

# The Application of Time Banking in Health Management

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**Abstract:** Health is affected by health management resource and capacity. There are two problems in health management: insufficient health management resources and unequal health management capabilities. This article introduces the concept and value of time banking that is regarded as a new social capital exchange and distribution path. This article also explores its application in health management, and puts forward two paths of how to utilize time banking online information system to improve health management resource and capacity. The first path is to provide social capital for health management by utilizing time banking to gather social capital. The second path is to improve health management capacity by using time banking to create an integrated health management system that can achieve social capital exchange and social division of labor.

## 1. Introduction

Health is affected by health management. Health management refers to the whole process of comprehensively monitoring, analyzing evaluating the health management of individuals or groups, providing health consultation, guidance, and intervening in health risk factors[1]. The object of health management is health resources and the purpose of it is to maximize the utilization of these resources and to provide personalized services so as to improve people's health status. Health management resources indicate the capacity of the system to provide services. However, in practice, insufficient resources and unequal distribution impede the development of health management.

### 1.1 Insufficient Health Management Resources

The defect, to begin with, is the scarcity of professionals in the health management system. Then, there is a lack of health management institutions whose quality of service need to be strengthened. Last but not least, COVID-19 is exerting enormous pressure on the health care system. All of these make it difficult to meet people's health demands by merely relying on hospital resources.

Social capital, proposed by French scholar Bourdieu which is manifested as trust among people and social relationships in networks[2], can compensate for the lack of health management resources. So in this research, we construct the complement on the basis of the theory. However, when voluntary service and community care (the component of social capital) are provided to vulnerable groups, such as the elderly and the disabled, infringement and other safety problems may occur.

Excepting the deficient of credit endorsement of social capital, there are difficulties in its integration process. The first is how to combine social resources with health management, and the other is how to play an active role in the intervention of health management. Thus, we put forward utilizing time banking and its online system to gather reliable social capital.

### 1.2 Unequal Health Management Capabilities

Besides insufficient health management resources, there are still unequal health management capabilities.

1) The health management resources are unevenly distributed among regions and countries. Taking China as an example, there exists a massive gap of economic and social development between

the east and the west. Furthermore, the Siphon Effect makes talents, equipment, and medicine concentrated in larger hospitals. As the income gap becomes wider and wider, multiple studies[3-4] have proved that health inequality is increasing in most countries[5]. Health management, especially communities', cannot provide qualified and equal services because of immature technology applications. While ideal health management relies on big data, which can collect, process, and analyze huge information[6] and deliver equally satisfying and personalized services to participants.

2) There is disproportion of individual health management capacity. Educational unfairness and economic inequality generate uneven health cognition and behavioral ability. Many studies [5,7-9] point out that there is a negative correlation between social class and mortality.

3) More seriously, health management mainly aims at developing the medical market [6], which makes it mainly serve the rich, unfortunately, depriving the public's health rights.

The development of Internet technology makes equalization of health resources and informatization of health management to become a reality. For example, information sharing based on E-health [10], telemedicine[11], online course training, etc. Therefore, how to use Internet information technology to promote the equal development of health management has become another topic. This article will explore the time banking path, a new social capital integration online system, to increase health management resources and enhance health management capacity.

## **2. Time Banking concept and values**

### **2.1 Time Banking Concept**

The development of time banking concept has experienced three stages [12].The first stage was from 1830s to 1970s. Robert Owen set up UK National Equitable Labor Exchange in 1832 and this organization had issued labor notes(see Wikipedia Time-based currency).In 1973, Japanese Teruko Mizushima fathered Volunteer Labor Bank which has been considered as the first Labor Bank in the world [13]. In this period, the value of time and time exchange have been recognized worldwide.

The second stage was from 1980s to 1990s.Community currency has become the complementary currency to fulfill the need of underprivileged people who cannot obtain services from market due to their meager income. Thanks to community currency system, local people can publicize the goods or services they wish to offer and/or obtain through a directory, newsletter, notice board, or Web site. In this process, the recipient “pays” and the provider only receives time credit or time currency that can be earned from helping others [14]. Community currency has many types. Though the main three types are Local Exchange Trading System, Time Dollar and Hours System (such as Ithaca HOURS started from 1991), Time Dollar is the most popular type [15-16]. Time Dollar was started in 1983 and created by Edgar Cahn[17]. Every people can get service from other people by spending time dollars that they earned by providing services for others. In early period, Time Dollar was called Time Credits. Computerized Time Dollar accounting systems help mobilize human resources to provide direct services [18]. The popularity of Time Dollar has accelerated the process of Time Banking.

