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Research on the Scenario Suspension Mechanism of Smart Community-Based Elderly Care: A Case Study of J Community in T City

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Abstract

In light of the ageing of the population and continuous progress in digital governance, intelligent community-based elderly care has been added to the reform plan for grassroots public services. However, in some communities, even after the construction of platforms, devices and service projects, problems such as low use, weak service coordination and inadequate collaborative governance persist. Drawing on embeddedness theory, this paper proposes the concept of "scenario suspension" and selects J Community in T City as the research subject. Three typical cases of smart elderly care are selected: health management, meal assistance and voluntary mutual aid, and their corresponding de-embedding phenomena in routine operation after system construction are analysed. Based on the above study, the operational difficulties of smart elderly care in J Community are mainly due to technology failures, service disruptions and governance deficiencies. Smart facilities have been brought into the community, but they have not yet been stably integrated into the health management system; although the meal-assistance platform can perform online record-keeping and settlement, offline delivery, feedback and improvement mechanisms are still lacking; and while the voluntary mutual-help platform has formed a basic process, community trust, participation incentives and multi-actor coordination are still weak. The reason is that the factors of technology, institutions and relationships have not been effectively integrated into the daily life of older adults and the service supply chain or community governance network. Therefore, this paper puts forward the three ways of technological re-embedding, institutional re-embedding and relational re-embedding to promote the transformation of smart community-based elderly care from a "constructed system" to a "stable operation".

Keywords

Smart community-based elderly care; embeddedness theory; scenario suspension; grassroots governance; digital governance.

1. Introduction

With the ongoing increase in the proportion of older people in the population, the structural pressure on the elderly care service system is intensifying; by the end of 2024, the number of people aged 60 and over in China had exceeded 310 million, and in Tianjin, the permanent resident population aged 60 and over had reached 3.53 million, making up 25.88% of the total permanent resident population. With the aging of the population and diversified care requirements at the same time, the traditional model of community-based elderly care has placed higher demands on service capacity, resource integration and precise supply [1].

With the development of digital technology in public services, smart elderly care has started to appear and can help alleviate the burden of care. In recent years, Tianjin has integrated smart elderly care into the development of the "Jin-style elderly care" brand by constructing smart

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elderly care service complexes, promoting the spread of age-friendly smart devices, and establishing elderly care data platforms. Therefore, communities have become the primary sites for policy implementation and technology application in service delivery for older adults.

But the system is completed does not guarantee that the services will work properly. Some communities have already been set up for platforms, devices and service scenarios, but problems such as "built but rarely used", "used but not smoothly connected", and "visible but with limited effect" still occur. Now, the problem is no longer whether a digital system can be constructed; rather, we need to know if that system can be genuinely incorporated into community governance and the service chain for older adults.

Previous research has explored the development logic of smart elderly care from various angles, such as the application of technology, service models, the digital divide and collaborative governance, etc., providing a general foundation for understanding this field. However, most of the above studies have focused on the macro level or system design and paid less attention to why, after the introduction of platforms, devices and service projects in communities, problems such as low utilization, service breaks and weak collaboration still occur in practice. That is to say, the difficulty of smart elderly care is not only whether a system can be established but also how this system operates in specific situations and continues to run.

Therefore, this paper will shift the unit of analysis from the whole model of smart elderly care to specific service scenarios and focus on the micro-operational process of health management, meal assistance and voluntary mutual aid. Based on the concept of "scenario suspension", this paper investigates the de-embedded state of technological, institutional and relational elements in community scenarios and explains how such de-embedding leads to visible operational difficulties.

J Community in T City is a typical case of this problem. The community has built a service system for smart monitoring, emergency calls, health management, meal assistance and voluntary mutual aid, and has a relatively strong platform foundation and scenario conditions. However, in practice, some facilities are used unstably, there are breakpoints in the service chain, and multi-party cooperation is not strong. Based on this case, this paper introduces the concept of "scenario suspension", analyzes the operating difficulties and formation mechanisms of smart community-based elderly care in specific scenarios, and puts forward optimisation paths for re-embedding.

2. Concepts and Theoretical Framework

2.1. Core Concepts

2.1.1. Smart Community-Based Elderly Care

Smart community-based elderly care refers to a new model of elderly care that takes the community as the basic service space and uses digital technologies such as the Internet of Things, big data and artificial intelligence to integrate resources from governments, market participants, social organisations and residents. It offers older adults daily living support, health and care services, safety monitoring and emergency response, meal assistance, mental and emotional support, etc. Compared with the traditional community-based elderly care model, this new model has added more types of services and improved the whole chain of care by optimizing demand-supply coordination, service delivery, etc [2].

Smart community-based elderly care has had the following three operational models so far. First, at the level of technology, sensors and health terminals improve the efficiency of needs detection and resource allocation, etc. Second, at the service level, online registration, offline delivery and process recording have increased the traceability of service supply. Thirdly, platforms can link governments and communities, enterprises, social organisations, families,

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residents, etc., at the level of governance to create a cross-actor collaboration network [3]. The three levels are not independent, and together they determine whether smart elderly care can be effectively realised .

Although there are more technological facilities now, the service scale has not risen accordingly. The introduction of a platform and the installation of devices are only the formal foundations for smart elderly care. Only when the technological system is integrated into the process of community governance and aligned with older adults' daily life, usage habits and rhythms of life, as well as offline services, can smart elderly care be transformed into a tangible and sustainable public service.

