

# An Empirical Research of Consumer Behavior in Online Pay-for-Knowledge for Chinese College Students

Shujie Chen  
School of Economics and  
Management  
Harbin Institute of Technology  
Shenzhen, China

Zonghao Liu  
School of Economics and  
Management  
Harbin Institute of Technology  
Shenzhen, China

Regina Fangying Lin  
School of Economics and  
Management  
Harbin Institute of Technology  
Shenzhen, China

**Abstract**—In the information age, people learn more and more from internet by knowledge sharing. Zhihu-Live is a commercial application that applied the idea of Pay-for-knowledge in recent years. University students are one of the representative and typical users and it is meaningful to research the evolution process. This paper applied two stage questionnaire to investigate on-line knowledge shopping behavior of college students. The empirical results show that the users do not entirely rely on the innovative way of knowledge learning in real life. Furthermore, it may helpful to analyze users' browsing habits by big data algorithms and provide better customized service in the future.

**Keywords**—online pay-for-knowledge, consumer behavior, personalized service, Zhihu-live

## I. RESEARCH BACKGROUND AND MOTIVATION

In recent years, Internet trend is experiencing rapid development from free-of-charge to payment mode. Around 2016, the emergence of some pay-for-knowledge applications (such as Zhihu-live, Himalaya FM, Fenda, Douban time) brought intense discussion. According to Tencent report, the change from free-to-payment experienced three stages. In first stage, before 2010, most Internet applications were for free. Many knowledge-sharing platforms are published in this period, so people can share their knowledge and experience more quickly and broadly. In second stage, payment mode began to emerge. For example, there were some sharing platforms or communities (such as Douban, Baidu zhidao, Baidu baike, Guokr). Knowledge sharing as an International random behavior began to change to commercial behavior. In third stage, after 2006, payment mode turned to charging mode, and new mobile application appeared on the Internet almost every month. Since there is no exact definition for this mode in previous research, after summarizing some characteristics of similar products, this research make a

**Corresponding Author:** Regina Fangying Lin, School of Economics and Management, Harbin Institute of Technology, Shenzhen, China.

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definition, which is “Internet personalized pay-for-knowledge mode”.

This payment mode is a recent rising mode and there are few researches about personalized pay-for -knowledge mode. Related reports only care about the data and they only show the superficial phenomenon of how application users' number changed and how the consumers transform their attitude toward this. They neglect the reasons behind the phenomenon and the specific characteristics of knowledge sharing in this period. This research will try to explain why this mode developed quickly using the factors of information age, knowledge-based economy, UGC and dissemination of knowledge.

Previous research mainly focused on all users rather than any specific group. As college students are the typical group who are eager to obtain knowledge and can adopt new applications easier than other users, so they are one of the main targeted group of these application and their attitudes play an important role in how this mode will develop. To fill up this vacancy, this research mainly focused on college student group. Firstly, we carry the first stage survey about how much college students learn about this mode. Then, we investigate their evaluation after using it. Finally, we make conclusions.

## II. LITERATURE REVIEW

From the view of economy, management and communication sciences, research uses following factors to explain why this mode becomes popular. First of all, cognitive surplus. Clay Shirik (2011) put forward a concept named cognitive surplus in his book *Cognitive Surplus: creativity and generosity in a connected age* [2]. It points out that people who get well educated and have power to control spare time tend to have strong inventive to share their ideas. When the free time controlled by different people is gathered together, it can cause knowledge spill-over. Nowadays, the development of social software facilities cooperation among people, so more and more people spend their spare time on creating behavior rather than only consumption. Moreover increasing well-educated people are willing to join the group to share their knowledge.

