the level of understanding of community group buying, preference for choosing to use community group buying, and the most commonly used platforms for community group buying , community group buying satisfaction, etc.

3. To collect the opinions and willingness of rural residents in Bengbu City on the use of community group buying platforms, as well as their expectations for the future development trend of Bengbu rural community group buying platforms, and give some reasonable suggestions.

3.2. Sampling Design

The research object of this survey is the rural residents of Bengbu City. The reasons why we choose the rural residents of Bengbu City as the research object of this survey are as follows:

1. As the "Jianghuai Pearl", Bengbu City itself has a certain representativeness, and according to the "National Statistical Yearbook", the consumption level of Bengbu City residents is also in a moderate position, which can represent a general meaning.

2. The object is not limited to a specific rural area, but is aimed at rural residents of all ages in the city, which is more scientific and practical.

According to the results of the pre-questionnaire, we take the residents' satisfaction with community group purchases in Anhui Province as the main estimation object, so the overall sample variance of rural residents' satisfaction with group purchases in rural communities in the city is extracted as a general sample variance. Calculate the optimal sample size. This gives a value of 1.96 at a 95% confidence interval. The overall sample proportion of residents who are satisfied with community group purchases in the province is an absolute allowable error. According to the pre-survey results, the optimal sample size is about 760. Considering that some residents may abandon the questionnaire halfway when filling out the questionnaire online, after synthesizing the opinions of the instructor and relevant investigators, and assuming that the invalid ratio is 20%, the actual number of samples distributed should be about 20%. for 950 copies.

3.3. Formal Investigation

1. Discrimination test

After collecting and sorting out the returned formal questionnaires, we used the t-test method to test, the theoretical principle is the same as above. The specific table of t-test results is shown in the appendix. The results show that the t-values of each question in the questionnaire are all significant (in the state of $p < 0.05$), that is, the settings of the questions and their options in the questionnaire have passed the discrimination test. It shows that each question design in the scale has a good degree of discrimination and discrimination.

2. Reliability test

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Table 1. Overall reliability test of formal survey

Reliability statistics	
Cronbach`s Alpha	Nofltems
.807	31

For the formal questionnaire, in order to test the accuracy and reliability of the data results obtained by the designed questionnaire under repeated use, reliability analysis is still carried out. Firstly, SPSS was used to test the overall reliability of the questionnaire, and the results of the Cronbach coefficient test are shown in Table 7. Among them, Cronbach's Alpha=0.807, which is greater than 0.8, indicating that the design of the questionnaire structure and item options is scientific and reasonable, and the overall consistency of the questionnaire is very high.

4. Analysis of the Status Quo of Community Group Buying Cognition and Use based on Descriptive Statistics

A total of 983 questionnaires were distributed in this survey plan. The rural areas of Bengbu City were taken as the overall survey and were divided into three regions, Bengnan, Bengzhong and Bengbei in turn according to their geographic locations. All samples were divided into three regions according to the double stratified sampling. distribute. . In the end, a total of 127 invalid questionnaires were put forward, and 856 valid samples were obtained, with an effective rate of 87.08%. According to the content of the questionnaire and the data results, the team conducted a descriptive analysis on the cognition and use of group buying in the residents' communities in Anhui Province.

4.1. Basic Information

Among the 856 valid samples recovered in this survey, there are 434 female samples, accounting for about 50.70%, and 422 male samples, accounting for about 49.30%. The ratio of male to female is relatively balanced, approximately 1:1; The proportion of people under 18 years old is about 4%, the proportion of people aged 18-30 is about 29%, the proportion of people aged 31-50 is about 56%, and the proportion of people over 50 years old is about 11%. The data shows that in this questionnaire survey, people aged 18-30 and 31-50 account for the highest proportions, while those under 18 and over 50 account for a smaller proportion; among all the survey respondents, the highest proportion of education level is college junior college. /Undergraduate, the lowest proportion of education is the master's degree and above, of which 96 people have a junior high school education or below, 204 people have a high school/ secondary school/vocational school education, and 468 people have a college/undergraduate degree, master's degree and the above is 88 people; the occupational distribution of all the surveyed subjects is shown in Figure 18. Students account for about 14%, housewives account for about 21%, retired account for about 16%, and office workers account for about 28%, freelancers account for about 10%, self-employed/contractors account for about 10%, and 1% are other occupations, and the occupational distribution is diverse.