2.1.2. Embeddedness

Embeddedness refers to the fact that behaviour, institutions and technology are not self-contained but are rather integrated into a particular social system, institutional arrangement, or network. Embeddedness refers to the process in which technological, institutional and relational components of smart elderly care enter community governance systems and older adults' daily lives, establishing stable links with existing service processes, responsibility structures and social interactions [4].

The three aspects of embeddedness are as follows. The first is technological embedding, which refers to the integration of devices, platforms and data systems in the service process. The second is institutional embedding, that is to say, whether the allocation of responsibilities, operating rules, feedback mechanisms and evaluation systems form a closed loop. The third is relational embedding; that is, whether services can win the trust of older adults and gain long-term support through community interaction, multi-actor collaboration and voluntary participation. The three types of embedding together provide the foundation for the stable operation of smart community-based elderly care [5].

2.1.3. Scenario Suspension

This paper will use scenario reduction for main analysis. It refers to a situation where platforms, devices, institutions or organisational structures have entered certain application scenarios for smart elderly care but have not been effectively integrated into the actual operating environment, and thus the service functions cannot be fully realised. It is not that smart elderly care has failed in general; rather, it is a concept to show that the system exists but cannot provide corresponding services.

The three kinds of scenario suspension are as follows: The first is technology suspension; that is, although devices and platforms have been deployed, they cannot be converted into continuous service capacity due to usage thresholds, insufficient age-friendly design, or weak connection with follow-up services. The second is service suspension, in which service projects and online processes have been established, but stable connections between supply and demand and between online records and offline fulfilment are lacking. The third is governance suspension; although multiple parties have joined the construction of the smart elderly care system, there are no clear divisions of responsibility, insufficient cooperation, and poor feedback, thus failing to achieve synergy.

The purpose of introducing this idea is to prevent the problems of smart elderly care from being seen as merely a lack of technology or management. Many communities have already established a certain set of platforms and devices, but the results of the services are still uneven. Often, the problem is that the various parts only appear in the service scenario formally, but fail to change in line with changes in human behaviour, organisational responsibility and community relations during operation. Therefore, scenario suspension focuses on the gap between "formal entry" and "substantive embedding".

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2.2. Embeddedness Theory

Polanyi was the first to propose the idea of "embeddedness" in his work, and he believed that economic behaviour is not autonomous but rather is deeply interconnected with society and its institutions. Granovetter further proposed that all individuals' behaviour occurs within real-life social networks, and that these networks can either help people obtain resources, choose certain behaviours or be more stable under cooperation. Since then, embeddedness theory has been developed into an all-encompassing analytical system that includes structural, relational, institutional and cultural forms of embeddedness.

Embeddedness theory can be used to explain why policy instruments, digital platforms and service mechanisms have different effects in various situations of public governance. Smart community-based elderly care will not automatically improve governance efficiency simply by introducing a technology platform, smart devices and so on. The Role is determined by whether it can be integrated into community organisation systems, the process of elderly care services, older adults' usage habits, and community trust.

According to embeddedness theory, the degree to which digital government services are actually used can vary. The same platform or device may have different effects in different communities due to various reasons, including but not limited to technological performance, the organisation strength of the community, residents' trust level, density of service and resource availability, and institutional implementation paths. Therefore, the analysis of smart elderly care should not be confined to listing the functions of the platforms, but also consider in what organisational relationships and life contexts these functions are applied.

Therefore, this paper employs the theory of embeddedness to explain why smart elderly care in J Community has not been widely implemented, despite having a relatively strong construction foundation. Analysis focused solely on the supply or service model of technology does not address how technology is actually implemented; therefore, an embeddedness view is necessary to observe the de-embedding process of technology, institutions and social relations in real service situations.

2.3. Analytical Framework: “Insufficient Embedding—Scenario Suspension—Operational Difficulties”

In terms of the level of embeddedness, the practicality of smart community-based elderly care depends on how closely coupled the technology system and the social system are. To explain how insufficient embedding leads to operational difficulties, this paper establishes an analytical framework of "insufficient embedding - scenario suspension - operational difficulties" and uses technological embedding, institutional embedding and relational embedding as the three dimensions of observation.

Insufficient technological embedding is likely to result in technology suspension, which can be shown by the existence of platforms but low usage, and weakly connected visible devices that fail to connect with services. Lack of institutional support is likely to result in service outages, and fully online procedures may not be implemented reliably in practice without timely feedback. Lack of relational embedding may lead to governance suspension, and although multiple parties are involved in the participation, there is an absence of trust, mobilisation and coordination. The following sections will present these mechanisms in J Community through the cases of health management, meal assistance and voluntary mutual aid.

"Insufficient embedding" in this framework refers to a lack of stable connections between technological, institutional and relational factors and actual community conditions. "Scenario suspension" is the operational expression of this insufficient embedding, and "operational difficulties" are further externalized results of suspension, such as device idleness, service delays, feedback failure and inadequate participation. The three links are not mechanically

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linked; rather, they are continuously in contact with one another. Insufficient embedding leads to suspension; suspension reduces the service experience and willingness to participate; and thus, other difficulties in embedding are further exacerbated.

The three kinds of embeddings are mapped to the three situations; however, it is not the case that each situation contains only one type of problem, but rather they have been classified according to their primary conflicts. Health management may also include institutional feedback, meal assistance may also use technology, and voluntary mutual aid may also be based on age-friendly platform design. However, in the materials on J Community, the most prominent problems in health management are a weak connection between devices and follow-up services; in meal assistance, there is a lack of fulfillment and feedback closed loops; and in voluntary mutual aid, there is insufficient relational mobilization and collaboration. Thus, the three scenarios can be considered typical cases for observing the suspension mechanism of smart elderly care.