Second, the development of UGC. UGC stands for User Generated Content, generating with the concept ‘Web2.0’ which promotes individuation. In UGC mode, users are not only browsers to search Internet content, but also the producers of Internet content. For the past of few years, UGC technology became more mature so that people can control and identify ‘fake information’ [3]. Third, the conformity with new media. New media has some features: digitization, fragmentation of communication context, the quick spread of speaking right, the mode of We-Media [4]. Under this mode, most platforms mainly provide short lessons, according with users’ fragmenting reading habits. The information in platform is produced by users’ rather than traditional celebrities or online celebrities. Overall, *pay-for-knowledge mode* conforms to the features of new media.

Last but not least, the conformity conforms to consumption concept. Consumption in knowledge economy tends to be more emotional and personal [5]. Under the background of knowledge economy, consumers show more interested in personalized products, getting a feeling of ‘individuality’ through consumption or service. Moreover, ‘convenience’ is an unavoidable trend. People pursuit more efficient and more time-saving consumption. In pay-for-knowledge mode, users can get more personalized learning experience by choosing a variety of content, and knowledge decorated by others can also bring huge convenience to users.

Based on research on knowledge economy, pay-for-knowledge mode, information consumption and various of data, this research focuses on college students and compare college students’ consumption characteristic and overall people’s. We introduce some variable, such as perceived value, consciousness of innovation and perceived enjoyment, to forecast the attitude of college students toward the personalized pay-for-knowledge mode. This research takes Zhuhu-Live as example and takes two-round questionnaire surveys to prove our hypothesis. Finally, this research gives some realistic advices.

### III. THE FIRST STAGE QUESTIONNAIRE AND RESEARCH HYPOTHESIS

Because of lack of previous paper, this research uses an exploration way to make hypothesis. Therefore, based on related study and our purpose, this research took the first questionnaire survey targeting college students. Group received valid 184 pieces of feedback in the first survey, including 156 from undergraduates and 28 from postgraduates or 119 from male and 65 from female.

First, from the view of consumption, this research wants to find out whether the pay-for-knowledge mode is suitable for college students. If so, does it tend to be an application for learning or entertainment? And from the view of supply, what adjustment can developer make to cast the demand of college students? According to data from China Youth News, 63.9% of interviewees are support to pay for knowledge and 73.9% of them are willing to pay

for an answer to solve a question [6]. According to Tencent’s survey, around 40% of users agree that pay-for-content mode is the trend about how we receive knowledge, and 25% of users express their hesitation [7].

Comparing our data from those data, research group can make two conclusions: (1) according to figure 1 and 2, the pay-for-knowledge mode is not popular in college students group and many students have no direct impression on it because they do not learn it deeply. (2) From figure 3, research group can summarize that the attitude from interviewees who ever used it before interview is better than attitudes from who never use it. Therefore, the first hypothesis is that college students tend to have more positive attitude toward this mode after using it.

Secondly, in the study of the factors that affect the willingness to adopt online subscription-based course, research found that perceived value significantly increased the users’ willingness to adopt online subscription-based course --that is, the more useful information the user considers to be valuable to him or the more it can satisfy his particular purpose, or how much entertainment the content you consume can bring to you. Meanwhile, perceived value has the greatest effect on the willingness to adopt. After summing up the content of Zhihu-live, this study finds that much content is related to the life of college students, such as the guidance for the future employment of a specific major, the language learning and advice on the choice of study abroad and many courses that are closely related to the interests of college students: travelling, fitness, literature, photography, etc. If the quality of these courses conforms to the psychological expectations of college students, it can bring entertainment to college students, so there must be a high demand for these courses among college students. Therefore, our team make the second hypothesis: perceived value makes college students more willing to spend compared with the total consumer population.

Finally, in the study of the factors affecting the willingness to adopt online subscription-based course, Ouyang Yingquan (2014) found that perceived expense has a significant negative impact on the willingness to adopt online learning payment [8]. However, from the perspective of path coefficient, the effect of perceived cost is smaller than that of perceived entertainment and perceived usefulness. Because college students can have less money, consumption concept is more rational and more purposeful. Therefore, college students should be more sensitive to cost than total consumers, and have a narrow price acceptance range. Therefore, the third hypothesis of this study is perceived expense has more significant negative effect on college students’ consumption willingness.

