The Study on the Influencing Factors of the Elderly's Willingness Towards the Mobile Payment

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Abstract: The society is facing an aging issues in the next few decades, both in China and overseas. At the same time, the promotion of the digital currency has become a trend all over the world. Thus, by studying the influencing factors of the elderly's attitude towards mobile payment, which is analogous to the payment of digital currency, a better understanding about the obstacle and how to spread it can be gained. This dissertation uses both a quantitative and qualitative method through field research and online questionnaires. And a basic model of evaluating the "attitude" is established. After a more detailed discussion into this two aspects, a conclusion can be drawn that the personal situation has much larger effects than platform situation itself, having a consistent effect on the attitude towards mobile payment. What's more, the elderly hold a more positive attitude and further acknowledgement on digital currency then general recognition. Based on the research and discussion, a few recommendations are given in this dissertation, to give reference for the future development of the mobile payment.

Keywords: Digital Currency; The Elderly; Mobile Payment; Statistic Model

Introduction

This essay is about to study the factors that effect the willingness of the elderly mobile payment and to state the importance of having this research. Thus there are mainly three questions need to be discussed in this paper.

First, the importance of having this research.The elderly has always been an vital part of the society. However, as the age growing, they are not supposed to suit the society. This research is an opportunity to discover what they are caring about and how things can be improved.

Second, the specific factors that affect the use of the mobile payment for the elderly. Among platforms, there are diverse differences which can bring an effect on the usage. This research is about to figure out what kinds of factors there are and how important they are.

Third, the obstacles it may face and the possible methods to solve them. By studying the data we gathered, some methods can come out to solve the analogous difficulties so that to give ideas and reference to develop the digital currency payment.

Literature Review

With the development of mobile Internet technology and the popularization of smart phones, the proportion of mobile payment in payment methods has gradually increased. In 2019, the amount of China's mobile payment business reached 347.11 trillion yuan, a year-on-year increase of 25.13%.(Mao Jinfeng & Sun Yingjun, 2021)[1].

Although the young can adapt this phenomenon, the elder may face a whole opposite situation. What's more, the population of the elderly is facing a rapid surge both in number and ratio in the future. According to the Seventh National Population Census Bulletin

(No. 5) of the National Bureau of Statistics of 2020, the population of China aged 60 and above is 264.02 million (18.7% of the total population).What's more, the population aging problem will become increasingly serious after 2020, that the proportion of the elderly population will rise to 23.8% in 2030 and rise to 31.1% in 2050 eventually, according to the estimates of the United Nations Population Office.(Tang Yong et al.,2021)[2]

At the same time, IT progress and its application to the financial industry have inspired central banks to analyse the merits of central bank digital currencies (CBDC) accessible to the broad public.(Bindseil&Ulrich, 2020)[3]. However, the events, that the elderly are refused to be served because of not knowing how to use mobile payment, come out from time to time, showing an unconsidered situation.(Tan Huyu , 2021)[4]. In that case, this essay is about to have an academic study about the impact of digital currency on the willingness of the elderly mobile payment.

Since the bud of aging issues appears in China, mountainous of study have been proceeding, about the possible developing models of population and measures to solve this (Mu Guangzong & Zhang Tuan, 2011)[5]. So there is no need to repeat this process again. However, there are only few essays combining these two topic together. Among them, most are using a more qualitative way to study this topic. So, this essay is going to work in this orientation, to study the impact factors about the willingness of the elderly towards mobile payment, under the circumstances of the rapid spread of the CBDC.

Unfortunately, the elderly is sometimes struggling in using the mobile devices. They seem to have a neglected user group in design of mobile devices and services, although the requirements to create well functioning solution for them are very well known.(Nasir et al., 2008)[6]. And there are mainly two factors that lead to this situation—— personal situation and the platform itself.

Methodology

This research is going to use a quantitative method to study the impact of diverse influential factors when using the mobile payment. To gather this relevant information,   designed questionnaires to the elderly are giving out through internet and at spot.

As for the questionnaire, thirty questions can be divided into two aspects. One is the situation of the candidates, involving learning ability, receptivity, education background, health problem and the payment habits.We can draw a conclusion on the impact of individual differences of mobile payment in a detailed way.

As for the other aspect, it is basically about the usage experience and the mental subjective feelings towards the mobile payment. This aspect of questions are more focused on the mobile payment itself, such as the features and the operating systems.

