



Smart Property Management: Transformation and Upgrading Enabled by New Technologies

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Abstract. With the rapid development of science and technology, smart property management is gradually becoming the key to improve the service quality and efficiency. Through the application of intelligent systems, such as intelligent security, intelligent inspection, access control technology, intelligent repair service and artificial intelligence, the quality of life of owners can be significantly improved. The automated management system helps property companies to realize the reasonable allocation of resources, optimize the work process, reduce management costs and improve the overall operation efficiency. Through analyzing the development trend and characteristics of intelligent property management, explore new technologies such as Internet, mobile Internet, cloud technology application in property management, and how these technologies can assign wisdom property management, how to make the service quality and work efficiency, discuss the role of wisdom property management in promoting the process of urban wisdom, and the development trend of future wisdom property management and challenges.

Keywords: intelligent property automation, big data, smart community

1 Foreword

1.1 Changes in the Urbanization Process and Property Management Needs

Smart property management is a new property management mode integrating information, intelligence and service, which represents the future development direction of the property management industry.[1] With the acceleration of the urbanization process, the property management is facing more and more challenges. The traditional property management mode has been unable to meet the needs of modern cities for high efficiency, convenience and intelligence. Therefore, the emergence of smart property management has become the key to solve this problem.

1.2 The Significance of Smart Property Management

Relying on digital and intelligent technology, intelligent property management innovates the traditional property management mode, which has the significance of improving management efficiency, optimizing service experience, reducing operating costs, enhancing security guarantee and promoting community development. Smart property management gives more intelligent elements to the house through scientific and technological means, and also provides a more efficient and more convenient way for property services. With the continuous progress of technology and the continuous expansion of application scenarios, smart property management will play a more important role in the future, and contribute to building better houses and better services.[2]

1.3 Analyze the Transformation and Upgrading Brought About by Smart Property Management

With the development of society and the progress of science and technology, the traditional property management mode is also constantly innovating. At present, many property service enterprises begin to apply science and technology to property management, in order to promote the development of property management in the direction of green and intelligent, to create a new green property service platform.[3] In terms of management mode, smart property management moves from decentralized to integration, and the unified platform integrates data to realize information sharing; in terms of service experience, smart property management realizes multiple interactive channels. The owner can communicate at any time through APP, and the property can timely receive and push information, and realize customized services with the help of big data to meet the needs of different owners. In terms of safety, smart property management has built an intelligent security system to prevent risks, real-time monitoring of facilities and equipment failures and fire hazards and timely early warning.

2 Development Process and Current Situation of Smart Property Management

2.1 Development Process of Smart Property Management at Home and Abroad

Smart property management has experienced a development process from scratch, from simple to complex, both at home and abroad. However, the development process of smart property management abroad is relatively mature, from the early information management to the stage of intelligence and integration, and the level of technology application and system integration is high. At the late start of domestic smart property management, through the rapid introduction of advanced technology, it has realized the leap from traditional management to wisdom, and gradually formed a management mode with Chinese characteristics. In the future, with the continuous progress of technology and the deepening of its application, smart property management will usher in a broader development prospect in the world.

2.2 Main Characteristics and Trends of Current Smart Property Management

At present, the main characteristics of intelligent property management include intelligence, information technology, high efficiency, personalization, integration, security and so on. In the future, with the continuous progress of technology and the continuous expansion of application scenarios, smart property management will show the trend of intelligent upgrading, deepening of data, diversified service expansion, obvious cloud-based, and close integration with smart city.

2.3 The Current Role of Smart Property Management in Improving the Quality of Life of Residents

Traditional property management services mainly rely on manual operation. In the property management of various projects of Shenzhen Railway Property, they are faced with problems such as a wide range of work, many operation and maintenance equipment, and difficult staff management. In daily business work, most of the front-line property management personnel rely on manual feedback and paper form filling to carry out their work, and the information degree is weak. Therefore, it is easy to cause the property service quality problems such as difficult tracking of work order maintenance status, low utilization rate of assets, and green cleaning patrol.[4] Smart property management has comprehensively improved the quality of life of residents through intelligent, data and humanized services. It not only enables the residents to enjoy a more convenient, safe and comfortable living environment, but also enhances the cohesion of the community and the residents' satisfaction.

3 The Application of New Technology in Smart Property Management

3.1 Intelligent Management System

Intelligent management system integrates the Internet of Things, big data, artificial intelligence and other cutting-edge technologies, comprehensively promoting property management to automation, intelligence and efficiency. In practical application, it organically integrates security, energy management, equipment monitoring and other subsystems, and realizes integrated management and resource integration through a unified platform. For example, in the field of security, the intelligent management system integrates a variety of functions, with the help of face recognition and other technologies to achieve accurate management and ensure security.