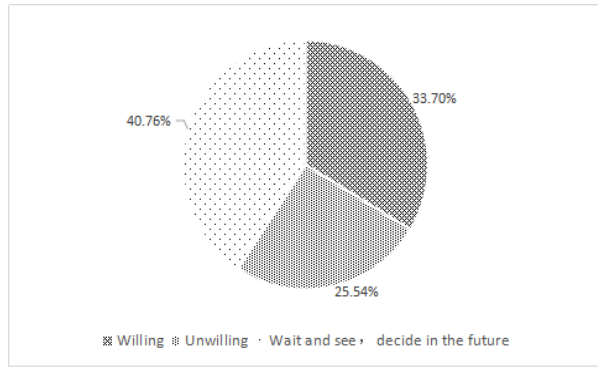


Fig. 1. Willingness to pay for content

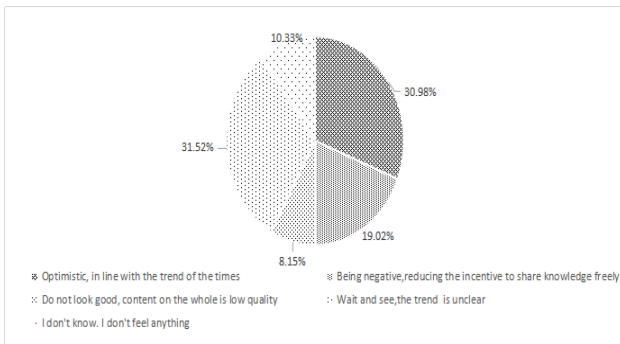


Fig. 2. What do you think of the future of content payment

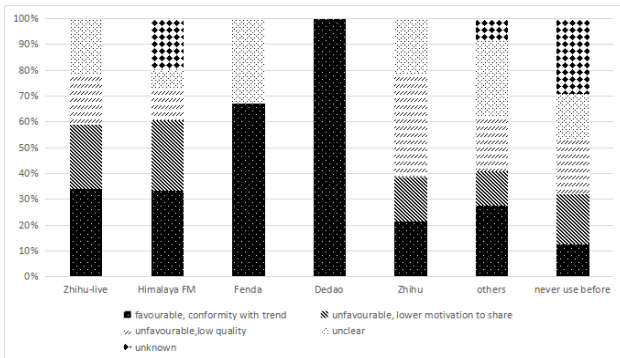


Fig. 3. Cross-analysis of APP usage and views on the future of content payment

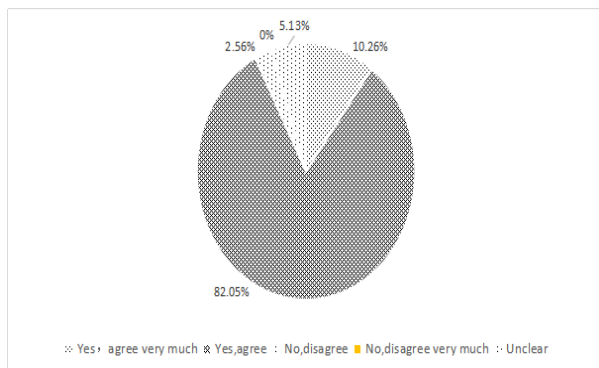


Fig. 4. Whether personalized knowledge payment mode is in line with the development of The Times

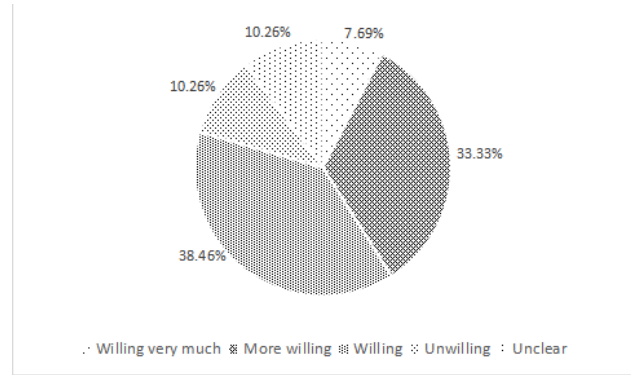


Fig. 5. Whether to continue to use the paid learning mode of Zhihu live in the future