4.2. Cognitive Situation

In the actual survey sample, 79.91% of people have heard of and used community group buying, and the remaining 20.09% said they have never used community group buying. Among the sample groups who have used community group purchases, 32.39% of the samples have used community group purchases 3-6 times in the past month, and 29.72% of the samples have used community group purchases more than 6 times in the past month, which also shows that

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today's community group purchases More or less in people's field of vision, most people have been exposed to community group buying in the process of life.

More than 49% of all surveyed residents have an average understanding of community group buying, about 40% per capita have little or relatively little understanding of community group buying, only 8.39% have a complete understanding of community group buying, and 2.11% of people have no understanding of community group buying at all. It can be seen that most residents have some awareness of community group buying, but the overall awareness still needs to be improved.

In the survey of residents' understanding of community group buying channels, they learned that the channels are diversified, and the proportion of each channel is not very different. Online media advertising promotion, offline physical activity promotion and in-shopping platform recommendation are the main ways for people to understand community group buying. The proportion is about 25%, and the proportion of community group buying is about 14% through the reposting in the circle of friends and the recommendation of relatives and friends, and about 5% of the people know about the community group buying through other methods, so the residents want to know about the community group buying. There are still many channels available.

4.3. Correlation Analysis of Basic Information and Cognitive Usage

We know that there are differences in the willingness of gender to use, so we guess that there are also differences in the cognitive situation of age and community group buying. It can be seen that the P value of 0.000 is much smaller than the given significance level of 0.05, which can indicate that the two are related to each other, that is, there is a certain correlation between user age and cognitive situation.

Table 2. Chi-square test (age and cognition of community group buying)

	value	frequency	Progressive significance (two-sided)
Pearson's chi-square	10.250[a]	12	.594
Likelihood ratio	10.702	12	.555
Linear association	.132	1	.716
Number of valid cases	730	-	-

Table 3. The results of the correlation coefficient between age and cognitive status

project		value	Approximate value Sig.
by scalar	Φ	0.332	0.000
	Cramer'V	0.309	0.000
	Dependency coefficient	0.136	0.000
N in a valid case		520	—

Table 4. Chi-square test (income and cognition of community group buying)

	Community group buying willingness	income
Chi-square	2.986[a]	19.447[b]
frequency	2	3
asymptotic significance	.225	.000

ISSN: 2710-0170

According to the results of the chi-square test in the table above, when α = 0.05, since the P value of the chi-square test = 0.000 < 0.05, the null hypothesis is rejected, and it is believed that the income and the cognition of community group buying are not independent and there is a correlation.

Table 5. Contingency Analysis of Income and Cognitive Contingency of Community Group Buying

		revenue				total
		Below 5000 yuan	5000-7500 yuan	7500-10000 yuan	More than 10,000 yuan	
Cognitive situation	know very well	22	57	33	22	134
	more understanding	62	81	140	44	327
	generally	56	100	95	8	259
	do not know much	17	23	21	14	75
	Not at all	28	17	9	7	61
total		185	278	298	95	856

According to the above table, it is concluded that the two types of middle-income groups with 5,000-7,500 yuan and 7,500-10,000 yuan have a significantly higher awareness of community group buying than the other two types. Combined with the current social situation, middle-income groups have a higher awareness of community group buying. The use of shopping patterns is more, and the level of recognition and awareness is relatively higher.

5. Research on the Development Prospect of Community Group Buying

5.1. LDA Topic Model Analysis [6]

Different from the traditional text form, the content of online comments is diverse. These differences are reflected in the different lengths of comments, paragraph forms, punctuation marks, emoticons and Internet terms, etc. These languages often cannot accurately reflect the emotional tendencies of comments, which in turn has an adverse impact on the selection of subsequent topics. Therefore, we first use Python to filter the collected data, and use HowNet's Open-Source Sentiment Dictionary (HOWNET) and Dalian University of Technology's sentiment dictionary to merge and reuse for sentiment analysis.

LDA is an unsupervised machine learning technique that can be used to identify topical information latent in large-scale document sets or corpora. It is a document topic generation model, also known as a three-layer Bayesian probability model, which includes a three-layer structure of words, topics and documents. The so-called topic generation means: we think that each word of a document is obtained through a process of "the article selects a topic with a certain probability, and selects a word from this topic with a certain probability".

Since the LDA model manually determines the number of topics, after constant attempts and corrections, the final number of topics is finally determined. From the LDA visualization in the figure below, when we choose the number of topics to be 4, the words in multiple topics overlap, and we further increase the number of topics to 6, and the overlap is effectively improved.

