

Generational Differences in The Willingness to Participate in Mutual-Aid Elderly Care: A Focus on The Time Bank Model in China

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Abstract: This mutual care among the elderly helps to establish a novel community-based ecosystem for aging populations. Among various models, the “Time Bank” has gained prominence in mutual-aid elderly care due to its unique philosophy and practical value. The Time Bank model has been gradually adopted worldwide and has found significant application in the field of elderly care. For many people, the Time Bank remains an unfamiliar concept or one they have never even heard of. This limited public awareness constrains both the dissemination and efficacy of the model. Therefore, this paper aims to use empirical research to analyze the awareness and willingness to participate of different age groups towards the Time Bank model. It will further explore the practical challenges it faces in wider promotion and propose actionable recommendations. The ultimate goal is to provide a meaningful reference for the innovation and improvement of mutual-aid elderly care models in China.

Keywords: Time banking; Social exchange theory; Mutual-aid elderly care; Willingness to participate

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1. Introduction

With China’s socioeconomic development and improved healthcare standards, the proportion of the elderly population aged 65 and above has been steadily increasing, reflecting an aging demographic trend. Currently, the elderly population in China continues to grow, with those aged 60 and above exceeding 250 million, accounting for approximately 18% of the total population, and this figure shows a year-on-year growth trend ^[1]. This demographic shift directly impacts the social security system, making the development of diversified pension models not merely an option but a necessary imperative.

Mutual-aid elderly care, as an innovative service model, is being promoted rapidly across the country ^[2]. This model moves beyond blood ties, advocating for mutual support between the young and the old, as well as among the elderly themselves, aiming to build a community-based elderly care ecosystem. China began piloting the Time Bank model in the early 21st century, with major cities like Shanghai, Beijing, and Nanjing taking the lead in exploration, accumulating valuable practical experience ^[3].

However, public awareness of the Time Bank remains relatively low. Empirical studies show that the public awareness rate of this model is only 12.7%, indicating it has not yet formed an effective collective understanding. Among

groups under 35, the recognition rate is less than 5%, revealing an objective intergenerational gap in awareness^[4]. This awareness gap limits the effectiveness of Time Bank promotion.

2. Literature review

The concept of time banking can be traced back to Robert Owen's idea of 'labor notes.' Its modern theoretical framework and operational model were formally proposed by American scholar Edgar Cahn in "Time Dollars," with core principles including asset restructuring, mutual benefit, and social capital. From a theoretical perspective, time banking is an important branch of "complementary currency", along with local exchange trading systems (LETS) and local currencies, which together complement the mainstream monetary system^[5].

In the United States, it ranges from community revitalization to supplementing public services. Academic research in the United States has mainly focused on the impact of time banking on social capital, the analysis of participants' motivations, and its potential in alleviating social inequality^[6]. Collom found that participation in time banking significantly enhances members' sense of community belonging and trust levels. The relevant research and development in the United States provides references for China in the process of urbanization and the innovation of community health services.

In Europe, time banking is seen as a social innovation to address issues such as an aging population and the financial pressure on public services. European scholars, such as Seyfang, have conducted extensive empirical research on time banking, focusing on its contributions to ecological sustainability, social inclusion, and local economies as a "new economy" practice^[7]. The time banking system in the United Kingdom is relatively well-developed. Its uniqueness lies in emphasizing the 'co-production' model, whereby service users and providers collaboratively design and deliver services to enhance the efficiency and human-centric quality of public services^[8]. During the European debt crisis, grassroots time banks emerged in large numbers in Greece, becoming an important tool for sustaining livelihoods^[9]. Research on time banks in Europe provides important insights for enhancing community mutual support and improving the efficiency and human-centeredness of public services in China.

Japan's unique 'Care Time Bank' model allows volunteers to accumulate hours spent providing care services to the elderly, which can later be redeemed when they or their family members require care. This model has received recognition and support from local governments, and in some regions, it is even possible to partially exchange the accumulated hours for statutory long-term care insurance services^[10]. The Japanese model holds significant reference value for China in exploring a pension service system that coordinates home-based, community, and institutional care. However, the issues faced by this model are also important considerations for China when undertaking similar explorations.

