Self-Control and the usage intention of knowledge payment products: Evidence from college students

Qiaoling Hou [1,*]

[1]Shenzhen Audencia Fintech Institute, Shenzhen University, SZU, Shenzhen, China.

* houqiaolinng@163.com

Abstract. With the rapid advancement of internet and infor-mation technology, people can obtain fragmented information, and the demand for knowledge content have been boosted. By purchasing knowledge payment products, people can learn new knowledge at their trivial time and possibly be rewarded after completing the established learning rules. Consequently, when people believe they can learn additional knowledge for free, it is important to the ability of self-control. Yet, little attention has been paid to how Self-Control influences the usage intention of knowledge payment products and the differences under distinct rewarded mechanisms common in actual online courses. Through conducting a survey questionn-aire among students on campus (106 valid questionnaires) and employing the ordered logit approach, the findings indicated that self-control has a positive and significant influence on the usage intention of knowledge payment products. Moreover, the result also implied that cashback plays an important role to attract consumers to participate in the program, which is valu-able for knowledge contributors or platforms while they are proposing a similar program.

Keywords:self-control; knowledge payment products; usage intention

1. Introduction

As one of the most powerful and beneficial abilities of the human mind, self-control refers that people adjust themselves to match with the environment and social requirements. Many social and personal problems in modern society can be attributed to the lack of self-control, like weight control, time management, emotional control, and financial planning, etc. For example, Brandon et al. (1990) have designed "The Self-Control Questionnaire (SCQ)" about health-related behaviors [1]. As for many other aspects of life, Tangney et al. (2004) found that people with high self-control got better grades, were better adjusted, had better interpersonal skills and better interpersonal relationships, and had more optimal emotional lives than other people [7]. Through the analysis of the relationship between self-control and academic achievement, Duckworth et al. (2019) showed that individual differences in self-control reliably predict academic outcomes, such as academic attainment, course grades, and performance on standardized achievement tests [3]. In many cases, the array of positive correlations between self-control and positive outcomes both suggests that the benefits of self-control are worth serious consideration.

In recent years, with the rapid advancement of internet networks and information technology, people can fragmentedly obtain information in their trivial time. Therefore, the development of knowledge products and services, and the demand for knowledge content have been increasingly boosted [2]. For example, WeChat has become not only a social platform but also a way for many users to obtain fragmented knowledge through the subscription of official accounts. In addition, online knowledge platforms have been undergoing a transformation from providing free knowledge to online paid knowledge [6], e.g., Zhihu and Dedao. Many prior studies have investigated what factors drive the purchase intention of online paid knowledge. Zhao et al. (2018) have showed in their research that knowledge contributors' characteristics (i.e., ability and integrity) and reputation can positively affect users' payment decisions in paid Q&A platforms [8]. Kuang et al. (2019) have provided evidence that financial incentives can be an effective strategy to nurture users, seed content, and enhance the sociality of a platform [4].

Due to the demand for people's self-improvement to maintain their competitive advantage, more and more people apply knowledge payment products as useful sources. By purchasing knowledge

payment products, people can learn new knowledge at their trivial time and potentially be rewarded after completing the established learning rules (i.e., cashback and other equivalents). When people believe they can learn additional new knowledge for free, it is important to the ability of self-control. Individuals with a higher self-controlled level will be more adept at regulating their behavioral, emotional, and attentional impulses to achieve long-term goals [5], therefore, higher self-control people may be more willing to pay for knowledge payment products to improve themselves. Yet, little attention has been paid to how Self-Control influences the usage intention of knowledge payment products and the differences under distinct rewarded mechanisms common in actual online courses, and this paper aims to fill the research gap.

Through conducting a survey questionnaire among university students on campus (finally leaving 106 valid questionnaire) and using the ordered logit approach rather than the OLS, the findings indicate that self-control has a positive and significant influence on the usage intention of knowledge payment product planned. On the other side, the research result also implies that the incentive mechanism (i.e., cashback) plays an important role to attract higher self-control users to participate in the reading program, which is valuable for knowledge contributors or platforms while they are proposing a similar program.

The remainder of this paper proceeds as follows. Section II illustrates the experimental design including sample and procedures, and measurements, followed by the experimental results presented in Section III. Furthermore, Section IV provides the discussion about the conclusions and limitations.