5.2. Market Forecast of Community Group Buying Mode based on ARIMA Model

After analyzing the research on the development of community group buying, a new retail prospect, from the comments of the three major traffic websites, this section uses the ARIMA model to predict the future market of community group buying in my country.

1. Selection of variables

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Community group buying is the intersection of community retail and fresh food e-commerce. It is a consumption state between online consumption and offline consumption. It relies on both the Internet platform and the offline community. Considering that the development trend of community group buying can be directly reflected by its market size, similarly, the input cost, transaction volume, the number of community group buying stores, the number of user groups and other data are important factors affecting the development of community group buying. After screening, we selected the amount of community group purchase financing (100 million yuan) and the number of users (100 million people) in each quarter of 2013-2021 to predict the market size of community group purchases.

2. Model calculation process

(1) Model identification

After the second-order difference, the autocorrelation function (ACF) and partial autocorrelation function (PACF) of the market size of community group buying in my country (2013-2021) are shown below. The analysis shows that the ACF is tailing decay, and the PACF lags two periods of truncation, the model can be initially identified as an ARIMA(2,2,0) model, and then the model parameters can be estimated.

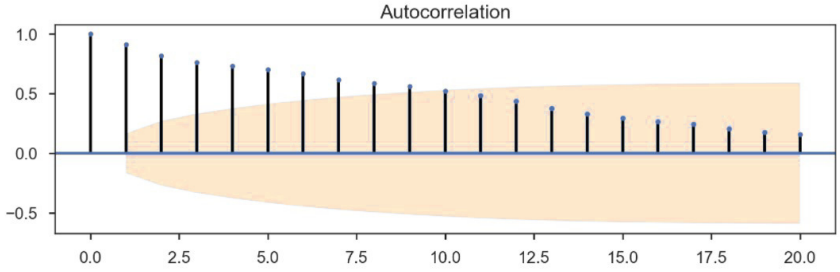


Figure 1. Autocorrelation function plot

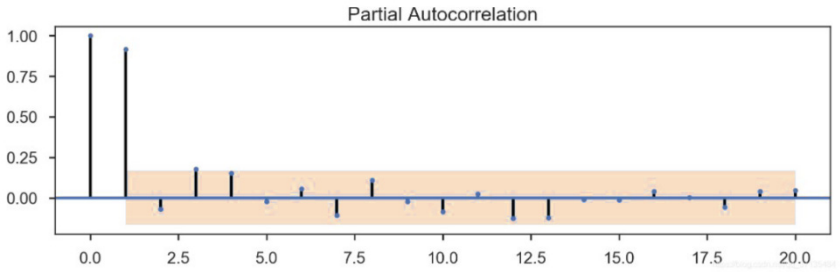


Figure 2. Partial Autocorrelation Function Plot

According to the ARIMA(2,2,0) model parameter table, the available model formula is:

$$y_t = 3.237 + 0.361y_{t-1} + 0.626y_{t-2} \quad (1)$$

(2) Model diagnosis

For the obtained model, we need to further optimize it reasonably. In this section, we decide to perform a white noise test on the above ARIMA (2,2,0) model, and judge the model by judging the P value of the autocorrelation statistic Pass our white noise test. If the P value of the autocorrelation coefficient statistic is less than 0.05, it is considered that it does not pass the white noise test, and the model needs further optimization; if the P value of the autocorrelation coefficient statistic is not less than 0.05, the model passes the white noise test. The P values in the table are all far greater than 0.05, so the model passes the white noise test, and the fitting effect is better.

The autoregressive model ARIMA model is used to detect the autocorrelation and non-stationarity of the residuals. At the same time, for the prediction of the market size of

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community group purchases, because the autoregressive model fails to eliminate the residual autocorrelation, the ARIMA (2,2,0) model is finally passed. Make corrections. And compare the actual observed value with the predicted value of the above model. Overall, the residual values are in a small range, indicating that the model can be used for short-term forecasting.