3. Research Design and Case Overview

3.1. Research Design and Analytical Method

A single-case study will be used in this paper to examine the actual operation of smart elderly care services in J Community. A case study approach will be taken; otherwise, there will be only problems related to specific technologies, but not the comprehensive difficulties in applying smart community-based elderly care. Through case studies, the abstract idea of "insufficient embedding" can be observed in the context of health management, meal assistance and voluntary mutual aid.

For the data source, the following types of secondary materials are used in this paper: policy documents, public information released by local governments and communities, media reports, case introductions, relevant academic studies, etc. Policy documents are used to understand the institutional background of smart elderly care; community materials are employed to present the construction conditions and service scenarios of J Community; and media reports and existing studies are used to add to the problems found in actual operation and verify them against policy and community materials.

To enhance the precision of analysis, a coding system based on the "embeddedness-scenario suspension" framework has been established in this paper to link analytical dimensions, types of suspension, identification indicators, and concrete manifestations. Technology embedding mainly refers to the frequency of use, age-friendly design and process integration. Institutionally embedded refers to the clarity of responsibility, provision of services and feedback adjustment. Relational embeddings generally refer to participation frequency, trust foundations and the extent of collaboration.

The following are the steps for data processing in this paper: scenario identification, problem classification and mechanism explanation. First, information related to health management, meal assistance and voluntary mutual aid is obtained from public sources. Second, representative problems are listed based on the three dimensions of technology, institutions and relations. Finally, these problems are combined with the three types of scenario suspension to explore the reasons for the insufficient embedding. Given that this paper aims to explain the mechanism, the requirement for the use of data is not statistical representativeness but rather whether the different sources can confirm each other and support theoretical inference.

Research based on secondary materials will have restrictions in terms of the selection of materials and their public availability. To offset the above deficiencies, this paper will not use just one source for the foundation of judgment. Instead, compare the policy objectives, community descriptions, media accounts and previous studies in the same analysis. Where the

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information cannot be verified directly, it is mainly used as a hint for mechanism inference rather than as a quantitative result.

At the same time, this paper will still adopt the explanatory mode of case studies. It does not aim to apply the conclusions of J Community directly to all communities, but rather takes a typical case to improve general mechanisms for the operation of smart elderly care. Other communities have different problems due to different population structures, fiscal support, platform types and foundations of social organisations. However, whether technology, institutions and relationships are applied in actual situations is still needed to assess the quality of smart elderly care operations.

Table 1. Coding Framework of Scenario Suspension

Analytical dimension	Type of suspension	Identification indicator	Concrete manifestation	Data source
Technological embedding	Technology suspension	Technology usage frequency	Limited use of platforms or devices	Platform introductions, community reports, case materials
Technological embedding	Technology suspension	Age-friendly technology	Operational procedures still have thresholds; auxiliary support is insufficient	Policy documents, case descriptions, related studies
Technological embedding	Technology suspension	Degree of technological integration	Testing, recording, and follow-up services are not stably connected	Project materials, community public information
Institutional embedding	Service suspension	Responsibility clarity	The boundaries of responsibilities for supply, delivery, and feedback are not sufficiently clear	Policy documents, practice descriptions
Institutional embedding	Service suspension	Service fulfillment	Online processes and offline delivery are insufficiently connected	Case materials, media reports
Institutional embedding	Service suspension	Feedback-adjustment mechanism	Continuous evaluation and dynamic improvement mechanisms are insufficient	Policy documents, related studies
Relational embedding	Governance suspension	Participation frequency	Participation by older adults or volunteers is not sufficiently stable	Community materials, case materials
Relational embedding	Governance suspension	Trust foundation	Older adults have concerns about platforms, data, and service continuity	Related studies, practice descriptions
Relational embedding	Governance suspension	Collaboration level	Communication and coordination among multiple actors are insufficient	Policy documents, community reports

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3.2. Case Overview

J Community in T City is selected as the case for the three main reasons listed below. First, J Community was one of the first to participate in smart elderly care practices and has established a service system that includes smart monitoring, health management, meal assistance, emergency calls and voluntary mutual aid. Therefore, this paper will present the general process of how smart elderly care moves from platform construction to scenario-based operation. Second, J Community also has a good technological and service foundation. On the contrary, the problem is more pronounced in the question of "how to operate after construction", and it has a relatively high analytical value. Thirdly, the relevant public materials are relatively abundant and can support mechanism analysis based on secondary data.

J Community was built in November 2015 to cover four residential areas, such as Jingjingyuan and Mingjunyuan, and has a total of about 4,152 houses and a permanent resident population of around 10,000. In recent years, the community has continuously promoted innovation in grassroots governance and elderly care services, and has received honours such as "National Demonstration Age-Friendly Community" and "National Elderly Care Service Pilot Project". The number of permanent residents aged 60 and above exceeds 2,400, accounting for more than 24 per cent of the community's population, and the proportion of the oldest-old and empty-nest older adults continues to rise. With the changes in the demographics of the population, the demand for continuous, accurate and coordinated services in older age has also risen.

J Community is using the municipal "Silver-Age" smart service platform for the construction of smart elderly care to integrate elderly care resources. It has promoted the digital application of health monitoring, emergency calls, meal assistance and voluntary mutual aid, and has established facilities such as health stations, smart health rooms and smart fitness equipment. J Community already has a relatively full-fledged technological and scenario foundation in terms of construction. However, from the operation side, some of these facilities are not used often; therefore, the stability of the service supply is relatively low, and multi-actor collaboration needs to be strengthened further.