2. Experiment Design

2.1 Sample and procedures

For data collection, the web-based survey was conducted by a revised questionnaire that the first part is participants' demographic information, the second is the main measure-ment for their Self-Control level, and the last part is designed to understand their usage intention of knowledge payment product under three different situations (see Appendix). In recent years, WeChat has become not only a social platform, but also a way for many users to obtain fragmented Knowl-edge by the subscription of official accounts. Specifically, some knowledge contributors or platforms register WeChat official accounts and then provide valuable online courses, so that users can fragmentedly learn through applets without extra downloading applications, such as MintReading, shanbayread, etc. Consequently, knowledge payment product conducted in this paper is a reference to a WeChat official account (i.e., MintReading). By using the knowledge pay-ment product, college students can learn new knowledge in different fields at their trivial time with only 15 minutes every day, and they may be rewarded after completing the established learning rules, such as cashback or other equiva-lents. As a result, three situations were set up based on the most common patterns used by actual online reading courses.

Table 1 Items and Corresponding Score

Items	Score
I am good at resisting temptation.	Reverse scoring
I have a hard time breaking bad habits.	Reverse scoring
I am lazy.	Reverse scoring
I do certain things that are bad for me, if they are fun.	
People can count on me to keep on schedule.	Reverse scoring
Getting up in the morning is hard for me.	Reverse scoring
People would describe me as impulsive.	Reverse scoring
I spend too much money.	Reverse scoring
I get carried away by my feelings.	Reverse scoring
I do many things on the spur of the moment.	
People would say that I have iron self-discipline.	
Pleasure and fun sometimes keep me from getting work done.	Reverse scoring
I have trouble concentrating.	Reverse scoring
I am able to work effectively toward long-term goals.	
Sometimes I can't stop myself from doing something, even if I know it is wrong.	Reverse scoring
I often act without thinking through all the alternatives.	
I lose my temper too easily.	Reverse scoring
I often interrupt people.	Reverse scoring
I sometimes drink or use drugs to excess.	Reverse scoring
	Reverse scoring

I prepared only the online version of questionnaires by sujump.com, and then randomly distributed the web-link to students on campus through social platform WeChat. The respondents were asked to answer each question to the extent to which they agreed with each statement, and the questio-nnaire was filled in anonymously. Each student was only allowed to fill in once. From 2nd July to 6th July 2021, 107 questionnaires were returned, two of which were removed with consistent options among different questions (no.26 and 30), as these respondents might not have read and answered the questionnaire carefully. Finally, the sample had 105 valid surveys for further data analysis.

2.2 Measurements

2.2.1 Self-control (tsc)

To measure participants' self-control level, this paper used the survey questionnaire based on the Self-Control Scale developed by Tangney et al. (2004). Yet, the question-naire above might be inappropriate for this paper conducted the research in the context of Chinese students. Therefore, I finally employed a version revised by Tan and Guo (2008) [9], which included 19-items among the completed question-naire version of Tangney et al. (2004). Participants had to answer each question to what the extent that they agreed with each statement, on a 5-point Likert scale from 1 ("Not at all") to 5 ("Very much"). The items and corresponding score were presented in Table 1, with the result representing that "the higher the total score, the higher the self-control level".

2.2.2 Usage intention of knowledge payment products (kp)

To ensure that the participants' usage intention of knowledge payment products, I was planning to launch a "110-day Reading Program" and measured the participants' intention under three situations where each will ask them a question "How strong is your intention to participate in this program?", then participants had to answer the question on a 10-point Likert scale from 1 ("I do not have the intention to do so at all") to 10 ("I have a very strong intention to do so"). The measurement of usage intention functioned rather as a final check whether participants really intend to participate in the program.

3. Results

3.1 Summary statistics

In this paper, I employed Stata 15.0 to analyze the relationship between Self-Control and the participants' usage intention on knowledge payment products. Due to the data collected were from the survey questionnaire, it was neces-

Table 2 Summary statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
gender	105	1.67619	0.4701726	1	2
grade	105	3.019048	1.487001	1	5
kp1	105	6.028571	2.708452	1	10
kp2	105	6.428571	2.444999	1	10
kp3	105	7.057143	2.401236	1	10
tsc	105	56.17143	11.12556	38	92

sary to examine the reliability and validity in the first step. Hence, the Cronbach's alpha was 0.828 and the value of KMO was 0.836, which indicated the reliability and validity of the questionnaire.