Domestic research on time banks mainly focuses on key areas such as elderly care services, community governance, policy support, and technical support. The Third Plenary Session of the 20th Central Committee of the Communist Party of China clearly proposed the national strategy of "actively responding to population aging"^[11]. In early 2025, the "Opinions of the Central Committee of the Communist Party of China and the State Council on Deepening the Reform and Development of Elderly Care Services" explicitly proposed to "promote community-supported home-based elderly care" and to "explore the establishment of a time savings management system for volunteer elderly care services" through measures such as government-purchased services. This document provides policy guidance for the development of a mutual assistance elderly care model.

Practical studies represented by the Nanjing Time Bank and the Hongkou District Time Bank in Shanghai show that this model can effectively improve the quality and efficiency of elderly care services and build a sustainable community mutual assistance network. Scholars such as Tong et al. pointed out that the time bank becomes an important link between home-based care and community-based care through the mechanism of resource redistribution^[12].

At the level of community governance, the 'time currency' incentive mechanism can effectively promote cooperation and trust-building among community members, forming a new governance pattern of "co-construction, co-governance, and shared benefits"^[13].

In terms of policy support, the practical exploration of local governments is worth noting. For example, the various mutual-aid elderly care measures introduced in Gutian, Fujian Province^[14], clearly define operational norms and incentive policies, and build a sustainable development framework of “government guidance + social participation,” providing a model for national promotion.

In the field of technology, taking Hongkou District in Shanghai as an example, the WeChat Mini Program developed there has achieved the intelligent management of service records^[15], initially establishing a modern operation system of “Internet + time bank.”

Although existing studies provide important theoretical and practical references, their scope of research subjects remains relatively limited. Therefore, this paper focuses on the population of Zhejiang Province as a specific research subject, examining different groups’ acceptance of and willingness to participate in time banks, and proposes recommendations to enhance participation willingness among different groups. This serves as a valuable supplement and extension in terms of concretizing the subjects of existing research.

3. Materials and methods

3.1. Data source

The research data comes from a questionnaire survey conducted in 2025 targeting Generations X, Y, and Z in the Jiangsu-Zhejiang-Shanghai region. A total of 451 valid questionnaires were collected. The questionnaire covered basic information, awareness levels, willingness to participate, and influencing factors.

3.2. Research methods

- (1) Questionnaire Survey: A Likert five-point scale was used to measure dimensions including awareness level, behavioral attitude, perceived usefulness, perceived ease of use, subjective norms, perceived behavioral control, and willingness to participate.
- (2) Statistical Analysis: SPSS was used for descriptive statistics on the respondents’ age, gender, educational background, occupational status, monthly income level, and living arrangements. Reliability and validity tests were conducted to prove data reliability. Correlation analysis was used to demonstrate relationships between variables. K-Means clustering analysis was used for preliminary population classification. Hierarchical analysis models and Structural Equation Modeling (SEM) were employed to verify the influence paths between variables.

4. Results

4.1. Respondent characteristics for the time bank participation willingness survey

The sample consisted of 451 individuals. The gender distribution was relatively balanced (55.65% female, 44.35% male). The age structure was predominantly composed of individuals aged 15–45 (66.74%). The educational level was generally high, with bachelor’s degrees or higher representing the largest group (66.10%). Occupations were primarily students (29.30%), government or public institution employees (28.40%), and freelancers (20.80%). Income was mostly concentrated in the range of 2,000–8,000 RMB (55.60%). The most common living arrangements were living with a spouse (33.50%) and two-generation households (28.20%). Overall, the sample was primarily composed of young and middle-aged, highly educated individuals with diverse occupations and medium income levels, demonstrating good representativeness.

4.2. Profiles of awareness level and participation willingness for Generations X, Y, and Z: Based on K-means clustering

Using SPSS 27.0, respondents from Generation X, Y, and Z were divided into two clusters (Table 1).