The third stage was from 1990s to Now. From the end of 1990s, community currency has been spread globally, due to the development of information and computer technology. Many countries adopted community currency to support community development. Time Dollar was recognized a community currency of American and it cannot be applied in different countries or regions, so people used time banking Instead of Time Dollar. Time banking is a model or system that people can exchange services by using time credits or time currencies. Time Bank is recognized as an organization to boost the development of time banking [12]. In 1995, Edgar Cahn founded an organization called TimeBanks USA which has been operated as an incubator for new time banking initiatives. Today organized time banking takes place in more than 30 countries [19]. In this stage, the most important advancement is that digital and information technology have been applied in time banking system. Some organizations created time banking App or online software, such as Community Weaver and Time Online, to connect different time banking subsidiary organizations into a whole system, which enables time currencies exchange on a larger scale.

## **2.2 Time Banking value**

1) Time banking works as an up-to-date and safe social capital management system. Time banking provides opportunity and power to create a world where any person is willing to contribute by helping others. In return, any person can earn sufficient purchasing power to enjoy a decent standard of living [20]. That is to say that every person can be a contributor for social development by utilizing their time, skills, knowledge, information, experience to help others. In time banking system, all members including older adults, the youngsters and persons with disabilities can be a service producer [21]. Time banking enables disadvantaged groups who are abandoned in labor market to become human capital for social development. As Edgar Cahn said that there are “no throw-away people”, all people are the assets of our society [22], because all people can achieve social value by doing what they can do, even a simple work, such as accompanying or talking.

Nowadays, thanks to computer software and online technology, time banking is designed as a modern and safe social capital management system that people are easy classified by different types based on population information, such as age, gender, location, skill, knowledge, profession. All the information will be visualized on screen, for example, who wants help, who is the nearest one, who is free now, who has this task capacity or who is the most praised person [23]. With the help of time banking system, services exchange, matching, and management are more efficient. In addition, time banking system are serviced as a safe protection system that excludes dangerous people who are aggressive or violent from service producer group based on member background information investigation[24]. Time banking also tells its members how to protect themselves throughout learning experiences from other people who have finished time exchange and shared their feedbacks in online information system about dangerous people, activities and surroundings.

2) Time banking builds a larger social capital supply network. Since community currency has its limitation that service exchange and time currency transaction can only be operated on a community scale, time banking creates a new path for social capital integration by using information system to connect different communities and organizations into a whole system, which expands service supply from family or community to city or country[25]. Based on time banking online information system, social capital supply, especially the human capital, knowledge capital, skill capital, information capital, is increasing exponentially. In other words, time banks are connected in a time banking online information system, services and social capitals can flow from one time bank to another in different areas. For example, Timebanking UK, a United Kingdom Non-Governmental Organization, has designed an online software Time Online2 and integrated 268 organizations of United Kingdom within this online system[26]. Time banking releases traditional social capital from geographical limitations, and enables different communities and institutions to form a new social network relationship. Communities and institutions can use their existing social capital in exchange for new social capital through the time banking online system to meet their development needs. Besides, by taking advantage of time banking online system, communities and institutions can achieve the division of labor in one system, which will build a strong social network that each community and organization can exert its own advantages to play a role in the system.

## **3. Paths of application: Time Banking in health management**

Time banking is considered as a new way to solve the problems of insufficient distribution of social capital. Besides government distribution and market distribution, time banking has become the third distribution of social capital, namely, social distribution[27]. This paper deems that when health management cannot meet the needs through government regulation and market regulation, information-based time banking system will be an innovative path to integrate social capital for health management resource supply and enhancing health management capacity.

### **3.1 Path to Provide Social Capital for Health Management Resource Supply**

1) This paper suggests to establish a time bank information system under the unified management of the government to integrate and provide social capital for health management. Then, relying on

propagating voluntary service spirit and time currency saving, the elderly, the persons with disabilities, teenagers, women who come from different communities and organizations are guided to join the time banking. Especially, those with health management capabilities, health knowledge, and health-related work experience are encouraged to participate in time banking services. More importantly, to participate in time banking activities will gather social capital to replenish the shortage of market and government in the supply of health management resources. Besides, through service interaction, the flow of health management capabilities, knowledge, and information among different groups of people will be realized, which enhances personal health management capacity and increases the social capital supply of health management resources.

2) This paper also advises utilizing time bank online information system to achieve the safe and precise intervention of social capital in health management. Firstly, it is necessary to register and review the background information of those who join time banking. Through the networking of government and bank database, within the scope of data security and personal privacy protection law, it can review the credit and criminal records of participants to avoid risky people participate in inappropriate health management services, which realizes the security check of social capital(see Fig.1). Secondly, that should establish a time banking database of health management social capital. Age, gender, race, religion, height, education level, profession, skills, location, contact information, available health management services and the need of health management services should be recorded in time banking database. This process is used to accurately classify the information for the health management service matching. Finally, that should use computer and information software to formulate a unified data matching protocol to achieve the self-matching of data that from health management service demanders and providers.