3.2 Information Technology

The Internet of Things technology, through the interconnection of equipment, data sharing and intelligent decision-making process, the Internet of Things technology significantly improves the overall level of property management, and greatly enriches the life experience of residents. The integration of its technology has injected new vitality into the property management industry and contributes to the harmonious and sustainable development of modern communities.[5] Information technology, as the core driving force of intelligent property management, with the deep integration of the Internet of Things, big data, cloud computing, artificial intelligence and other technologies, realizes the all-round upgrade of property management, and deeply changes the traditional property management mode and efficiency. Through the deployment of sensors and intelligent terminals, the Internet of Things technology realizes the interconnection of property facilities and equipment, and collects multiple data in real time, which not only improves the efficiency of property management and service quality, but also promotes the construction of community culture.

3.3 Perception and Recognition Technology

Perception and identification technology integrates the Internet of Things, artificial intelligence, big data and other technologies to realize real-time perception and accurate identification of multi-dimensional information such as property environment, equipment status and personnel behavior, and provide strong support for the intelligent and refined property management. With the deployment of various sensors and intelligent devices, the sensing technology can comprehensively monitor the community environment and facilities, providing a safer and healthier living environment for the community residents. In addition, perception and recognition technology provides decision support for property management by deeply mining the behavior patterns of residents and the frequency of facilities and conducting data analysis.

3.4 Automation and Control Technology

Automation and control technology realizes the intelligence, automation and refinement of property management through the integration of the Internet of Things, big data, artificial intelligence and other technologies. In intelligent property management, automation and control technology is widely used in intelligent equipment management and automation control, intelligent security and security control, energy management and automation regulation, intelligent service process and automation response, data analysis and decision support and other aspects. These applications not only significantly improve the efficiency and security of property management, but also provide owners with a more convenient and comfortable life experience, and is an important technical support to promote the sustainable development of smart property management.

3.5 Emerging Modeling and Building Simulation Technology

Emerging modeling and building simulation technologies provide support for the whole life cycle of property management with the construction of virtual models and simulation scenarios. Building information model technology is widely used, which can realize three-dimensional visual modeling of building facilities, simulate physical and functional characteristics, and help the property management team to find problems in advance and optimize the design. The property management team can also monitor and optimize the building performance in real time by simulating building energy consumption, environmental quality and other data. In addition, the deep integration of emerging modeling and building simulation technology, the Internet of Things and big data, data collection combined with simulation model analysis can realize equipment fault warning and optimal resource allocation.

4 Practical Case of Smart Property Management

"Live here" is an exclusive APP created by Vanke for the owners, which integrates the functions of property service, community life service, online interaction and life consumption, aiming to build a convenient property life service system and enhance the connection and interaction among community residents. Vanke Property has the characteristics of convenient service, intelligent access, open and transparent information, and rich community life. Owners can realize the functions of fee payment, problem feedback, inviting visitors and so on through the "Live here" APP. Vanke Property also cooperates with Ruiyi Line traffic management platform to support face recognition, Bluetooth door opening and remote door opening to improve the efficiency and security of community traffic. The implementation of these functions not only improves the owners' satisfaction with property services, but also improves the work efficiency of property personnel. The successful practice of Vanke's "live here" smart community provides a reference model for the industry and promotes the development of smart property management.

However, Vanke Property is also faced with problems such as high investment in technology update and system maintenance, difficulties in data security and privacy protection, and difficulties in using APP for some elderly owners or owners with low acceptance of new technology. To solve these problems, Vanke sets up a professional technical team, cooperate with scientific research institutions, continuously optimize the system and follow the technological development trend; establish and improve the data security management system, adopt encryption technology, strict access control and other means to protect the owners' data security awareness training; to give training lectures and design the APP for aging, to help the owners integrate into the intelligent community life.

5 Challenges and Coping Strategies of Smart Property Management

5.1 Technical Challenges

Smart property management faces many challenges in the process of technology application, including fast technology update, high cost input, difficulty in data security and privacy protection, weak core technology capability and so on. These challenges have put forward a severe test to the digital transformation of property management enterprises, but through effective coping strategies, related problems can be significantly alleviated and the sustainable development of smart property management can be promoted.

First of all, smart property management relies on cutting-edge technologies such as the Internet of Things, big data and artificial intelligence. Rapid iteration requires enterprises to continue to invest funds for upgrading and maintenance, which poses pressure on small and medium-sized property enterprises. Coping strategies include choosing mature and reliable digital suppliers to share costs, using government subsidies and social capital, and evaluating technical solutions through POC testing.

