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# Research on the Influencing Factors of the Willingness to Pay for Knowledge Consumers in the Knowledge Payment Platform

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**Abstract:** In 2016, "knowledge payment" had become the most popular Internet phenomenon in China. As we all know, knowledge content is an intangible information product, which is essentially different from the physical product. We cannot judge its quality directly from the external features. When the quality of knowledge products cannot be directly judged, what are the factors affected by the consumer in the process of making a purchase decision? This article studies the factors that may affect the willingness to pay for consumers in the knowledge pay platform. We use Python to collect "Zhihu live" data and analyze it through the SPSS tool. The results show that online social capital of knowledge sharers has a significant positive impact on consumers' willingness to pay, but there is no significant effect of offline social capital and knowledge price on consumers' willingness to pay.

Keywords: social capital, price, willingness to pay, knowledge payment.

## 1. INTRODUCTION

With the development of mobile payment and the change of the structure of social demand, sharing economy has developed rapidly. In 2015, a knowledge program "Logic Show" was popular in the network. Since then, the knowledge sharing economy has developed in China. According to the 2017 China knowledge payment industry development report, Chinese knowledge payment APP active users have reached 520 million people. However, the rapid growth of user scale makes us curious about the outburst of knowledge payment industry. We learn that consumers' purchase intention is usually driven by five factors: consumer's individual characteristics, product internal clues, product external cues, consumption situations and socioeconomic factors. Consumers usually make a purchase decision based on the judgment of the quality of the product and the preference of the individual. In the physical products with obvious characteristics, the internal and external clues are mostly reflected in the quality of the product. And knowledge, as a kind of information product, has nonmaterial and experiential. These unique properties make it impossible for consumers to perceive the quality of knowledge externally, and thus may be plagued by the purchase decision. So what can be used as a signal to judge the quality of knowledge in the knowledge payment platform? How do these factors affect the willingness to pay for knowledge consumers?   Therefore, this paper, taking the "Zhihu live" as the research object, tries to discuss what factors affect the willingness to pay for knowledge consumers.

"Zhihu live" is a real time question and answer interactive payment product launched by "Zhihu" (China's largest online knowledge question and answer community). According to statistics, the amount of knowledge transactions generated by "Zhihu live" has reached nearly 100 million Yuan, and the average number of people who participate in knowledge payment is 400 per day. The sharer can create a live, and the live home page needs to display information about sharing knowledge that will appear in the information flow of the followers. General knowledge payment platform includes two basic information. One is the information of knowledge content, such as title, price, start time, comment and so on, the other is the sharer's personal information, including the number of fans, the amount of attention, the personal profile, and so on. "Zhihu live" has the same

characteristics. Knowledge consumers can not directly judge the quality of knowledge, but only by identifying knowledge sharer's personal information and sharing knowledge related information as a signal to judge the quality. Because knowledge usually adopts the pre-sale mode, the review mechanism will not be generated until the end of the sharing. Therefore, this paper explores the factors that influence the willingness to pay of knowledge consumers before the review. In the previous research on the network community, the user's personal information is divided into online and offline social capital. Therefore, through the research, we find that online social capital of knowledge sharers has a significant positive impact on consumers' willingness to pay, knowledge sharers offline social capital has no significant impact on consumers' willingness to pay.

## 2. LITERATURE REVIEW

### 2.1 Social capital
### 2.1.1 The concept of social capital

The concept of "capital" can be traced back to the research of scholars such as Weber, Marx and Engels in economics. Until the early 20th century, Hanifan first described the social capital in his thesis. He pointed out that credit, friendship and social interaction have formed a certain accumulation of social capital [1]. Subsequently, the theoretical research related to "social capital" gradually started in the field of sociology. "Social capital" was initially used in community research and generally used to explore networks of relationships [2]. Social capital plays an important role not only for communities and individuals but also for human capital [3]. The concept of social capital has long been used to articulate a wide range of social phenomena, but Pierre is the first scholar to define clearly social capital. He defines social capital as the sum of real and potential resources embedded in the networks of relationships owned by individuals or social units [4]. Later scholars defined the definition of "social capital" on the basis of social relationship network. For example, Putnam pointed out the relationship between social capital representing individuals - social networks and the reciprocal values that are formed on this basis [5]. In the management literature, Nahapiet & Ghoshal defined social capital as "the sum of the actual resources and potential resources embedded in the relationship network owned by individuals or social units" [6]. Lin Nan argued that social capital was a resource embedded in social networks that enable actors to access and use these resources [7]. Although there were many previous studies on social capital, they did not give a unified definition. According to the object and content of the study, this article defines social capital as the resources owned or used by individuals or organizations that are embedded in social networks. The research shows that there is a necessary relationship between social capital and social network. Therefore, this paper has obtained important theoretical support in the research of knowledge payment platform.

