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Cost-Benefit Analysis of Internet of Things Technology in the Group Elderly Care Service Platform

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Abstract: The application of Internet of Things technology in the group elderly care service platform has significant cost-effectiveness advantages. By improving service efficiency and quality, reducing operating costs, and improving user experience and satisfaction, it can provide more high-quality, convenient, and intelligent elderly care services for the elderly. However, the Internet of Things technology also faces some challenges when implemented in the group elderly care service platform, such as security and privacy issues, standardization, and interoperability issues. To address these challenges, it is necessary to improve management and protective measures to achieve the widespread application of Internet of Things technology in group elderly care services. In summary, promoting the application of Internet of Things technology in the group elderly care service platform has broad development prospects and significance in the future.

Keywords: Group elderly care; Internet of Things; Cost-benefit analysis

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1. Introduction

With the global population aging and changes in social structure, the group elderly care model, as an innovative form of elderly care, is gradually receiving widespread attention. Group elderly care aims to provide more comprehensive, convenient, and high-quality elderly care services through mutual assistance and resource sharing in daily life among the elderly. However, with the increasing number of elderly people and the diversification of service demand, there are many challenges in improving the efficiency and quality of group elderly care services [1].

The emergence of Internet of Things technology has brought new opportunities for group elderly care services. The Internet of Things technology is an emerging technology that connects the physical world with the information world through technologies such as radio frequency identification, sensors, and cloud computing, which achieve information sharing and intelligent control between devices. The Internet of Things technology

can achieve functions such as health monitoring, environmental control, and resource integration in the group elderly care service platform, further improving service efficiency and quality. Although the Internet of Things technology has broad application prospects in group elderly care services, a comprehensive analysis of its cost-effectiveness needs to be conducted [2]. Cost-benefit analysis helps evaluate the practical application value of the Internet of Things technology in the "Huddle Together" elderly care service platform, helping decision-makers better identify investment returns and feasibility.

2. The application of Internet of Things technology in group elderly care services

2.1. Overview and characteristics of Internet of Things technology

Internet of Things technology refers to the technology that connects various information-sensing devices over the Internet to achieve intelligent management and control. The Internet of Things technology can collect various data in real time, including health and environmental data of the elderly, and transmit them through the Internet to relevant platforms for processing and analysis. The Internet of Things technology can intelligently analyze and make decisions based on collected data to achieve intelligent control and management of elderly care services, and improve service efficiency and quality. The Internet of Things technology can achieve interaction between elderly people and elderly care services, improve the convenience and comfort of services, and meet the personalized needs of the elderly.

2.2. Application status and trends of Internet of Things technology in group elderly care services

The application of Internet of Things technology in group elderly care services has been widely applied. The Internet of Things technology can monitor the health data of the elderly in real time through various sensors and devices, including heart rate, blood pressure, sleep activity, etc., to timely detect abnormal conditions and provide corresponding care, which improves the efficiency and quality of health management. The Internet of Things technology can monitor real-time data on the elderly care environment, including temperature, humidity, lighting, and other needs of the elderly.

With the continuous development and application of Internet of Things technology, its application in group elderly care services has also shown the following trends. The Internet of Things technology can achieve personalized services and intelligent management for the elderly, meet their personalized needs, and improve service quality and efficiency. Internet of Things technology can achieve real-time collection and transmission of elderly care service data, and data sharing and analysis through the Internet to improve service quality and efficiency. The Internet of Things technology can achieve intelligent management and control of elderly care services, including smart homes, medical equipment, catering services, etc., thus improving service efficiency and quality [3].

2.3. Advantages and challenges of Internet of Things technology in group elderly care services

The Internet of Things technology can achieve intelligent management and control of elderly care services, improve service efficiency and quality, and meet the personalized needs of the elderly. The Internet of Things technology can improve the quality of life of elderly people by monitoring and analyzing their health data in real time, detecting abnormal situations promptly, and providing care. The Internet of Things technology can achieve interaction between elderly people and elderly care services, improve the convenience and comfort of services, and meet the personalized needs of the elderly.

However, there are also many challenges in the application of Internet of Things technology in group elderly care services. Firstly, there are security and privacy issues. The application of Internet of Things technology in elderly care services has the risk of personal privacy and data security issues, so effective data management and protective measures need to be improved. Secondly, there are issues of standardization and interoperability. The application of Internet of Things technology in elderly care services involves various models of devices and technologies, so it is necessary to promote standardization and interoperability of the technology to improve application efficiency and quality. The third issue is the investment cost [4]. The application of Internet of Things technology in elderly care services requires investing both time and money in the procurement and management of equipment and systems.

In summary, the application of Internet of Things technology in group elderly care services has broad prospects and advantages, which can improve service efficiency and quality, enhance the quality of life of the elderly, and meet their personalized needs. At the same time, it is also necessary to improve management and protective measures, address security and privacy issues, enhance standardization and interoperability, and control investment costs, to achieve the widespread application of Internet of Things technology in group elderly care services.

3. Characteristics and needs of group elderly care services

3.1. Definition and current status of group elderly care services

Group elderly care, also known as mutual assistance or collective elderly care, is a new type of elderly care model that refers to a group of elderly people living together in nursing homes through mutual assistance and resource sharing, while enjoying each other's companionship and care, thereby achieving the goal of reducing family burden and improving quality of life. At present, group elderly care services have gradually become a new trend in China.