A "relatively complete construction but operation needs improvement" model is more appropriate for J Community than a community lacking resources for discussions on scenario suspension. If the community has not yet built a platform or installed devices, then the problem can be traced back to a lack of supply. J Community has a good digital foundation and has not been transformed operationally to date. It can be seen that there is a new conflict in smart elderly care under the new mode of construction, namely performance rather than process.

J Community can be seen to have multiple layers of governance: government promotion, community initiative, platform support and resident participation. Although there are some merits to implementing smart elderly care policies in this structure, certain typical problems at the grassroots level have also been identified: high-level policies generally focus on constructing platforms and service innovation, while communities have diverse needs of older adults, a shortage of human resources, limitations in the capacity of service providers, and a lack of willingness among residents to participate.

4. Manifestations of Scenario Suspension in Smart Elderly Care in J Community

The following three are representative cases of health management, meal assistance and voluntary mutual aid. The above cases are respectively related to health support, daily life assistance and social participation, and thus serve as representative examples for studying whether smart elderly care services have genuinely entered the lives of older adults. A general introduction to smart elderly care models does not show whether platforms, devices,

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institutions and participation in the service process have actually been integrated into the system.

The three cases are not distinguished in this paper. Instead, they are considered different links in the operating chain of the smart elderly care system. Health management is focused on the application of technology in services; meal assistance is concerned with the entry of services into daily life; and voluntary mutual aid is about governance in relations. The three links are mutually related. The experience of using technology reduces older people's trust in these platforms; high-quality meal assistance affects their evaluation of the community governance system; thus, the activity of voluntary mutual-aid groups has improved and both the availability of technology and services have been boosted.

4.1. Technology Suspension in the Health Management Scenario

A representative case of the construction of smart elderly care in J Community is health management. According to the public materials, the community has built health stations and smart health rooms. The residents' ID cards and social insurance cards can be used to have their first blood pressure and blood sugar tests, oxygen saturation measurements, etc., conducted at home and access remote medical services. In terms of construction, this scenario has clear digital features and is in line with the policy direction of using digital technologies to promote the integration of medical and elderly care services and to extend grassroots health services downwards.

Device installation does not guarantee the stable operation of the health management service. Relevant materials provide more information on device functions and platform capabilities, but offer little data on daily use frequency, feedback from older adults, health record updates, abnormal indicator handling, or connection with family doctors. It can be concluded that the problem is not a lack of devices but a lack of continuous health management in use. Although the technology is in the community now, it has not yet become a full-service model for older people's daily lives.

This technology suspension is shown in two ways. First, older people have a certain life-and-death pressure. Identity recognition, indicator reading, remote consultation and result interpretation may have simple forms, but they can still be difficult for older people and those with weaker digital literacy. Second, there is still no link between the test data and follow-up services. If the data cannot be reliably linked to community health services, family doctor contracts, follow-up reminders and risk interventions, then health testing will be a single-point service and unable to form a complete closed loop.

Generally speaking, people are not concerned about disease occurrences unless they are serious, and as long as their children are well, they do not pay much attention to preventive health management. If there is no expert interpretation after the test, the older people will not be able to understand what the indicators mean. If the abnormal data are not promptly sent to community health service institutions, a risk warning cannot be turned into action. If follow-up responsibilities are not clear, health management will only be at the level of "having been tested once", and such gaps in the chain will reduce the practical value of the devices.

Technology failure also reduces the will of older people to use smart facilities. When older people learn that the test results will not lead to follow-up care or that every time they need to use a device, they need help, their confidence in and reliance on these devices will decrease. Over time, the smart health facilities may deteriorate from being service entry points into mere display buildings, resulting in tension between "visible digitalisation" and "unavailable services".

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4.2. Service Suspension in the Meal Assistance Scenario

Meal assistance is a high-frequency situation in daily life for older people receiving community-based elderly care. For older adults who are very old, live alone, or are physically limited, meal help can be regarded as daily life care and a type of safety and social support. Typically, the stages of smart meal assistance through a platform are target identification, subsidy application, order collection and payment settlement, and service supervision. However, in the end, whether or not it can be delivered reliably, safely and on time will have an effect.

From the operating end, a basic question is whether the online procedure connects to the off-line service for meal assistance. Digital platforms have increased the efficiency of recording and settlement, but older adults' service experience is mainly focused on food quality, on-time delivery, service staff behaviour, problem handling and improvements. If a platform can complete the ordering and recording but lacks stable delivery, clear responsibilities, and effective feedback, meal assistance will be regarded as "fully online processes but unstable offline experience".

Therefore, the difficulty in the meal-assistance scenario can be referred to as service suspension. It is not to be taken that there is a failure of the policies and platforms; rather, it means that although service projects have been established, they have not fully entered the daily lives and community-service chains of older adults. If the end of the service chain does not have delivery responsibility, complaint handling, satisfaction tracking and dynamic adjustment mechanisms, then a bottleneck will likely occur in the "last mile".

Meal assistance has a high frequency, fixed requirements and strong demand for experience. A late delivery or a meal with a problem may reduce the older person's trust in the service directly. Meal assistance has relatively high demands for continuous fulfilment capacity compared with health testing, and, while voluntary mutual aid exists, it lacks the clear market-based or organisational supply mechanisms. Therefore, the meal-assistance scenario is a representative case of the "online management ability" to "offline application deficiency" in smart elderly care.

At this time, the platform is also not without merit. Help the community find service users, track subsidy usage and order information, etc. However, if the platform data cannot be used to improve delivery, quality supervision and service adjustments, then it will only serve as a record of administration rather than active service governance. For older people, a service is not about the appearance of the platform; it needs to ensure the timely delivery of daily food, problem-solving capability, and adaptability to changes in their lives.