### 2.1.2 Social capital classification and measurement

Putnam suggested that the most important study of social capital is to clarify the dimensions. He divides social capital into bonding of social capital and bridging of social capital. Bonding Social capital performs more strongly in emotional and personal relationships, while bridging social capital reflects more in weak links in social networks. Based on this classification, Williams divided social capital into four types: online and offline bridging social capital and online and offline bonding social capital, in the study of the distinction between online and offline in human relationships [8]. In Twitter's research, Hofer & Aubert pointed out that online social capital is related to the number of users [9], and some research shows that users can increase online social capital by using Twitter. From a manifestation of the form, social capital can be divided into structural social capital and cognitive social capital [10]. Structural social capital refers to objective social structures such as social organizations and networks. Cognitive social capital is a standard, value, attitude and belief that emerges from ideas and consciousness and contributes to cooperative behavior and mutually beneficial behavior. Zhang Lu, in

his study of the community, divides user social capital into online and offline structural social capital and online and offline cognitive social capital [11]. From macro and micro perspectives, macro-level research on social capital mainly focuses on regional or national perspectives, such as the study of the impact of social capital stock on the economic growth in the region, micro-social capital focuses on the individual resources contained in social networks, such as the structural characteristics of individuals in the overall social network and their own social status [12]. In the study of online communities, usually focusing on the micro level, for the measurement of individual social capital, scholars generally use the nominal and positioning method. Nominal method is to measure the resources in the network by understanding the information features of the network members. Positioning method can measure the structural position of social capital and the resources in the network. The core content of the positioning method is to calculate the individual social capital by the professional prestige in the social network [13]. From the definition of social capital, we can see that resources are the core elements of social capital, and these resources include power, status, wealth, information and so on. In a specific network, members can obtain important social capital, which are presented in the form of network connection, social status or reputation. Therefore, on the basis of previous studies, this paper divides the social capital of the sharers in the community into four categories, as shown in Table 1:

**Table 1. Classification of social capital**

| Classification | Structural social capital | Cognitive social capital |
| --- | --- | --- |
| Online social capital | Number of fans | Number of praise &thanks |
| Offline social capital | Institutional rankings | Professional prestige |

The study found that social capital has an important influence on user knowledge sharing behavior. Users with more fans can get more likes and higher rankings [14]; and in reality, users with higher social status are more willing to answer other people's questions and ask very few questions. In the study of the medical online community, doctors' offline prestige and social status will bring more virtual gifts and patients' online voting [15]. Some scholars also try to explore the relationship between knowledge sharers' social capital and consumers' knowledge payment behavior [16]. Therefore, this paper argues that social capital is one of the factors that affect consumers' willingness to pay.

**2.2 Price**

Price is the rate at which a good is exchanged with other good in the marketplace. Price has always been a central issue in economics. In economics, the price appears in the study of signal theory. Stuglitz applies the notion of signal to the market analysis of asymmetric information, believing that price can judge the quality of a good [17]. The price can be used to measure the economic value of goods and all non-economic value. In the online shopping environment, we view price and seller reputation as the most important external cues that influence shopping behavior. With the development of market economy, the price has not only been judged as quality [18], but also the price is considered as a sign of loss. When the price is higher, the purchase intention of consumers is relatively lower, Price is considered a financial burden [19]. However, there is a natural difference between the knowledge product and the traditional commodity, which is original, invisible and lagging in effect.

**3.  RESEARCH MODELS AND HYPOTHESIS**

By summarizing the past research, this paper establishes the following model framework, as shown in Figure 1. knowledge products, as experiential products, cannot directly judge their quality. In knowledge payment platform, consumers can only make judgments of purchasing decisions through information of sharers