#### IV. THE SECOND STAGE QUESTIONNAIRE AND RESEARCH RESULTS

Based on the three hypotheses above, the research team designed a second questionnaire. The questionnaire adopted the before and after control model. The respondents filled out a questionnaire before using the relevant platform, and then filled out another questionnaire after using it. Finally, this study received 40 valid questionnaires, of which 34 were from undergraduates. The number of male and female was roughly the same. After comparative analysis, the research team obtained the following data and conclusions.

Firstly, team find that users' satisfaction with the platform declines slightly after using (from 7.58 to 7.23, as shown in the table 1), but roughly meet expectations, with enjoyment being the highest expectation before using, the score decreased most after using. The content quality and convenience are the second highest expectation value, the actual score is roughly conformed to the expectation index after use, and the overall score of the degree of helping is lower. Therefore, the research team can draw the conclusion that content quality and enjoyment are the two most important parts of the users, but the enjoyment does not meet the expectation of the users. Compared with 33.7% of users in the first questionnaire who were willing to pay for content and 40.76% of them express hesitate, 30.98% of interviewees thought the pay-for-content mode was conformed to the trend of the times, and 31.52% of them were waiting and seeing. The research team found that the proportion of users who agree with the model has risen significantly to 82.05%, while the proportion of unclear attitude has fallen to 5.13%. In addition, nearly 80% of respondents said they would continue to use Zhihu-lives pay-for-learning mode in the future. Based on this to test hypothesis 1, the conclusion is drawn: after understanding and using the payment model, college students' attitudes towards the model have changed significantly, showing a great deal of agreement for the model, and the recognition degree exceeds that of the total consumer population.

TABLE I. SCORES BEFORE AND AFTER USE PAY-FOR-KNOWLEDGE SERVICE

Analysis index Investigation time	Content quality	Degree of convenience	Enjoyment	Degree of help	Total score
Before use (expected value)	7.7	7.7	7.78	7.15	7.58
After use (actual score)	7.53	7.53	6.89	6.97	7.23

Secondly, according to figures 6-8, scores are highly correlated with the attitude toward continued usage. From figure 6 and 7, it can be concluded that the more satisfied college students are with the content and the help they get, the more likely they will continue to use Zhihu-live. As can be seen from figure 8, the more interesting the content, the more likely users to continue to use Zhihu-live, but the correlation is low. Based on these to test hypothesis 2, we can get that perceived value makes college students' consumption willingness higher than total consumer population, and college students pay more attention to practicability than entertainment after using.