4.3. Governance Suspension in the Voluntary Mutual-Aid Scenario

Voluntary mutual aid is a typical case of smart elderly care that integrates digital platforms with community social capital. J Community has built a basic process of "application - task dispatching - task acceptance - evaluation" through its volunteer service platform and motivates residents to participate with points-based rewards, information dissemination and links to offline activities. Institutional design is to establish a multi-actor collaborative and community co-governance system in this model.

However, the platform's processes will not spontaneously form a stable mutual-aid relationship. To ensure the long-term operation of voluntary mutual aid, there should be a stable supply of volunteers, clear divisions of responsibility, good incentives, and a foundation of community trust. If only the matching of information is achieved and the necessary organizational conditions and relational foundations for continuous participation are not met, mutual-aid services will remain low-frequency, fragmented and occasional.

In the voluntary mutual-aid situation of J Community, governance suspension can be divided into three types: a discrepancy between the expression of demand and the provision of services, a disconnection between the online task process and the offline relationship among

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acquaintances, and a lack of continuous communication, evaluation feedback and incentive mechanisms for multiple parties. The first problem is not that there is a platform available; it is that a platform can be connected to a community's relational network and used for governance.

The other nature of voluntary mutual aid is that it includes both the supply of services and the reproduction of community relations. A home visit, an errand service, or a holiday stay are all ways to meet the needs of older adults and also make them more familiar with and secure in their neighbourhoods. Voluntary mutual aid should not be viewed as a platform-based task dispatching problem, but rather as a form of community construction.

If the platform's operation is too reliant on online matching and lacks offline mobilization and organisational support, problems such as "demands without task execution", "volunteers without continuity", and "no-feedback loops for optimisation" may occur. If the service boundary is vague, responsibility and risk are unclear; otherwise, the lack of motivation may reduce participation. Older adults who do not know how to use the service platform may also be reluctant to use it.

4.4. Summary

In general, the failure of scenario suspension in J Community's smart elderly care is not due to a single link. Instead, these take various forms in different circumstances: health management is generally expressed as technology interruption; meal assistance is provided in the form of services; and voluntary mutual aid is implemented under a governance suspension. Together, these forms indicate that the main problem of smart elderly care has moved from "whether a system has been built" to "whether the system can be stably embedded in service processes and community life".

Therefore, it can be concluded that the situation of scenario suspension is not due to a failure in a single department or technology, but rather as a result of problems in the coordination of technological processes, service responsibilities and relational networks. Technological breaks in health management reduce the initial trust older adults have in smart services; unstable fulfillment of meal assistance decreases their reliance on community platforms; and low participation in voluntary mutual aid reduces the chance for technology and services to be supported by people. The accumulation of the three types of suspensions will eventually reduce the overall effectiveness of smart elderly care.

5. Formation Mechanisms of Scenario Suspension

The previous part has listed the suspension problems in J Community's smart elderly care at the technological, service and governance levels. Based on the above analysis, these problems are not isolated incidents and cannot be blamed solely on the lack of equipment or missing projects. The underlying reason is that the technology, institutions and social organisations have not been integrated into actual service situations. As a result, although platforms, devices and service actors have entered the community, stable service chains, responsibility chains and interaction networks have not yet been formed.

Theoretically, the formation of scenario suspension is not an accidental operating deviation but rather the result of a conflict between the construction logic of smart elderly care and the life logic of the community. The construction logic is based on uniformity, openness and repeatability, and the logic of community life is about variety, endurance and connection. When the standardised system is applied to a specific life scenario, if it is not adjusted or revised, it will remain in a state where the form exists but the function is not achieved.

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5.1. Insufficient Technological Embedding: Mismatch Between Technological Systems and Life Contexts

Technology suspension first stems from the mismatch between the technological system and the life context of older adults. Smart elderly care platforms are generally designed based on the logic of functional integration, data collection and process management, and focus on whether the system can be activated, whether data can be generated, and whether functions can be realised. However, the application of technology for older adults is less effective if it is not user-friendly, difficult to operate, lacking explanations, or unable to provide follow-up services [5].

A typical case of poor health management is as follows. Health stations and smart health rooms can perform tests of blood pressure, blood glucose, blood oxygen, etc., but the testing process still requires older adults to complete identity verification, device operation, indicator understanding and result judgment. Some older residents and those with low digital literacy may not be able to use a smart device for services if community workers, medical staff or volunteers do not provide companionship and guidance.

There is also insufficient technology embedding, and the technological nodes are weakly connected to the service chain. Devices can complete the front-end data collection but are not required to trigger a follow-up service. If the test results cannot be stably connected with the health record, family doctors, follow-up reminders, risk assessment and referral interventions, then the technology will remain at the level of "capable of testing" and fail to form a "manageable" service closed loop [6].

The other is a discrepancy in the evaluation standards for technology. During the construction period, attention is frequently given to the number of devices, the kind of functions they have, and how broadly they cover different platforms; however, relatively little attention is paid to whether older adults can use these devices alone, how willing they are to use the devices repeatedly, and whether they receive assistance after using them. Therefore, although the technology system may perform well in the project, it is not practical for daily life. If older people cannot learn how to use technology and do not trust it, they will not be included in the service chain.

Therefore, the lack of technological integration among older people is not simply that "older people do not know how to use smartphones". It is rather the result of multiple failures in technological design, auxiliary support and follow-up services. A common misconception in smart elderly care is that the application of technology and the generation of data are the same as delivering services. In short, it will be of no use for the government unless the data can be comprehended, transmitted and converted into action.