Table 1. Summary of clustering characteristics across generations

Characteristic dimension	Cluster X1 (Positive Cognitive Type)	Cluster X2 (Conservative and wait-and-see type)	Cluster Y1 (High-willingness participation type)	Cluster Y2 (Low-willingness alienation type)	Cluster Z1 (Low-demand hesitant type)	Cluster Z2 (High willingness potential type)
Basic portrait	Female, college diploma, self-employed	Female, Bachelor's degree or above, government/public institution	Male, college diploma, self-employed businessman	Female, college diploma, self-employed	Female, college diploma, self-employed	Female, Bachelor's degree or above, Self-employed
Monthly income	2000–5000 yuan	Under 2000 yuan	5,000–8,000 yuan	5,000–8,000 yuan	2000–5000 yuan	5,000–8,000 yuan
Mode of living	Living with spouse	Living with parents or children	Living with spouse	Living with parents or children	Living with spouse	Living with spouse
Degree of awareness	High (Understanding and attention)	Low (unaware and indifferent)	High (Understanding and attention)	Low (unaware and indifferent)	Low (unaware and indifferent)	High (Understanding and attention)
Subjective norm	High (Family and Community Support)	Low (family attitude is average, not promoted in the community)	High (Family and Community Support)	Low (family attitude is average, not promoted in the community)	Low (no perceived support from family or community)	High (Family and Community Support)
perceived ease of use	High (Convenient process, able to use proficiently)	Low (Process clarity is average, not proficient)	High (Convenient process, able to use proficiently)	Low (the process is inconvenient, difficult to use proficiently)	Low (the process is inconvenient, difficult to use proficiently)	High (Convenient process, able to use proficiently)
Demand and willingness to participate	High (with relatively large demand)	Low (Future demand is average)	High (with relatively large demand)	Low (Average demand)	Low (not much demand)	High (with relatively large demand)

4.3. Horizontal comparison across the three generations

A comparison reveals significant differences in the awareness levels, participation intentions, and their influencing factors for the Time Bank model among the three generations:

- (1) Regarding Awareness and Attention, differences in Generation X are mainly related to education, income, and community support; differences in Generation Y are primarily reflected in living situation and community support; differences in Generation Z are mainly influenced by education and income.
- (2) Regarding Need and Technology Acceptance, in Generation X, individuals with higher need are typically females living with spouses and receiving community support, while those with lower need are females in multi-generational households lacking community support. In Generation Y, those with a higher need are males living with spouses and receiving community support, while those with a lower need are females in multi-generational households with insufficient community support. In Generation Z, those with a higher need are females with bachelor's degrees or higher receiving community support, while those with a lower need are females with associate degrees and average community support.
- (3) Influencing Factors: For Generations X and Y, family environment is a major factor affecting participation willingness. For Generation Z, educational background is more influential. Community support is a common

factor influencing the participation willingness to participate of all three generations. Individuals from Generations X and Y might rely more on family support, as their upbringing environments emphasized family responsibility and intergenerational mutual aid. Scholar Gong Jianrong suggested that intergenerational relationships and living arrangements significantly influence the elderly's willingness to participate in mutual-aid models ^[16]. In contrast, Generation Z individuals place greater emphasis on personal capability and educational background, likely because they grew up in a social environment that focuses more on individual development.

4.4. Analysis of factors influencing respondents' willingness to participate in Time Bank: Based on structural equation modeling

4.4.1. The following hypotheses were proposed

- H1: An individual's perceived usefulness of the mutual-aid elderly care model has a direct positive impact on their willingness to participate.
- H2: An individual's perceived ease of use of the mutual-aid elderly care model has a direct positive impact on their willingness to participate.
- H3: An individual's awareness level of the mutual-aid elderly care model has a direct positive impact on their behavioral attitude.
- H4: An individual's awareness level of the mutual-aid elderly care model has a direct positive impact on their subjective norms.
- H5: An individual's awareness level of the mutual-aid elderly care model has a direct positive impact on their perceived behavioral control.
- H6: An individual's awareness level of the mutual-aid elderly care model has a direct positive impact on their willingness to participate.
- H7: An individual's behavioral attitude towards the mutual-aid elderly care model has a direct positive impact on their willingness to participate.
- H8: An individual's subjective norms regarding the mutual-aid elderly care model have a direct positive impact on their willingness to participate.
- H9: An individual's perceived behavioral control over the mutual-aid elderly care model has a direct positive impact on their willingness to participate.

