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Intelligent Savings Equipment Design Based on Urban and Rural Empty Nest Elderly

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Abstract.China's aging population and large base, which brings a lot of social problems. They have unique psychological and physical characteristics, which make them lonely in a social corner. They are the predecessors who have contributed their youth and wisdom to the construction of a better country. Therefore, we should extend our most sincere thanks and do our best to create a comfortable environment for them. What needs to be studied in this paper is the urban and rural empty nester who need more attention. They are a group separated from the intelligent age. In the intelligent era, they have to use smart Banks. Therefore, it is particularly important to design a savings device that is more suitable for urban and rural empty nester. This is a qualitative research to design an intelligent savings device for urban and rural empty nester.

1.Empty nests in urban and rural China

The empty nest theory was first proposed by Hill and Hansen in the 1930s. In 1949, in his paper, Gurlik divided each family population into six stages: formation、expansion、stabilization、contraction、empty nest and disintegration according to the beginning and end of each family population. The concept of an empty nester refers to an elderly person who has no children to take care of, lives alone or lives with a couple. It can be divided into three situations: the first is the childless, widowed elderly without a wife. The second is the elderly who have children but live apart from them. The last one is that the children are away from home and the elderly have to be separated from them. The empty nesters in this case are couples with children over 60 years old who have been living alone outside for a long time or single elderly people.

According to the population data released by the national bureau of statistics in past years, the proportion of people over 65 years old in China's total population was 4.9 percent in 1982, 5.6 percent in 1990, 7.1 percent in 2000, 8.9 percent in 2010 and 10.1 percent in 2014. As shown in figure 1-2, the proportion of the elderly population in China is increasing rapidly, and the aging of the population is accompanied by the problem of empty nesters, which has become a major social problem.



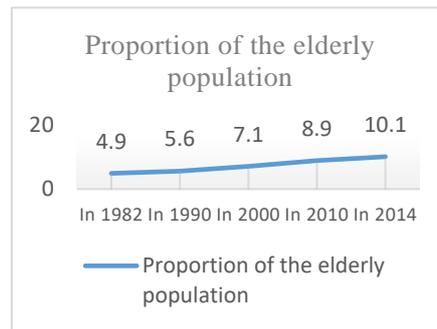


Figure 1: population proportion of elderly population in China

2. Empty nesters old man analysis the actuality and problems

In China, mobile payment is active in all aspects of life, bringing great convenience to the nation. However, this group does not include empty nesters, who are a specific group of people in an intelligent society. They live in an intelligent environment, but are excluded from this group.

In this paper, the application of empty nesters in saving facilities was investigated. Found them in handling savings business, the main business required is withdrawal. The withdrawal of capital source roughly divided into four types, the first category is retirement pay, the second class of social security, the third class for children of remittance, the fourth class for national subsidies, such as veterans、low income、returning farmland to forest、the old man over the age of 70 and other governmental subsidies.

In the process of investigation, eight questions were analyzed and summarized. (1) Most young people go out for work, leaving elderly people to raise young children, and regularly remit money to their families every month to maintain their basic living and the money a child needs to grow up, which requires elderly groups to enter the savings activities. (2) Most empty nesters use the red passbook instead of the bank card. (3) Most of the elderly in the unconscious of the default intelligent era of convenience, but in the actual operation process is standing in the second perspective, the need to operate the intelligent savings equipment with the help of staff. (4) In the view of talking about the intelligent savings device is all the elderly are proposed interface font small. (5) The old man also said that the interface is complicated, there are some unnecessary options and voice reminder is not clear enough. (6) In the survey there are male elderly withdrawals more than the number of female elderly withdrawals. (7) Most empty nesters don't use counters or ATM, so the money they need to withdraw is remitted by their children to relatives, who then transfer it to the elderly.

The elderly and vulnerable groups without digital capability are part of the social group and also the group that needs to be benefited. Because the existence of this group is impossible to disappear even in the case of the strong third-party mobile payment, it is a trend to rely on the empty nesters and apply them to the savings devices.

3. User characteristics

Design is born to serve people, not users to adapt to design. Therefore, the design should start from the physiology and psychology of the user group, explore the characteristics of this group, and start from their needs to design products that meet the needs of users.

3.1. Psychological characteristics of empty nesters

The common psychological characteristics of empty nesters are inability to do anything, gradually rising sense of incompetence and loss、psychological distrust of the world, and the degeneration of nervous system, behavior and perception.

3.2. Physiological characteristics of empty nesters

Psychologically, the status of the elderly has changed in their eyes this is the decline of family status, so the sense of loss, inferiority is obvious, have random ideas. The degradation of some physical

functions leads to the slow behavior, and thus produces a sense of decline in the intangible psychological, resulting in greater psychological pressure.

3.3. Personal characteristics of users

Empty nest old man of the family will be by gender, age, social background and affected by the degree of education, formed by the different to the "science and technology acceptance" the old man under the condition of the physical characteristics degradation will produce "technology phobia", for intelligent product is strange, it makes them unable to use life type of basic science and technology service facilities, and more alienation intelligent products. Many of the existing savings devices are smart products that empty nesters dread.