5.2. Insufficient Institutional Embedding: Weak Responsibility Chains and Feedback Mechanisms

An underlying reason for the lack of institutional support in services and governance is insufficient institutionalisation. Many parties are involved in intelligent elderly care, such as government departments, community organizations, platform enterprises, service providers, social organizations and volunteers. Although many people are involved in providing the resources, if there is no clear division of labour, stable rules and procedures, or continuous feedback, it will not be able to improve governance effectively and will remain in a formal state.

Meal assistance lacks strong institutional support and is prone to being cut off from the online system. The platforms are responsible for target identification, order recording, subsidy verification and payment settlement; however, the responsibility of meal supply, prompt delivery, quality supervision, complaint handling and service optimisation has yet to be specified. If institutional design focuses only on platform functions and subsidy processes but

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fails to specify who delivers, who supervises, who responds and who improves, then the service chain will likely break at the terminal end.

There is also a deficiency in the institutional support for the evaluation system; it focuses on the results of construction rather than the process of operation. Many smart elderly care projects have achieved some results in terms of platform launch, device coverage and the number of service projects, but they have paid less attention to utilisation rates, completion rates, response rates, feedback-processing rates and satisfaction. If there are any deviations in the service, problems may not be promptly identified, reported and corrected; thus, the platform is more likely to become a "record-keeping tool" than a "governance tool".

A weak chain of command will also lead to a delay in addressing the issue and "buck-passing". When older adults have problems with food and beverage orders, delivery or other issues on a certain platform, if there is no clear channel for reporting such problems to the community, platform management team or service providers, the problems will remain unsolved. With the passage of time, older people may start to think that providing feedback does not help, and service providers may not know the real needs of the elderly in time.

Insufficient institutional support is another form of inadequate institutionalisation of construction logic in operation. The construction stage aims for relatively quick-term visible results and usually shows an immediate effect, such as a new platform release, device installation or activity display. The operational stage, on the other hand, is an extended investment in personnel and coordination that will not yield results in the near future. If the evaluation system continues to focus only on construction indicators, the grassroots organisation will be unable to fund daily maintenance.

5.3. Insufficient Relational Embedding: Weak Support from Trust and Community Interaction

The other is a lack of relational embedding in scenario suspension. Smart elderly care is not just a technology or a project; it needs to be fully integrated into the lives of older adults and run continuously through community trust, daily contact and many other forms of participation. Even if a platform and rules have been set up, smart elderly care will not be effective if older adults are unwilling to use it, afraid to use it, or do not believe that the service will be available in the future.

First, the digital divide limits older adults' access to services. Move health checks, online appointments, emergency calls and meal-assistance arrangements to online platforms, and the level of use will not be affected. Some older adults need explanations from friends, help at home, and continuous company more than an interface. Without the above social support, digital technology may no longer serve the purpose of convenience and become a new source of exclusion.

Second, lack of trust leads to the cessation of service use. All are related to individuals' personal data and privacy security: health monitoring, location sharing and emergency services, and data logging. Older adults are more concerned about information security, who will be responsible for services, and the guarantee of follow-up, etc. If the platforms are unable to build trust by offering clear reasons, stable services and quick responses, older adults will be unwilling or unable to use them.

A Weak community relational network will reduce the scope of voluntary mutual-help and multi-party cooperation. Platforms can offer a service for publishing demands and dispatching tasks, but the ongoing development of mutual-help behaviour is still limited by how well the residents know each other, their sense of community, a feeling of responsibility, and participation incentives. Without offline relational support, platform mechanisms cannot be automatically turned into real mutual aid, and governance suspension thus occurs [7].

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Relational Embedding is used in the development of intelligent senior care. Many older people are not opposed to new-generation technology, but they prefer to learn about and use such technology under the guidance of someone they know. Explanations and company provided by community workers, neighborhood backbone members, family members and volunteers can turn abstract platforms into accessible service entry points. Without the above relational mediators, it will be difficult for users to learn how to use this technology.

Weak Relational Embeddings may also reduce the stability of multi-agent cooperation. Smart elderly care services cover governments, communities, enterprises, social organisations and the public. Problems at any link must be resolved. If the actors do not have regular communication and a foundation of trust, platform records will not be automatically generated for collaboration; instead, there will be an unclear division of responsibilities and a dispersed resource.

5.4. Summary

In short, scenario suspension in J Community's smart elderly care is caused by the joint effect of weak technological integration, poor institutional support and insufficient network effects. The Technology does not meet the conditions for sustained high-volume service operation. Weak Institutional Support does not link online procedures with offline implementation and feedback. Without the inter-platform relation embedding, the incentive for cooperation will not exist. For smart elderly care to shift from a system-building stage to one of stable operation, the three types of elements must be embedded in specific service scenarios.

This way also shows that the governance difficulties of smart elderly care are multi-faceted and stem from technology, organisation, society, etc. If only technology can be applied to solve the problem, the issues of responsibility and trust among older adults will not be addressed. If only institutions strengthen the evaluation, the living and working problems and lifestyle habits of older adults will not be solved. Only strengthening community mobilisation will not provide support for platforms and service processes. Scenario suspension therefore needs joint governance.

6. From De-Embedding to Re-Embedding: Optimization Paths for Smart Community-Based Elderly Care

As shown in the analysis above, the operational difficulties of smart elderly care in J Community do not stem from a single technological defect but rather from the failure of technology, institutions and relationships to be effectively implemented in practice. Therefore, the optimisation of smart elderly care should not be limited to adding devices, extending platforms or piling up projects. Instead, it should aim for "re-embedding" to reconstruct the links among technological systems, institutional arrangements and social relations, thus turning smart elderly care from a visible construction project into a continuously operable service system.