For one question, the options can be summarized into five degrees from 0 to 4. In this way, the initial subjective results can be transformed into statistical data. Using the statistical software—stata, a model can be established.

Besides, a field research has processed for couple of times, by chatting with the elderly face to face. In this way, we could learned more about their opinions.

Results

After gathering and sifting the data of the questionnaires, the results is showed below:
Chart I:

	attitude	personal	platform
1	4	2	1.625
2	4	2.26667	2.0625
3	0	.933333	.5
4	1	1.26667	.75
5	4	2.13333	3
6	2	1.06667	1
7	1	1	.9375
8	4	2.6	3.1875
9	4	2.66667	3.125
10	2	1.4	1.875
11	3	2.86667	2.75
12	3	3.06667	2.9375
13	1	1.26667	2.125
14	1	1.86667	1.625
15	1	.733333	1.25
16	1	.533333	1.25
17	0	.4	.1875
18	3	1.46667	1.6875
19	0	.266667	.1875
20	1	1.06667	1.625
21	1	1.46667	1.1875
22	4	2.33333	3.125
23	2	2.06667	1.8125
24	0	.2	.875
25	2	1.06667	.875
26	4	2.73333	3.1875
27	1	1.26667	1.625
28	0	.733333	1
29	0	.8	1.0625
30	1	.666667	.5625

Chart I shows the final attitude of the elderly towards the mobile payment and the average points of each one in parts of personal and platform.

Chart II:

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. regress attitude personal platform

      Source |       SS           df       MS       Number of obs   =        30
-------------+----------------------------------   F(2, 27)        =     41.60
       Model |  48.446647          2  24.2233235   Prob > F        =    0.0000
    Residual |  15.7200196        27  .582222949   R-squared       =    0.7550
-------------+----------------------------------   Adj R-squared   =    0.7369
       Total |  64.1666667        29  2.21264368   Root MSE        =    .76304

------------------------------------------------------------------------------
    attitude |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    personal |    .961294   .3788672     2.54   0.017     .1839226    1.738665
    platform |   .5710979   .3354713     1.70   0.100    -.1172324    1.259428
       _cons |  -.5157663   .2927961    -1.76   0.089    -1.116534    .0850017
------------------------------------------------------------------------------
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The "personal" data and "platform" data can be seen as the variables that affect the "attitude". In this way, a model can be fitted through the method of OLS by the program—Stata:

attitude = -0.5157663 + 0.961294*personal + 0.5710979*platform

personal=(q1+q2+···+qi)/i;

platform=(q1+q2+···qj)/j .

It can be seen from the chart that Prob>F is 0.0000, which illustrates the model is meaningful. And the P values of the two variables also show the correlation between them and the independent variables.
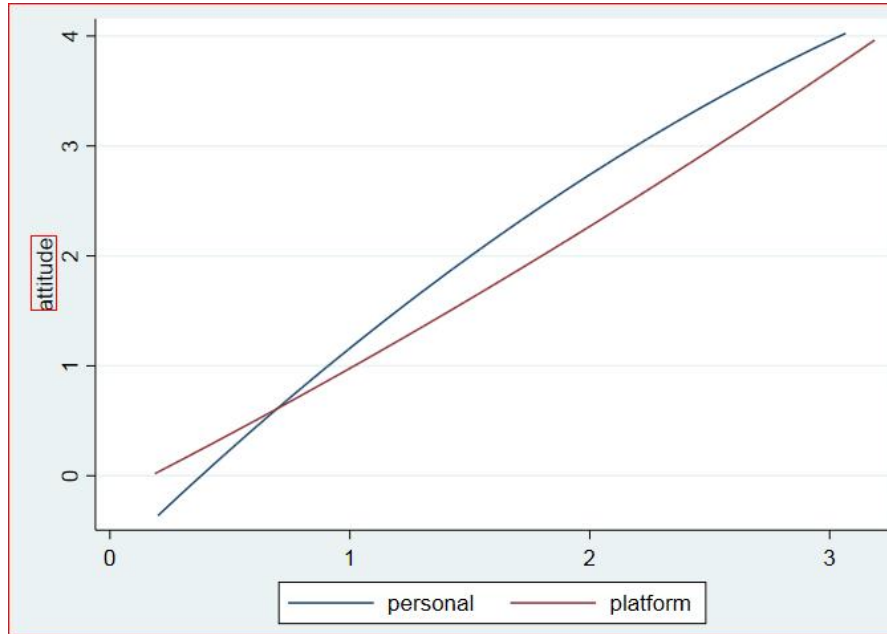
Chart III:

Chart III shows the relationship between personal and attitude, platform and attitude separately, both are positive correlation.