and knowledge products. Therefore, this model discusses the influence on the willingness to pay for the knowledge consumer from two perspectives: the sharer information and the knowledge product information. The popularity of products is usually considered as a factor that influences consumers' willingness to pay, but it can only represent the degree of individual preference and cannot directly reflect the quality of knowledge products.so this research will be the popularity of knowledge content as control variables.
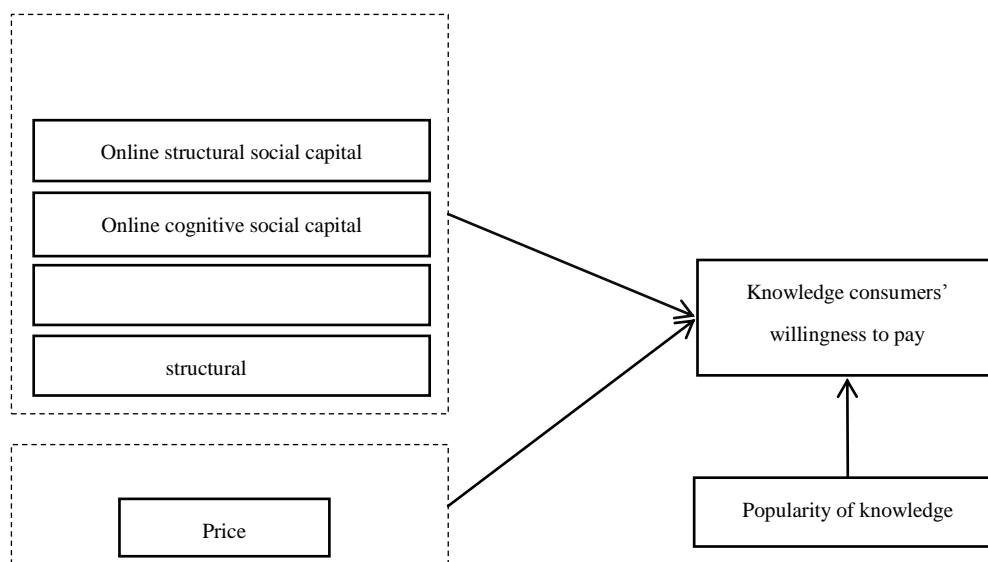


**Figure 1. Research Model**

### 3.1 Information of knowledge Sharers and the willingness to pay for knowledge consumers

Through the previous description, we know that in the network community, knowledge sharers will accumulate a certain amount of online social capital through community activities. And these social capitals are stored in the network structure in the form of the number of fans, praise and thanks. Meanwhile, offline social capital accumulated by knowledge sharers in real life through work or study can be displayed in the profile information in the form of occupation, institution, etc. Knowledge shared in "Zhihu live" automatically appears in the information flow of the followers, and more followers mean more users are hoping to get the knowledge posted by their sharers. This paper believes that this is an indirect recognition of the ability of the sharer, thereby recognizing the quality of the knowledge they share. So a large number of fans may attract more people to buy the knowledge. Meanwhile, users can get more thanks and praise through community interaction. These values reflect the high quality of the content shared by the sharer in the community. Therefore, this article puts forward the hypothesis:

H1: the online structural social capital of the sharer has a significant positive impact on the willingness to pay for the knowledge consumer.

H2: the online cognitive social capital of the sharer has a significant positive impact on the willingness to pay for the knowledge consumer.

Knowledge sharers can display personal career experiences and industry information in the community. This article scores the sharer based on Li Chunling's Professional Prestige Rankings and measures their offline social capital [20]. Professional reputation often shows people's power status and ability in real life. Under the same field, a university professor may be more persuasive than a worker. Because of the complexity of the industry, it is difficult for us to measure the offline structural social capital. Therefore, this paper only takes into account the offline cognitive social capital:

H3: the offline cognitive social capital of the sharer has a significant positive impact on the willingness to pay for knowledge consumers.

**3.2 Information of knowledge products and the willingness to pay for knowledge consumers**

Price is a very important external clue for commodity purchase intention, and it is also a sign of the quality of goods. Therefore, this paper argues that the higher the price of knowledge products, the higher the value of knowledge and thus the more people will buy. Propose a hypothesis:

H4: the price of knowledge products has a significant positive effect on the willingness to pay for knowledge consumers.

## 4. DATA ANALYSIS

**4.1 Data collection and processing**

This study used Python crawler program to grab all occupational data from the "Zhihu live" platform, and a total of 884 data are obtained. To get the data we need, we first screened out no rating data, then removed the institutional account, the price was 0, and no occupation data. And 202 effective data are finally obtained. In data processing, this article takes the arithmetic average of the number of likes and thanks obtained by the sharer to measure the online cognitive social capital. The professional prestige score was used to measure offline cognitive social capital，and the willingness to pay for the consumer is measured by the number of participants.

**4.2 Descriptive statistical analysis**

The results of data descriptive statistics are shown in Table 2.