3.2. Advantages and disadvantages of group elderly care services

Group elderly care provides a social interaction platform for the elderly, where they can make new friends, share life experiences, and take care of each other. This social interaction helps alleviate the loneliness and anxiety of elderly people. Members of the elderly care group can share resources such as housing, catering, and medical care, thereby reducing their personal burden and improving their quality of life. This resource-sharing approach helps to alleviate the economic pressure on the elderly and increase their freedom and autonomy. In group care, elderly people can take care of each other, especially for members with poor physical conditions, as the other members can provide assistance and care [5]. This mutual care approach helps to reduce social and family pressure and improve the quality of life and happiness of the elderly.

However, group elderly care requires an effective organizational and management system to maintain order and provide services. If the organizational management is improper, it may lead to conflicts and disputes among its members. Although group elderly care can share resources, it still requires certain economic inputs, such as rent, catering expenses, etc. For elderly people with poor economic conditions, this may increase their economic pressure. Additionally, group elderly care is mainly suitable for elderly people with good physical health, and may not be suitable for collective living for elderly people with poor physical conditions.

3.3. The needs and expectations of elderly people for group elderly care services

The elderly crave to socialize with their peers. Group retirement is a platform for elderly people to find a sense of belonging and presence. The elderly gradually become weaker physically and require the care and assistance

of others, so group retirement provides them with a platform for mutual care, where they are expected to receive the care and attention of other members. For some elderly people with poor economic conditions, they hope that group retirement can provide cost-effective solutions to reduce their financial burden.

The elderly expect that the organization and management system for group elderly care can be improved, to ensure harmonious and orderly coexistence among members. Elderly people hope that the living environment for group elderly care can provide basic living and leisure facilities, such as kitchens, bathrooms, television rooms, etc., to meet their basic living and entertainment needs. Elderly people expect certain safety measures, such as emergency call systems and fire protection facilities to be provided to ensure their residential safety through group elderly care.

The reasons for the need for group elderly care services mainly include social interaction, mutual care, resource sharing, and economic benefits. The elderly expect to find a suitable platform to spend a happy old age with their peers. Therefore, in the future development of group elderly care services, it is necessary to further improve the organizational and management system, living environment, and safety measures to meet the needs and expectations of the elderly.

4. Cost-benefit analysis of three Internet of Things technologies in the group elderly care service platform

4.1. Cost analysis of Internet of Things technology

The Internet of Things technology requires a significant investment in equipment costs, including sensors, smart devices, network communication devices, etc. Additionally, there is also the cost of building and regular maintenance of the platform servers, storage, and network bandwidth. In addition, labor cost is also required for manual operation, R&D, and management in the application of Internet of Things technology [6].

4.2. Benefit analysis of Internet of Things technology

The Internet of Things technology can improve the efficiency and quality of elderly care services and reduce the waste of manpower and resources through real-time monitoring, automated control, and intelligent management. The Internet of Things technology can provide personalized services according to the specific needs of the elderly, and improve their quality of life. Through the Internet of Things technology, resource integration and sharing can be achieved, which reduces the operating costs of elderly care services. With real-time monitoring, early warning of abnormality, intelligent control, and better user experience and satisfaction can be provided.

4.3. Specific case studies and data collection

Research on two specific cases has been conducted, which include intelligent health monitoring systems, and smart homes and environmental control, with the finding that Internet of Things technology can significantly improve the efficiency and quality of the group elderly care service platform. Through data collection and analysis, it is determined that the application of Internet of Things technology can bring significant benefits.

The intelligent health monitoring system can monitor the health data of the elderly in real time, detect abnormal conditions, and provide care promptly, thus improving the efficiency and quality of health management. Smart homes and environmental control can provide a comfortable and safe living environment by intelligently adjusting indoor environmental factors. In addition, Internet of Things technology can also provide psychological support, entertainment, and social interaction for the elderly through social media, smart devices, and smart home devices, to reduce loneliness and promote social participation [7].

4.4. Conclusion and suggestions for cost-benefit analysis

The Internet of Things technology has significant cost-effectiveness advantages in the group elderly care service platform. By improving service efficiency and quality, reducing operating costs, and enhancing user experience and satisfaction, Internet of Things technology can bring significant economic and social benefits to the group elderly care service platform.

Therefore, it is suggested to promote the application of Internet of Things technology by increasing equipment investment and construction, and improving the intelligence and individuation level of the platform in the "Huddle Together" elderly care service platform. At the same time, it is also necessary to improve management and protective measures, address security and privacy issues, enhance standardization and interoperability, and control investment costs, to achieve the widespread application of Internet of Things technology in group elderly care services.

5. Conclusion

The application of Internet of Things technology in the group elderly care service platform can provide more efficient, convenient, and intelligent elderly care services for the elderly. Through the cost-benefit analysis of Internet of Things technology, this study finds that despite the high initial investment cost of Internet of Things technology, the benefits it brings are significant. The advantages of Internet of Things technology in the group elderly care service platform are mainly reflected in improving service efficiency and quality, reducing operating costs, and enhancing user experience and satisfaction [8]. However, the Internet of Things technology also faces some challenges during its application in the group elderly care service platform, such as security and privacy issues, standardization and interoperability issues, investment cost issues, etc.

To reduce the cost of Internet of Things technology in the group elderly care service platform, unified standards and specifications can be formulated to avoid unnecessary construction and purchase. By adopting open-source technology and platforms, the cost of software and hardware can be reduced. By improving management and maintenance, degradation and damage to equipment and systems can be reduced, thereby reducing costs [9].

In summary, the application of Internet of Things technology in the group elderly care service platform has obvious advantages and benefits, which can improve service efficiency and quality, reduce operating costs, and enhance user experience and satisfaction. At the same time, it is also necessary to improve management and protective measures, address security and privacy issues, enhance standardization and interoperability, and control investment costs, to achieve the widespread application of Internet of Things technology in group elderly care services [10].

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Disclosure statement

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