Discussion

The higher an option scores, the more negative it on the use of the mobile payment. Overall, from the model established:

attitude = -0.5157663 + 0.961294*personal + 0.5710979*platform ,

both the "personal" and "platform" factors have a significant influence on one's attitude. And they each is positively related to the final result. What's more, the former coefficient is 0.961294, and the latter is almost half of that, leading to a conclusion that the personal situation has much larger effects than the platform itself.

However, this conclusion is too rough, so a further discussion about the factors needs to be done with the help of the filled questionnaires.

Personal:

Subjectively, once the first impression is built, it can only be gradually changed by the publicity and contact in the long later time. Thus the influence of the mental factors could be stable in short term. Due to the results of the surveys, most of the elderly hold a consistent positive attitude towards the mobile payment, knowing more than we first thought.

Objectively, people could easily get diseases when getting older, effecting the use of the mobile payment. Besides the physical issues, education is another influencing factor. Normally, those who have higher education experience are more likely to accept it. And these factors cannot be changed well in months.

In a conclusion, the influence of both subjective factors and objective factors, together combining the personal factors, is stable in short term.

Platform:

According to the survey, there are only two mobile payment platforms that are analogous and widely used: "WeChat Pay" and "Ali Pay". Few people have tried the DCEP, and they haven't discovered huge difference between them. So the discussion is based on the feedback of using these two platforms.

The scope of application:

In China, one smart phone can solve almost everything in daily life. And merchants now are preferring to receive digital money than paper money for convenience. Thus, making it a positive circulation, the scope of application for the mobile payment will be larger.

The operating system of application:

Nowadays, the elderly can easily use the mobile phone in daily life. However, there are too many unrelated functions that crowd

into the payment platform. Taking Ali Pay for example, besides payment, there are ticket buying, credit card, stock market and more in the same one page, bringing confusion and inconvenience for the old.

Overall, though there are learning thresholds, the elderly are quiet satisfied with the current platforms in daily use.

Conclusions & Recommendations

In summary, there are basically two aspects of factors that influence the elderly' s attitude towards mobile payment. One is the personal situation, another is the platform itself.

For the former one, education and eye sight are important factors, holding a great positivity and support for the majority, greatly built by the publicity propagation and social atmosphere.

As for the later one, the universality of mobile payment in reality is the foundation. And due to the analogy of the platforms, the elderly are less likely to be effected by the nuances between different platforms. But the multiple functions and complexity of the platform are reducing enthusiasm of purchasing through mobile payment, which is widely existed.

What's more, personal situation has much larger effect than platform itself. One reason is that the former one is a more subjective factor. So the fluctuation of the initial data of the options is large, bring a more significant correlation towards attitude. Another reason is that the mobile payment platform is similar and irreplaceable, so the user has to adapt them or quit already.

References

[1] Mao JF & Sun YJ. The Impact of Mobile Payment on Household Consumption: An Empirical Analysis Based on CHFS[J]. Technology and Industry, 2021, 21(09): 242-246.

[2] Tang Y, Lei PR, Sun KL, Dai L, Li YX & Lan MX. Crossing the Digital Divide: An Analysis of Influencing Factors in the Willingness of the Elderly to Use Mobile Payment[J]. Scientific Research on Aging, 2021, 9(10): 36-46+78.

[3] Bindseil U, Tiered CBDC and the Financial System (January, 2020). Available at SSRN: https://ssrn.com/abstract=3513422 or http://dx.doi.org/10.2139/ssrn.3513422

[4] Tan HY. Research on social exclusion in the use of mobile payment for the elderly[D].Yantai University,2021.

[5] Mu GZ & Zhang T. The development trend of population aging in China and its strategic response[J]. Journal of Central China Normal University (Humanities and Social Sciences Edition).2011(05):29-36.

[6] Nasir M.H. N. M., Hassan H, & Jomhari N. (2008). The use of mobile phones by elderly: A study in Malaysia perspectives. Journal of Social Sciences, 4(2), 123-127.