The proposal of re-embedding also indicates that the focus of governance for smart elderly care must change: it should move from front-end construction to back-end maintenance, from platform functions to service experience, and from project quantity to operational quality. Only by placing technology, institutions and relationships in the same governance system can the dispersed facilities, processes and actors of elderly care services in a community be integrated stably.

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Table 2. Formation Mechanisms of Scenario Suspension and Re-embedding Paths

Service scenario	Manifestation of suspension	Formation mechanism	Re-embedding path	Optimization focus
Health management	Devices are visible but used unstably; testing is weakly connected with follow-up services	Insufficient technological embedding	Technological re-embedding	Build a continuous service chain of testing—evaluation—referral—follow-up—feedback
Meal assistance	Online processes are relatively complete, but offline delivery and feedback mechanisms remain unstable	Insufficient institutional embedding	Institutional re-embedding	Clarify responsibilities for meal supply, delivery, response, supervision, and feedback
Voluntary mutual aid	Platform processes have been established, but participation, feedback, and coordination remain insufficient	Insufficient relational embedding	Relational re-embedding	Strengthen community trust, participation incentives, and online–offline linkage

6.1. Technological Re-Embedding: From Device Configuration to Process Integration

The focus of technological re-embedding is no longer on adding more and more devices; instead, it is to change the function of technology in the service chain, to be a core center for continuous health management rather than an isolated test tool. Health Stations and Smart Health Rooms need to do more than collect data. Instead, connect the community health service centre, family doctor, chronic disease management system, follow-up reminder function, and risk intervention system. After the elderly persons complete the test, their data will be stored in a health record, and prompts for abnormal indicators, referrals or home visits will be issued.

At the same time, age-friendly technology and support systems will be strengthened. Platforms and terminal devices should reduce the number of operating steps and optimise fonts, icons, voice prompts and one-click help functions. Community workers, volunteers and family members can also be added to the technology use to provide explanations, companionship and proxy services for the elderly and other people with weaker digital skills. Age-friendly Design should not be limited to interface transformation; it should also include a service combination of "technological support + interpersonal assistance" [8].

In addition, increase transparency in how data is used and protect users' privacy. Health monitoring, remote consultation and emergency calls are all sensitive information. Communities and platforms should explain in simple language who collects the data, how it is used, how the data is protected, and how older adults can authorize, query and withdraw their consent for data usage. Only when the technology is more understandable and trustworthy will it be able to enter people's daily lives for older adults.

During the operation of the community, a tiered management system for older adults with chronic diseases, those living alone, and the oldest-old can be established. Regularly remind older adults how to use the platform and provide health education through the platform. In

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cooperation with family doctors, organised periodic checks will be conducted for older people with chronic illnesses. A fast-response mechanism should be established for high-risk older adults to address abnormal indicators promptly by alerting the community, contacting family, seeking medical help, etc. Thus, the change will be from "passive testing" to "active management" of technology.

6.2. Institutional Re-Embedding: From Project Construction to Closed-Loop Operation

Institutional re-embedding needs to extend institutional arrangements from the construction stage to normal operation. Meal assistance is a typical case; the platform handles registration and subsidy processing, places orders, and pays, but its real effect is contingent upon whether the meal supply, delivery, quality inspection, complaint handling, etc., forms a closed-loop system. Therefore, first of all, a clear list of responsibilities should be established, and the responsibilities and accountability methods of suppliers, delivery actors, regulators, communities and platform enterprises at each link need to be specified. Second, the focus of evaluation should be changed from "whether the system has been built" to "whether the system operates effectively". For meal assistance, indicators such as order completion rate, delivery punctuality rate, response rate, complaint-processing rate, satisfaction, and reuse rate can be added to the evaluation [9]. Compared with the number of devices or platform pages, operational indicators are better able to reflect whether services have been integrated into older adults' daily lives and are more conducive to identifying weak links in the service chain . Third, a dynamic feedback and continuous improvement mechanism should be built. Communities may identify problems such as poor meal quality, delivery delays, changing needs, and operational difficulties through telephone follow-ups, offline opinion collection, platform evaluations, and grid-based visits, and form a closed loop of "identification - recording - handling - feedback - improvement". Platforms should also be transformed from mere information-recording tools into governance hubs that connect the government, communities, enterprises, social organizations, and residents.

Institutional re-embedding also needs to build stronger cross-actor consultation mechanisms. Regularly organize service-review meetings between the community and the platform company to discuss issues such as delivery routes, meal content, subsidy use, complaint handling, etc., along with meal suppliers, delivery staff, grid workers and older adult representatives. Integrate older adults' life experiences into the institutional plan to reduce dependence on temporary coordination for service adjustments.

6.3. Relational Re-Embedding: From Platform Matching to Trust Construction

Relational re-embedding aims to link the digital platform with the community's social network. Volunteer mutual-help platforms can improve the efficiency of demand matching, but the formation of mutual-help relationships still requires trust, identity and long-term interaction. Communities can use familiar forces, such as grid workers, community workers, family doctors and volunteers, to explain the functions of the platform, service processes and information security measures to older adults to reduce their fear of technology and service uncertainty.

At the same time, develop a system for long-term volunteer motivation and responsibility. Voluntary mutual aid is not limited to a short-term mobilization or moral call-out. Points and service records will be awarded for behaviour that merits recognition; Honour feedback and a time-banking system will be used for accumulation of points. At the same time, specify more clearly the range of responsibility for volunteer services to avoid confusion and inspire more people to join.