4.4.2. Goodness-of-fit test for the SEM model of factors influencing willingness to participate in the Time Bank model

According to the results in **Table 2**, CMIN/DF (Chi-square/Degrees of Freedom) = 3.528, which falls within the acceptable range of 3-5. RMSEA (Root Mean Square Error of Approximation) = 0.075, which is within the good range of <0.08. Furthermore, the results for IFI, TLI, and CFI all reached the excellent level of above 0.9. Therefore, based on these analysis results, it can be concluded that the SEM model for the participation willingness scale has a good fit.

Table 2. Model goodness-of-fit test

Index	Reference standard	Result
CMIN/DF	1-3 is excellent, 3-5 is good	3.528
RMSEA	< 0.05 is excellent, < 0.08 is good	0.075
IFI	> 0.9 is excellent, > 0.8 is good	0.921
TLI	> 0.9 is excellent, > 0.8 is good	0.904
CFI	> 0.9 is excellent, > 0.8 is good	0.920

Table 3. Hypothesis testing results for SEM paths of factors influencing

Path relationship	Estimate	S.E.	C.R.	P
Behavioral Attitude 4 ← Perceived usefulness 4	0.879	0.138	7.537	***
Behavioral Attitude 4 ← Perceived usability 4	0.02	0.266	0.063	< 0.95
Behavioral Attitude 4 ← Awareness level 4	0.113	0.185	0.44	< 0.66
Perceptual behavior control 4 ← Awareness level 4	0.713	0.038	12.088	***
Subjective norm 3 ← Awareness level 4	0.855	0.041	15.388	***
Participation intention 4 ← Awareness level 4	-0.51	0.095	-3.487	***
Participation intention 4 ← Perceptual behavior control 4	0.913	0.095	9.662	***
Participation intention 4 ← Subjective norm 3	0.405	0.104	3.404	***
Participation intention 4 ← Behavioral Attitude 4	0.312	0.056	5.014	***

According to the results in **Table 3**, the analysis of path coefficients supports several hypotheses:

- (1) Perceived usefulness has a direct positive impact on an individual's attitude towards participating in the Time Bank. Thus, H1 is supported.
- (2) Awareness level has a significant impact on an individual's subjective norms regarding Time Bank participation and also directly influences perceived behavioral control. Thus, H4 and H5 are supported.
- (3) Willingness to participate is significantly influenced by behavioral attitude, subjective norms, and perceived behavioral control. Thus, H7, H8, and H9 are supported.
- (4) Several other hypothesized paths (H2, H3, H6) did not reach statistical significance.

4.4.2. Analysis of reasons for non-significance of the path

This study's structural equation modeling revealed that hypotheses H2, H3, and H6 were not statistically significant, highlighting unique barriers in time bank promotion. H2's non-significance indicates that "ease of use" is currently not a decisive factor - with low model awareness and operational familiarity, potential participants prioritize fundamental "utility" and "trustworthiness" over convenience. The non-significance of H3 and H6 challenges the conventional "knowledge-attitude-practice" assumption, suggesting current publicity fails to address deeper public concerns while structural factors like trust and risk create stronger decision barriers than basic awareness. Collectively, these results indicate public decision-making has evolved beyond technical acceptance to value assessment and trust building. The core challenge lies not in proving usefulness or raising awareness, but in establishing credible long-term value and convincing the public of the model's effectiveness in addressing retirement needs. Future strategies should therefore shift from knowledge dissemination to building system credibility, demonstrating value returns, and designing mechanisms that ensure long-term stability.

5. Discussion

5.1. Current status of the Time Bank model

Research indicates moderately high levels of familiarity with time banks, positive behavioral attitudes, and perceived usefulness, with these variables being significantly correlated. K-means clustering reveals distinct generational differences: Generations X and Y show stronger reliance on family support structures, reflecting values of intergenerational solidarity, while Generation Z emphasizes individual capability and education, displaying greater openness to innovative elderly care models.