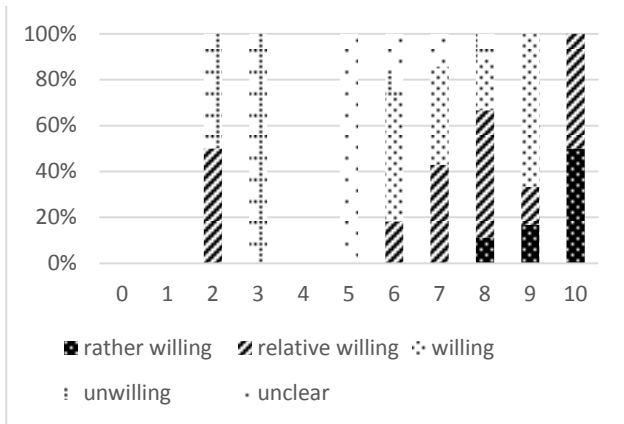


Fig. 6. Cross-analysis of help levels and continuous use

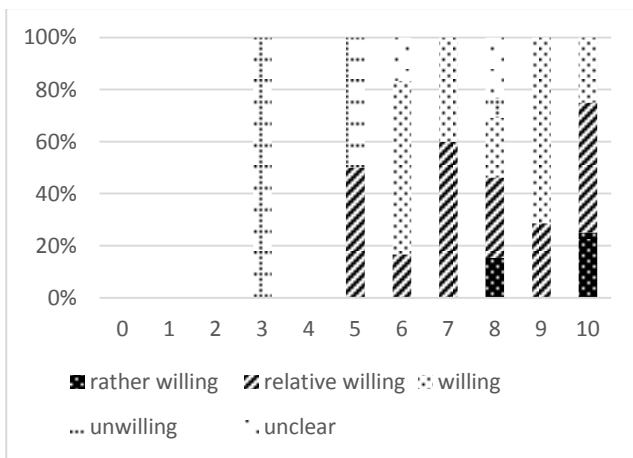


Fig. 7. Cross-analysis between content quality score and continuous use

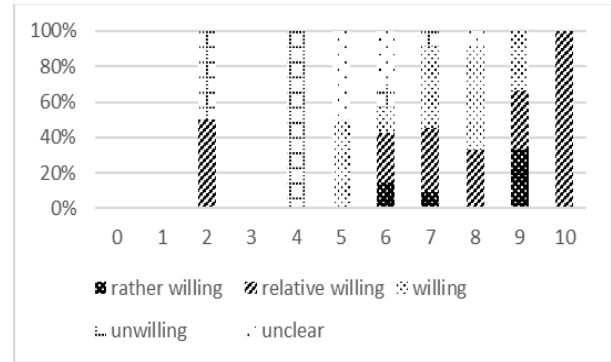


Fig. 8. Cross-analysis of interest score and continued use

Thirdly, figure 9-11 is the result of the price survey. It can be found that most of the respondents think the price of the course is reasonable, and they think that the acceptable range is in the 1 to 20 yuan. This is also the price range for courses offered by the research team. Through cross-analysis, the research team found that the recognition of the price significantly affected the willingness of users to continue using Zhihu-live. Therefore, we can verify hypothesis 3 that college students can accept lower price with higher sensitivity, greater elasticity of demand and are easy to be influenced by price of this kind of mode.