4. Unreasonable part of existing savings equipment

4.1. Unreasonable part of labor in existing saving equipment

Restricted by various social conditions at that time, in the villages and towns of empty nesters old man by the education level is generally low, many can't read alone, so these groups store exchange activities need to rely on the counter staff guidance to complete.

(1) The counter can solve the problem of difficulty for old people to withdraw money, but it has low timeliness. Simple operation activities will affect the customers who queue up for other complicated businesses. (2) It takes a long time to deal with business at the counter, but the rest area is limited, which is beyond the physical capacity of the elderly. (3) Counter staff are trained and enter this industry, but there is no lack of distrust and preciseness towards empty nesters, which makes the staff irritable, and the staff have a bad attitude when handling business for the elderly, which even hurts the self-esteem of the elderly. (4) The long-term cost of the staff is high, and they have holidays and rest time, so they cannot provide services at any time.

4.2. The existing savings are the irrational part of the intelligent equipment machine

With the progress of science and technology, the intelligent era has begun to creep in, and the emergence of intelligent savings devices in major Banks has greatly enriched the daily lives of ordinary people. Under the condition that the timeliness of the counter is insufficient, the intelligent saving device is favored by the user group, but new problems appear in the use process.

(1) There is an age gap in the setting of the existing savings equipment. The setting group does not take into account the elderly group, and the setting process is complex. (2) The display interface of the saving device is complex, with unnecessary Settings. (3) Whether it is the number keys or the interface font display is too small to meet the needs of the elderly. (4) The prompt is not obvious and clear. (5) The color of the machine is often cold, which makes the empty nesters' cold and lonely mood even weaker and paler. (7) The basic design of small towns is not perfect and the social resources are insufficient. There are basically such Banks as post offices and rural commercial Banks. The machine setting is less, there will often be part of equipment damage and too late to repair, in the "migratory birds return" when the flow of large and affect efficiency.

5. New intelligent saving equipment

5.1. Direction of intelligent savings devices based on empty nesters

Savings devices should be designed to lower standards and be limited to people who have difficulty in using them, so that the design is suitable for the general population. The direction of this design is based on the above problems and in combination with characteristics of the old man's psychological physiology design can satisfy the urban empty nesters old man use smart saving equipment, design a new urban and rural old man smart saving equipment.

5.2.Product presentation

As shown in figure 5-1, this product is divided into two parts, the display screen and the money box. The operation bayonet ports are arranged in the upper part of the machine according to the custom. The operation steps are arranged in the position according to the orientation, and the bankbook length ranks them at the top separately for this purpose. According to the azimuth habit from bottom to top next, it is bank card socket、 ID card socket and voucher small bill exit respectively. Replacing complex text forms with numbers and simple patterns.Because traditional buttons for plastic material, in with the touch of the people and corrosion, which is formed by sweat and paint, so the breakthrough tradition button in the form of a password, password now popular touch screen interface, and heavy work lead to deformation of the fingers and bulky, button in the form of a password will be next to accidentally touch the Numbers, so take the touch screen instead of buttons. Slow movement of the elderly in the use of slow reaction and long time to lower the head of the operation will lead to physical discomfort, so the password keyboard arranged in the product with its eyes on the part, to alleviate fatigue.

The display interface is divided into operation steps, digital keys and display interface by region. The serial number marked with operation is displayed in the form of a pattern on each socket. Setting up the middle of the smooth plane is convenient for the elderly to let go and relieve part of the weight, put carry-on items. The light prompt with arrow display is designed beside each required operation jack, and the green light arrow indicates that the user will operate or is operating, and the light prompt and voice prompt are combined to achieve better effect.



Figure 2: shows the figure



Figure 3 :new smart savings device interface

Difficulties in the operation of intelligent savings machine are mainly concentrated on the display of the interface. The complexity of the interface will lead to difficulties in the process of product promotion, which will greatly blow the self-esteem of the elderly and make the interface as clear as possible.

As shown in figure 5-2, the interface display of this product opens the eye-protection mode. Interface simplification is one of the aims of this design.Numbers are presented in combination with simple fonts, complex fonts are distinguished by red and green in social language, and red characters are used to indicate return and green characters to indicate confirmation to simplify more complex fonts.Interface items are mainly simple withdrawal items, other items in the other inside to make the interface simple and clear. It takes time to wait in the card taking link, so there is a ring counting second device in the card taking link to express the remaining processing time and feed back the information that the customer is running.

6. Conclusions

The problem of empty nesters in Chinese empty nester families has become a major social problem. Empty nesters have become a major social problem in China. We should pay attention to this group, integrate them into the public, and turn technology into a tool for application. Therefore, we should start from small things, always pay attention to the inconvenience in their lives, design intelligent products that they can use, and feel the beauty brought by science when using the convenience brought by intelligent technology products.

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