Finally, connect the online platform with off-line community activities. Communities can connect volunteer service platforms with neighbourhood activities, health lectures, meal-

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assistance visits, holiday greetings and grid-based visits, and thus help older adults, volunteers, community organisations and service providers build familiarity and trust through repeated interaction. Community organisations act as intermediaries to identify the needs of the people in the community, connect resources, mediate conflicts among them, collect feedback from all sides, and promote a sense of unity and trust among them.

Relational re-embedding should also consider the subjectivity of older adults themselves. Smart elderly care should not see older people only as service users. It should also encourage younger older adults in good health with rich life experiences to participate in mutual-aid services, express their demands, and provide service evaluations. By creating a system of "old-age mutual assistance", interest groups and neighborhood support networks, the community can change passive services into joint participation and strengthen the endogenous momentum of smart elderly care [10].

6.4. Summary

The optimisation of smart community-based elderly care should move beyond the provision of technology to promote the coordinated re-embedding of technology, institutions and relationships. Technology re-embedding focuses on connecting devices to health-management processes. Institutional re-embedding is concerned with closed loops of responsibility, evaluation and feedback. Relational re-embedding focuses on trust, participation and community engagement. Only when the three support each other will smart elderly care move from platform existence to service effectiveness and from actor participation to collaborative governance.

In practice, the three kinds of re-embedding should also be connected in a sequence. At the start, communities may begin with high-frequency, rigid-demand and clear-feedback-oriented services such as meal assistance and health management to show some obvious improvements. Then, they can build a network of voluntary mutual aid and neighbourhood support offline. Finally, the operation data, service feedback and resident participation will be included in the regular government work. This way can enhance the sense of accomplishment for older adults and strengthen the foundation of long-term operation for the platform.

At the policy level, this means that the construction of smart elderly care should establish full-cycle management from the beginning of design to the end of operation. At the project approval stage, we need to consider who will maintain the devices, who will explain the data, who will handle feedback, who will be responsible for offline fulfillment, and how older adults will participate in the evaluation. Only by embedding these questions in the institutional design beforehand will the following operations be free of temporary coordination and reliance on individuals' experience.

7. Conclusion

Embeddedness theory serves as the analytical framework for this paper, and J Community in T City is selected as the case study to examine why smart elderly care may still be operating inefficiently after the construction of such systems. Instead of focusing on the application of technology or service models and the digital divide, this paper will take concrete service scenarios as its unit of analysis and put forward the concept of "scenario suspension" to describe the situation where platforms, devices, institutions and organisations have entered communities but have not been effectively integrated into real-world operation.

The study has found that the operating difficulties of smart elderly care in J Community are mainly due to technological failure, service disruption and governance deficits. Smart devices and platforms have appeared in the health-management scenario and are now in our communities; however, there is a lack of age-friendly support and poor integration with follow-

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up services that hinder their application in continuous health management. Online identity recognition, record-keeping and settlement for meal-assistance services are relatively mature; however, offline delivery, quality feedback and a continuous improvement mechanism are still lacking. Although a voluntary mutual-help model has been established on the platform, a foundation of trust, incentives for participation and multi-actor cooperation are lacking; thus, the mutual-help arrangement has failed to develop stable governance capacity.

Further analysis indicates that the causes of scenario suspension are insufficient embedding of technology, institutions and relationships. If the technology is only at the level of device configuration and data collection, it will easily result in "high configuration but low use". If institutions focus on project construction and platform launch but lack responsibility chains, operational evaluation and feedback loops, they will be unable to support stable services. If the relationships cannot provide trust, explanation, companionship and participation support, digital platforms will be unable to enter the daily lives of older adults.

Based on the above results, this paper puts forward the three ways of re-embedding. Technology re-embedding should link testing, evaluation, referral, follow-up and feedback. Institutional re-embedding needs to clarify the responsible parties in the service chain, operational indicators and feedback mechanisms. Relational re-embedding will strengthen the sense of community and offline companionship, increase the enthusiasm of volunteers, etc. The goal of intelligent elderly care is not to increase the level of technology, but rather to build an integrated system of technology, institutions and society in practice.

At the higher level of grassroots governance, the J Community case shows that the extent of digital governance is not simply a function of technological coverage. Determine whether the services, divisions of responsibility and modes of interaction have been altered by digital systems. The real purpose of smart elderly care is to help the community sense changes in older people's lives earlier, quickly mobilize resources to meet their needs, respond to problems continuously, and thus rebuild the bond of trust between older adults and their communities.

Re-embedding is not to say that the demand for digital technology will disappear, as mentioned in this paper. Technology should be understood in the context of an all-encompassing system of governance. The purpose of intelligent elderly care is not to add more terminals and platforms; rather, it aims to connect with people's daily life and quality of life through technology, arrange services, collect feedback, etc. In the absence of institutional closed-loop mechanisms and supporting ties, new technologies will likely have a large disparity between design and application.

The theoretical contribution of this paper is to add "scenario suspension" to the study of smart community-based elderly care and show that there is an intermediate link between system construction and actual operation. In practice, grassroots governance actors should be aware of the number of platforms, devices and projects; at the same time, they should consider whether these factors are integrated into the life context, service supply chain and community relationship network of older adults. The main data in this paper are secondary materials; first-hand interviews with older adults, community workers, platform enterprises and service providers were not conducted. More in-depth field studies will be conducted in the future on different kinds of communities to explore them in detail and determine the suitability of this concept.

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