Secondly, it with a large amount of owner information and equipment operation data. The response strategy involves the establishment of a sound data security management system, using encryption and access control means, selecting authoritative qualification certification suppliers, and strengthening staff data security awareness training.

In addition, the Internet of Things sensor technology, equipment failure prediction algorithm and other key technologies are not mature. Coping strategies include cooperating with universities and research institutions for customized research and development, encouraging technological innovation and cross-border cooperation, and establishing equipment "health records" to optimize the management process.

Finally, the personnel challenge was equally significant. Smart property management needs compound talents with both property management and information technology ability, but such talents are in short supply. The response strategy involves cooperating with universities to conduct customized training, optimizing human resource allocation, and introducing external expert consultants to improve the technical level of the team.

5.2 Management Challenges

Smart property management faces many management challenges in practical application, which mainly focus on the inefficiency of traditional management mode, data island, resource waste, untimely service response and shortage of inter-disciplinary talents. For these challenges, the following coping strategies are proposed:

First of all, traditional property management relies on manual operation for a long time, from daily inspection to fee collection, the process is cumbersome and inefficient. In the face of the intelligent transformation of intelligent property management, this mode is difficult to quickly adapt to the new working methods and technical requirements. By introducing intelligent system, intelligent property management can realize

the automation of equipment monitoring, work order circulation, energy consumption management and other links.

Secondly, under the traditional property management system, the data of various departments are independent of each other. For example, the owner complaint data of the customer service department and the equipment maintenance data of the engineering department are difficult to achieve effective integration and sharing. This makes the property management decision lack of comprehensive data support, unable to form an accurate judgment of the overall operation of the property. By introducing property management software, intelligent property management realizes centralized information management and real-time sharing, and breaks the data island. For example, through a unified property management platform, the data of cleaning, security, finance and other departments can be synchronized in real time to avoid the waste of resources.

In addition, when traditional property management deals with owners' demands for repair and complaints, it often leads to too long response time due to poor information transmission and cumbersome process. The simplicity of the property management service content also makes it difficult to meet the increasingly diversified and personalized needs of the owners. Through the automatic process and intelligent order dispatch system, intelligent property management realizes the rapid allocation and processing of tasks such as repair, cleaning, security and security, and significantly shortens the processing time of work orders. At the same time, smart property management also innovates the service content, through in-depth understanding of the needs of owners, to carry out personalized services.

Finally, the traditional management mode faces the problem of talent shortage. Smart property management needs compound talents with solid professional knowledge of property management, but also master information technology, data analysis and other skills. However, there is a serious shortage of such talent reserves in the industry. To cope with this problem, we should strengthen the cooperation with universities and training institutions, and jointly formulate talent training programs; establish a perfect internal training and incentive mechanism, to cultivate intelligent talents to adapt to the new technological revolution.

6 Future Development Trend of Smart Property Management

With the rapid development of information technology, intelligent property management has become an important development direction of the property management industry. In the future, smart property management will deeply integrate artificial intelligence, Internet of things, big data and other technologies, promote property management from the traditional mode to the direction of intelligent, ecological and green, improve management efficiency and service quality, and create a more convenient, comfortable and safe living environment for owners.

In terms of artificial intelligence, with the help of deep learning and machine learning algorithms, the system can intelligently analyze the owners' behavior and predict the demand, and realize the transformation from passive response to active service. In

terms of the Internet of Things, the wide application of the Internet of Things technology can achieve the comprehensive interconnection of community facilities and equipment. Intelligent access control, monitoring system, environmental monitoring equipment and other Internet of Things devices collect and transmit data in real time, forming an all-round intelligent perception network. In terms of big data, the development of the Internet of Things and big data technology enables smart property management to collect and integrate massive data. In terms of service, it will break the traditional boundary, integrate third-party service resources such as health management, online education and community e-commerce, and build a one-stop community life service platform.

7 Conclusion

Under the powerful power of new technologies such as the Internet of Things, big data and artificial intelligence, intelligent property management is undergoing profound changes, realizing the transformation and upgrading from the traditional model to intelligent and refined, and bringing significant benefits to the property industry. However, smart property management also faces many challenges in the process of development. For example, potential data security risks, low skill level of employees, and uneven acceptance of intelligent services by owners. As smart property management moves towards the direction of intelligent, personalized and green, it should further strengthen the integration with the overall digital development of the city. With the help of science and technology, we will expand the professional depth and management precision of property management, innovate the property management mode, and use AI and artificial intelligence and other technical means to improve the quality and service efficiency of property management. Only when property management synchronizes with The Times and technology can it achieve better and higher development.[6]

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