These differences extend beyond cognition to motivation and trust. Participation willingness among X and Y aligns with collectivist values and community support, consistent with high-trust models like Japan's "Care Time Bank." In contrast, Generation Z's willingness is driven more by personal capital (e.g., education, income), reflecting individual agency and utility assessment, similar to participation patterns in European "new economy" practices.

Notably, basic knowledge does not directly translate into participation intention (as shown by nonsignificant paths H3 and H6 in SEM), indicating traditional awareness campaigns are insufficient. Across generations, potential participants prioritize system credibility and long-term sustainability—concerns mirrored in U.S. experiences where operational instability hinders development.

Ultimately, generational differences reflect an evolving social contract for elderly care: older cohorts seek modernized traditional support, while younger ones view time banks as personalized planning tools. Effective promotion must thus balance community trust-building for X and Y with standardized, reliable system design for the more individualistic and cautious Generation Z.

5.2. Suggestions for promoting the Time Bank model

- (1) Individual Level: Enhance personal awareness and shift generational mindsets. Individuals should actively seek out knowledge, participate in relevant practices, and encourage people around them to participate, helping more people understand this model.
- (2) Community Level: Communities should play an organizational and promotional role. They can use various channels like bulletin boards and WeChat groups, to regularly disseminate information about the Time Bank. Media and online platforms can be utilized to promote the culture of mutual-aid elderly care and champion the traditional virtue of mutual help.
- (3) Government Level: The government should formulate specific laws and regulations to clarify the rights, obligations, and other aspects of all parties involved. It should establish nationally unified operational management standards for Time Banks. Selecting well-performing Time Banks as typical cases for focused promotion and encouraging other regions to learn from their successful experiences, adapting them to local conditions, is crucial.

5.3. Opportunities and challenges for the Time Bank model

In summary, the Time Bank faces both advantages and difficulties in its development. Advantages include low-cost mutual aid, enhanced community cohesion, and flexible service matching. Challenges involve difficulties in valuing time, high personnel mobility, lack of operational standards, insufficient legal safeguards, trust issues, and competitive pressures. However, policy support, growing social demand, and digital development present significant opportunities.

6. Research limitations and future directions

This study has several limitations despite its initial insights into intergenerational perceptions and willingness to participate in time-bank mutual elderly care. The sample was predominantly drawn from the Jiangsu-Zhejiang-Shanghai region, with an overrepresentation of highly educated, young, and middle-aged groups, thus limiting the national generalizability of findings, particularly for older, less-educated, and rural populations. Methodologically, reliance on cross-sectional survey data restricts causal inference and long-term tracking of evolving attitudes. Additionally, the exclusion of "perceived risk" due to measurement reliability constraints may overlook key participation barriers, while discussions of systemic issues like cross-regional "time-coin" circulation and legal safeguards rely largely on literature reviews and open-ended responses rather than rigorous empirical testing.

Future research should expand sample diversity across regions, urban-rural divides, and socioeconomic backgrounds, with targeted inclusion of actual elderly service users; employ longitudinal or comparative case designs to track behavioral

dynamics; integrate validated scales or mixed methods to examine trust-building, risk perception, and technology acceptance mechanisms; and investigate sustainable operational models through policy design, technical platform interoperability, legal clarity, and cross-generational incentive compatibility.

7. Conclusion

This study investigated the willingness of Generations X, Y, and Z to participate in the Time Bank mutual-aid elderly care model. It identified key influencing factors, including awareness level, behavioral attitudes, subjective norms, and perceived behavioral control. Significant generational differences were found, shaped by factors like family environment (X/Y) and education (Z), with community support being universally important. The SEM model confirmed several key influence paths. Based on these findings, multi-level recommendations were proposed for individuals, communities, and the government. While the Time Bank model faces challenges related to standardization, trust, and sustainability, its potential benefits in addressing an aging society are substantial. With coordinated efforts from all sectors of society, it can evolve into a viable and valuable component of the future elderly care system.

Disclosure statement

The authors declare no conflict of interest.

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