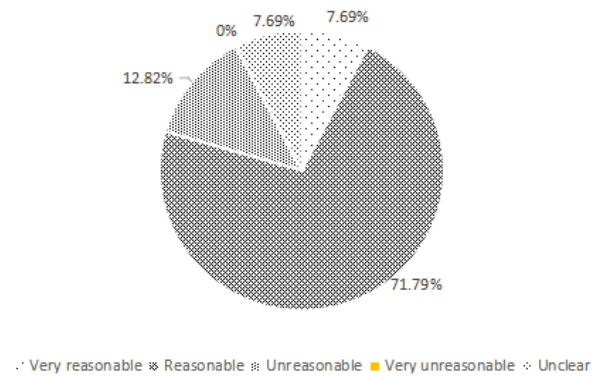


Fig. 9. Whether you think the price of the courses you listen to is reasonable

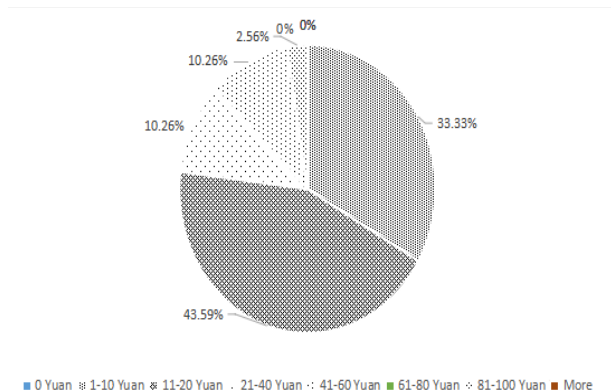


Fig. 10. The highest price acceptable to college students

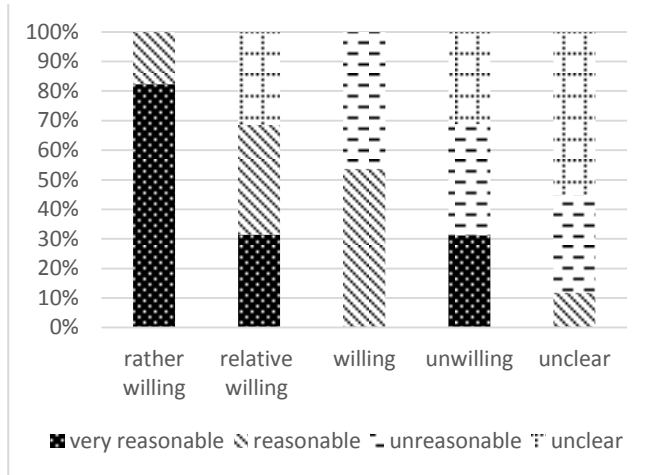


Fig. 11. Cross-sectional analysis of price reasonableness and willingness to continue to use

## V. DISCUSSION

In the information age, people learn more and more from internet by knowledge sharing. Zhihu-Live is a commercial application that applied the idea of Pay-for-knowledge in recent years. University students are one of the representative and typical users and it is meaningful to research the evolution process. Because of lack of previous paper, this research uses an exploration way to make hypothesis. With two stage questionnaire to investigate on-line knowledge shopping behavior of college students, the empirical results show that the users do not entirely rely on the innovative way of knowledge learning in real life, which is important result in this paper and for the real world. Then from the view of consumption, this research wants to find out whether the pay-for-knowledge mode is suitable for college students. And in the study of the factors that affect the willingness to adopt online subscription-based course, research found that perceived value significantly increased the users' willingness to adopt online subscription-based course. Furthermore, it may helpful to analyze users' browsing habits by big data algorithms and provide better customized service in the future. We can think that next step could study how we can make price for the goods and services with the pay-for-knowledge mode.

## VI. CONCLUSION

Nowadays, it is not very popular to learn by online pay-for-knowledge among college students. Not only because their limited understanding of the APP, but also due to their learning habits. Therefore, the overall evaluation of the first stage questionnaire is not satisfied. However, the users' preference changed and their willing score is significantly improved, after using. In addition, perceived value and price are important factors for individualized knowledge consumption in this study. Perceived value is divided into perceived usefulness and perceived entertainment, both of which have a certain

impact on the use of college students. In the two parts, perceived usefulness has a greater impact, while perceived entertainment has a smaller impact. This study found that the college students pay more attention to the actual content of the lesson, less attention to the lecturer, so the comments on the Internet which pay-for-knowledge mode is another form of decorated "fan consumption" is not applicable to college students. Finally, college students can accept courses with lower price and have higher sensitivity, greater elasticity of demand. They are easy to be influenced by price, and more difficult to accept relative high price courses.

For future use and product promotion, college students think that it should properly improve the Zhihu-live recommendation system. First of all, with the introduction of big data technology, providing personalized value-added is an important development direction of pay-for-knowledge mode. In the future, Zhihu-live and other pay-for-knowledge platforms can make full use of big data technology. According to the browsing habits of users, they provide customized services to users to meet the exact need of users for knowledge. Therefore, they are important improvement in introducing big data technology, optimize the classification system, aim at the precise needs of users and provide more individualized courses to users. However, in Zhihu-live, users can interact with lecturer only during the live, and there is no chance to interactive with them in the look-back function. Many interviewees believe that, in order to strengthen the interaction between user and lecturer, increase the user's stickiness and optimize the user's experience and enhance the user's absorption and digestion of knowledge, the related platform should strengthen the interaction between the user and the lecturer, so that the user can feel more about the "sense of participation".

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