**Table 2. Descriptive statistics**

|  | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Number of participants | 202 | 56.0000 | 10107.0000 | 989.727723 | 1378.1893342 |
| Online structured social capital | 202 | 45.00 | 598889.00 | 52297.9554 | 99584.88460 |
| Online cognitive social capital | 202 | .38 | 3034.01 | 206.1423 | 371.52756 |
| Offline cognitive social capital | 202 | 40.75 | 85.15 | 65.5530 | 7.45524 |
| Price | 202 | 9.0000 | 199.0000 | 27.668168 | 18.5860473 |
| Popularity | 202 | 4.00 | 11560.00 | 697.4158 | 1241.53630 |
| Valid N | 202 |  |  |  |  |

**4.3 Correlation analysis**

Then the study conducted a correlation analysis of independent variables and dependent variable. The results showed that the online structured social capital and online cognitive social capital were significantly correlated with the number of knowledge paid participants, while the correlation between offline cognitive social capital and the number of paid participants was not significant. There is no significant correlation between the price of knowledge content and the number of participants. The popularity of knowledge content as a control variable is significantly related to the number of paid participants.

**4.4 Regression analysis**

The research used SPSS19.0 software to have multivariate linear regression analysis. And the results showed that the goodness of fit was good ($R^2 = 0.424$). In addition, the variance analysis result shows that the

model has passed the set test, which means that the linear relationship between dependent variable and independent variable is obvious (F=28.868, P=0.00).

In table 3, the regression analysis results show that the cognitive social capital（β=5.132,t=0.504, p=0.615>0.1） and price（β=-1.273,t=-0.313, p=0.754>0.1） not reached a significant level, so these two variables are eliminated. On the other hand, online structured social capital has a significant positive impact on consumers' willingness to pay (β=0.002, t=1.770, P=0.078<0.1). Online cognitive social capital has a significant positive impact on consumers' willingness to pay (β=0.550, t=2.285, p=0.023<0.05). Therefore, hypothesis H1 and hypothesis H2 are supported, hypothesis H3 and hypothesis H4 are rejected.

**Table 3. Regression Results**

| Model | Unstandardized Coefficients - β | t | Sig. |
|---|---|---|---|
| (Constant) | 33.316 | .050 | .960 |
| Online structured social capital | .002 | 1.770 | .078 |
| Online cognitive social capital | .550 | 2.285 | .023 |
| Offline cognitive social capital | 5.132 | .504 | .615 |
| Price | -1.273 | -.313 | .754 |
| Popularity | .658 | 10.903 | .000 |

Dependent Variable: Knowledge consumers' Willingness to pay

## 5. CONCLUSIONS

### 5.1 Research conclusion

Through the analysis, we can clearly see that the online social capital of the participants has a significant positive impact on the willingness to pay of knowledge consumers. In the community, the more fans the sharer has, the higher the online structural social capital it accumulates in the community. Some scholars believe that users' high quality interaction in the online community leads to higher social capital[11], so the high online structural social capital also means the affirmation of the sharer's ability, at the same time, The knowledge shared by sharers in the "Zhihu live" will appear in the information flow of the followers, so that more users will choose to pay the fees, which is consistent with the hypothesis. In the measurement of online cognitive social capital, we choose the number of praise and thanks of sharers got in community activities, these values can directly reflect the quality of the shared knowledge of sharers in the community. In the premise of judging the quality of the knowledge is not intuitive, consumers should judge the quality of knowledge sharing in "Zhihu live" through the previous approbation of contributive knowledge in the community. As a result, the higher the online cognitive social capital is, the more people are involved in the pay. However, there is no significant effect of offline social capitals on the willingness to pay, which may be explained by the lag in the measurement of occupational prestige. In the Internet age, people's evaluation of many professions has changed.

In the impact of knowledge products information, we see that prices have no significant impact on the number of consumers. In the hypothesis, we think that the price is the reflection of the value of knowledge, and the high price represents the better content of knowledge. But we may have overlooked some problems. Price is not only regarded as a signal of quality, but also considered as a sign of loss. When the price is higher, consumers' purchase intention may also be relatively low.

### 5.2 Contribution and limitation

This study mainly explores what factors influence consumers' knowledge buying products when they

cannot perceive knowledge quality through reviews, and the results help knowledge providers to understand the willingness to pay knowledge consumers. Sharer can change the strategy to attract more consumers to pay for knowledge, such as: increasing the number of fans for more community activities, improving the quality of knowledge, and obtaining more users like and thanks. Through these community behaviors, Sharer can accumulate more online social capital, so that more users can participate in knowledge payment, and the sharer can get more financial benefits. For a paid platform for knowledge, the standard of pricing knowledge products is one aspect that needs to be carefully considered.

Although in this study, the author strives for rigorous process and procedural science, but there are still some shortcomings. First, the shortage of data samples is an important problem, and the universality of the conclusion needs to be tested. Secondly, when we measure the social capital online, we adopt the occupational prestige index which is lagging behind in time, and some new occupations have not been well reflected. Finally, our research is limited to people who share knowledge for the first time in the payment platform and does not relate to the impact of ratings and auditions on their knowledge willingness to pay. Therefore, we have a lot of work to do in the future research.

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