Based on the data, the descriptive statistics (see Table 2) showed that the average self-control level among participants is 56.17. The average usage intention was slightly strong on knowledge payment product under three situations proposed in this paper, all the value was slightly larger than 6. Yet, the third situation is 7, which suggested that this kind of incen-tive mechanism (i.e., cashback), to the great extent, was more attractive to consumers.

Moreover, I divided the basic sample into two groups according to the level of self-control, corresponding to high (stsc=1) or low (stsc=0) self-control level. Based on this, I then calculated the average usage intention among two groups, respectively. Table 3 indicated the following results:

With low self-control level, average usage intention under the first situation (kp1) was 6.17, under the second situation (kp2) was 6.26, and under the second situation (kp2) was 6.60.

With high self-control level, average usage intention under the first situation (kp1) was 5.89, under the second situation (kp2) was 6.60, and under the second situation (kp2) was 7.52.

3.2 Self-Control and the usage intention of knowledge payment products

This paper aimed to study how the relationship between self-control and the usage intention of knowledge payment products under different situations, which assumed that participants with higher self-control levels might be more willing to pay for knowledge payment products to improve themselves. Because the dependent variable in this paper was a categorical variable, I applied the ordered logit approach to further investigate rather than the OLS. According to the conclusions showed in Table 4:

Under the first situation, self-control had a positive but insignificant impact on the usage intention of knowledge payment product; Gender had a positive and significant impact on the usage intention.

Table 3 Average usage intention with high and low self-control level

stsc	tsc	kp1	kp2	kp3
0	47.73585	6.169811	6.264151	6.603774
1	64.76923	5.884615	6.596154	7.519231
Total	56.17143	6.028571	6.428571	7.057143

Table 4 Self-control and usage intention

stsc	kp1	kp2	kp3
gender	0.606	0.347	0.197
	(1.66)*	(.94)	(.55)
grade	0.07	0.197	0.21
	(.60)	(1.64)*	(1.75)*
tsc	0.013	0.022	0.041
	(.75)	(1.31)	(2.43)***

Under the second situation, self-control also had a positive but insignificant impact on the usage intention of knowledge payment product; Grade had a positive and significant impact on the usage intention.

However, under the third situation, self-control had a positively significant impact on the usage intention of knowledge payment product, which highlighted the importance of incentive mechanism (cashback); Grade had a positive and significant impact on the usage intention.

4. Discussion

In this paper, I conducted a survey questionnaire among students on campus and finally obtained 106 valid question-nnaires to further investigate. Eventually, through using the ordered logit approach rather than the OLS, the research results indicated that self-control had a positive and sign-ificant influence on the usage intention of the knowledge payment product planned. In addition, the result also implied that the incentive mechanism (i.e., cashback) played an important role to attract higher self-control users to parti-cipate in the reading program, which was valuable for knowledge contributors or platforms while they are propo-sing a similar program. Nevertheless, the other two situations did not present the same significance, the main reason might be that there were several limitations in this paper. First, the basic sample size applied was rather small, therefore, it was not enough to suggest a significant correlation between dependent and independent variables. Second, the design for knowledge payment products was not representative, beca-use not everyone remained the demand for reading original English books, hence causing the bias of measurements. As a result, future research needs to handle the above problems.

References

[1] J. E. Brandon, J. Oescher, and J. M. Loftin, "The Self-Control Questionnaire: An assessment," Health Values: Health Behavior, Education & Promotion, vol. 14, 1990, pp. 3–9.

[2] S. Cai, Q. F. Luo, X. Fu, and B. Fang, "What drives the sales of paid knowledge products? A two-phase approach," Information & Management, vol. 57, 2020, pp. 1-13, doi:10.1016/j.im.2019.103264.

[3] A. L. Duckworth, J. L. Taxer, L. Eskreis-Winkler, B. M. Galla, and J. J. Gross, "Self-Control and Academic Achievement," Annual Review of Psychology, vol. 70, 2019, pp. 373–399, doi:10.1146/annurev-psych-010418-103230.