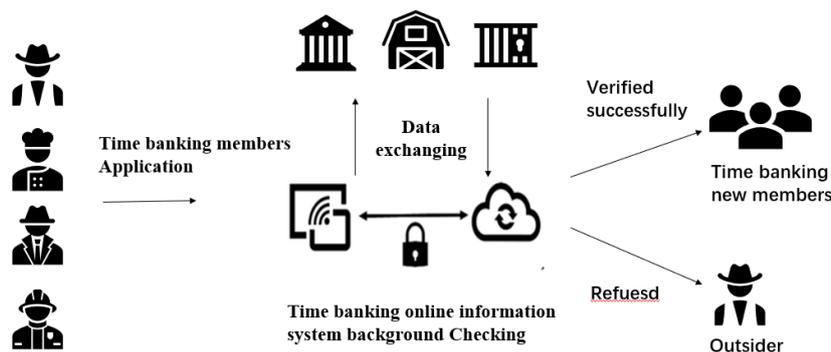


Fig.1. Security check of social capital based on Time banking online system

### 3.2 Path to Improve Health Management Capacity

In the future, utilizing time banking online system can achieve social capital integration and exchange of health management, which will enhance the health management capacity of communities and organizations.

1) This paper recommends to build a social capital exchange system of health management by time banking online system (see Fig.2). Firstly, government should promote different communities and organizations, such as hospitals, universities, nursing homes, etc., to participate in the time banking mutual-help system, and classify the social capital of different communities and organizations. Then, based on those social capital of various communities and organizations, time banking system can sort out the human capital, information, knowledge, skill, equipment that can be used for health management, health education and health services. Through the time bank online information system, health management social capital can be exchanged between communities and organizations, which will achieve the equal distribution of human capital, information, knowledge capital, skills and other social capital that can be applied in health management. In the process of social capital exchange, worker of health management organizations and individuals of communities can learn knowledge and skill about health management from each other, which enhance the health management capacity of organizations and communities. Besides, social capital supply of health management by time banking system also improves the health management capacity of the whole society.

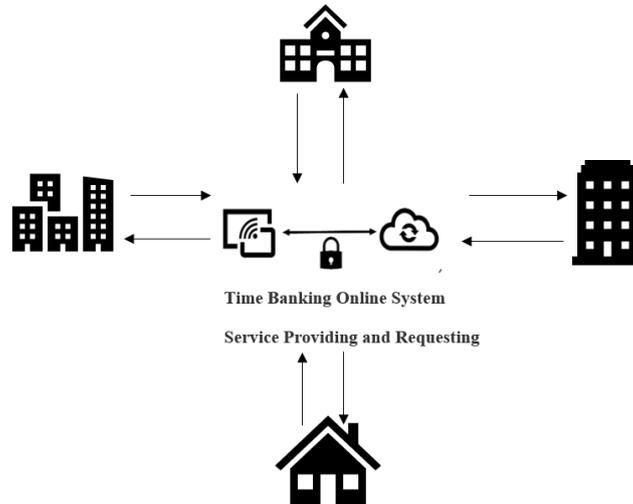


Fig.2. Social network based on Time banking online system

2) This paper supposes to create an integrated health management system by time banking online system. Firstly, with the help of the information and data management capabilities of the time banking, a comprehensive assessment can be carried out and the health management resources, health management capabilities and health management needs of communities and organizations will be clearly presented in the form of data. Then, time banking manager can gradually upload the above data from different communities and organizations to the database of the time banking online information system, and build a time banking integrated health management system based on these health management data. Time banking integrated health management system means making full use of the social capital of communities and organizations to achieve cooperation and division of labor in health management according to their capabilities and needs. In the time banking integrated health management system, every person, community, organization can play a positive role in social division of labor and cooperation. For example, health care is provided by communities, health treatment is conducted by hospitals, individuals participate in health care and simple health services, and doctors or university teachers can take part in the education of health management. There is no denying that social division of labor and cooperation by time banking will further improve the health management capability of the whole society because everyone or every organization will be a new power for health management.

#### 4. Conclusion

With the help of Information technology, time banking has become a cutting-edge social capital exchange system. In time banking system, everyone can be regarded as social capital. Because of this merit, time banking is spreading in many areas and is considered as a new path to promote social development. According to the benefits of the time banking, this paper theoretically designs the application path of the time banking in health management. Although time banking cannot be found in many cities, in UK, time banking has been successfully applied in healthcare [28]. Time banking can also be combined with cutting-edge information technology (such as Blockchain technology), which can promote credible participation in public welfare activities [29]. In the future, with the continuous progress of the time banking, social capital will certainly be able to play more roles in health management.

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