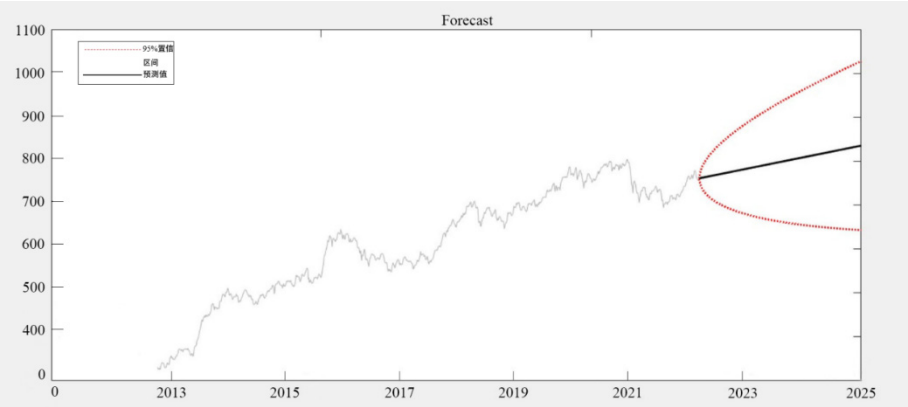


Figure 3. Community group buying market size forecast

With the advancement of social science, the number of Internet users will continue to increase, and the new retail model of Internet + retail such as community group buying and offline distribution will be used by more and more people. The epidemic has seriously affected people's daily life, and the community group buying model has helped people solve their daily shopping problems. In recent years, it has developed rapidly. According to data forecasts, it will maintain an annual growth rate of 7.5% in the next few years, with a relatively large development. potential.

6. Conclusion and Recommendations

6.1. Research Conclusion

For the analysis of the influencing factors of residents choosing community group buying, when the education level is junior high school and below, the proportion of willing to choose community group buying is the lowest, which is 36.31%. The proportion of choosing community group buying is obviously greater than 50.0%, and the variable of education level has a significant positive effect on whether residents are willing to choose community group buying; with the increase of income level, the proportion willing to choose community group buying continues to increase, and those who are willing to choose community group buying The proportion shows a downward trend. The monthly income variable has a significant positive effect on whether residents are willing to choose community group purchases; when the distance between the residential areas is relatively close to the urban area, residents are more willing to choose community group purchases, while relatively speaking, people in county and rural areas are willing to choose community group purchases. The willingness to choose community group buying is lower than that of urban residents. The distance of residence relative to urban area has a significant positive effect on whether residents are willing to choose community group buying.

Analysis of the influencing factors of residents' preference for community group purchases, we used the random forest algorithm to study the relationship between residents' preference for community group purchases and age, gender, occupation, education, and income. We found that in addition to occupation, among the four factors of gender, monthly income, age and educational level, residents' willingness to choose community group buying has a higher relationship with residents' age, educational level, and monthly income; The degree of

ISSN: 2710-0170

willingness is less correlated with the gender of residents. By observing the comparison chart of the weight coefficients of each occupation when building a random forest, it can be seen that in all occupations, whether residents are office workers has a strong correlation with their willingness to choose community group purchases. Compared with other professional office workers, they are more willing to choose community group buying.

6.2. Research Recommendations

For the government, the construction of laws and regulations should be standardized, law enforcement measures should be strictly enforced, and the construction of administrative laws and regulations related to community group buying should be improved to lay a legal foundation for the stable operation of the market; in addition, clarifying the boundaries of law enforcement, reducing the pressure of supervision, and clarifying the main body of supervision will be conducive to the effective supervision of supervision. Implementation; urge the platform to consciously and actively cooperate with relevant departments in the supervision of monopoly, illegal competition and other behaviors, explore the supervision mode of the platform economy, strengthen the technical support for the supervision of the platform economy, and improve the supervision efficiency.

For enterprises, we need to take a long-term view. Don't just bow your head and pick up "sixpence" for yourself. Technological innovation is more worth looking forward to; focus on regional deep cultivation, and through continuous iterative upgrades, comprehensively improve platform services, strengthen product focus, and promote differentiated marketing. ; Strengthen resource management and control, and do a good job in the supply process.

For the community, it is necessary to improve the management of goods and protect the rights and interests of consumers; optimize the user experience, and at the same time, the head of the group can use preferential measures to enable users to use the circle of friends to mobilize more new users to join, focus on social fission, broaden new paths for customer acquisition, and obtain more favored by many customers. This social fission promotion method can effectively reduce marketing costs and improve user stickiness, which is a new way to expand customer acquisition.

For individuals, they should enhance their awareness of rights protection, dare to expose bad and illegal acts that affect the market order and destroy consumer experience, so as to ensure that their rights and interests can be protected; beware of personal information leakage, security risks exist everywhere; give timely evaluation feedback, get more updates Good consumer experience.

Acknowledgments

This project was funded by Undergraduate Innovation and Entrepreneurship Training Program of Anhui University of Finance and Economics (Project number: 202210378187), the ownership of the research results belongs to Anhui University of Finance and Economics.

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