[4] L. Kuang, N. Huang, Y. Hong, and Z. Yan, "Spillover Effects of Financial Incentives on Non-Incentivized User Engagement: Evidence from an Online Knowledge Exchange Platform," Journal of Management Information Systems, vol. 36, 2019, pp. 289–320, doi:10.1080/07421222.2018.1550564.

[5] A. Schöndube, A. Bertrams, G. Sudeck, and R. Fuchs, "Self-control strength and physical exercise: An ecological momentary assessment study," Psychology of Sport and Exercise, vol. 29, 2017, pp. 19–26, doi:10.1016/j.psychsport.2016.11.006.

[6] L. Su, Y. Li, and W. Li, "Understanding consumers' purchase intention for online paid knowledge: A customer value perspective," Sustainability, vol. 11, 2019, pp. 1-19, doi:10.3390/su11195420.

[7] J. P. Tangney, R. F. Baumeister, and A. L. Boone, "High self-control predicts good adjustment, less pathology, better grades, and interpersonal success," Journal of Personality, vol. 72, 2004, pp. 271–324, doi:10.1111/j.0022-3506.2004.00263.x.

[8] Y. Zhao, Y. Zhao, X. Yuan, and R. Zhou, "How knowledge contributor characteristics and reputation affect user payment decision in paid Q&A? An empirical analysis from the perspective of trust theory," Electronic Commerce Research and Applications, vol. 31, 2018, pp. 1–11, doi:10.1016/j.elerap.2018.07.001.

[9] S. H. Tan, Y. Y. Guo, "Revision of Self-Control Scale for Chinese College Students," Chinese Journal of Clinical Psychology, vol. 16, 2018, pp. 468-470.

Appendix (Questionnaire)

Dear students! Welcome to participate in this survey. The questionnaire is filled in anonymously, and all information collected is only used for research, without any personal evaluation, and strictly confidential. Without right or wrong in all the answers, please answer according to your real idea and situation. Thank you for your participation and support!

What is your gender?

a. male   b. female

What is your grade?

a. Freshman   b. Sophomore   c. Junior   d. Senior   e. Postgraduate or above

Using the scale provided, please indicate how much each of the following statements reflects how you typically are. (Note: Each question can only choose one answer)

                                        Not   at   all
Very much

I am good at resisting temptation.   1——2——3——4——5

I have a hard time breaking bad habits.   1——2——3——4——5

I am lazy. 1——2——3——4——5

I do certain things that are bad for me, if they are fun. 1——2——3——4——5

People can count on me to keep on schedule. 1——2——3——4——5

Getting up in the morning is hard for me.   1——2——3——4——5

People would describe me as impulsive. 1——2——3——4——5

I spend too much money.   1——2——3——4——5

I get carried away by my feelings.   1——2——3——4——5

I do many things on the spur of the moment. 1——2——3——4——5

People would say that I have iron self-discipline. 1——2——3——4——5

Pleasure and fun sometimes keep me from getting work done. 1——2——3——4——5

I have trouble concentrating.   1——2——3——4——5

I am able to work effectively toward long-term goals. 1——2——3——4——5

Sometimes I can't stop myself from doing something, even if I know it is wrong.
    1——2——3——4——5

I often act without thinking through all the alternatives.   1——2——3——4——5

I lose my temper too easily.   1——2——3——4——5

I often interrupt people.   1——2——3——4——5

I sometimes drink or use drugs to excess.   1——2——3——4——5

We are planning to launch a "110-day Reading Program": participants can choose four original English books of their own interest and study in flexible time with fifteen minutes of "reading & detailed explanation" contents will be set every day.

Pay 100 RMB to buy this reading program and get the permanent e-books of the involved books.

Would you like to participate?   1<——>10

And then, we propose the following reward mechanism based on the basic situation ①:

If you insist on learning and punch in the platform for 88 days within the validity period of the reading program, you will receive 100 RMB worth of physical books (free shipping).

Would you like to participate?   1<——>10

If you insist on learning and punch in the platform for 88 days within the validity period of the reading program, you will get full payment back (as the scholarship).

Would you like to participate?   1<——>10