Knowledge management and modern digital transformation of the property management industry in China

Qiang Shen, Yukun Hua, Yuxing Huang, Richard Ebstein, Xiaofen Yu and Zhihua Wu

Abstract

Purpose – *In the current urban and increasingly digital/information era, the service of property management towards residents is of key importance to the well-being of society, which is especially well reflected in its role during the COVID-19 pandemic in China. However, professional knowledge management (KM) has yet to be applied to the daily operation of the property management companies in this sector. The authors posit that introduction of KM concepts to property management at this time would significantly help facilitate the transition of traditional property management towards a higher and more effective value-added service model. From the perspective of KM, this study aims to offer both a theoretical and practical analysis of such a novel business model for companies in the property management industry.*

Design/methodology/approach – *Given the current status quo of property management, the authors integrate theories from both KM and information-digital management to qualitatively analyse the challenges and difficulties companies are facing and importantly offer practical suggestions for the centralization, digital-information platform establishment and service innovation.*

Findings – *Following the analysis of KM and digital-information modeling, the authors identify three main challenges facing property management services offered in the current digital society including market fragmentation, lack of digital platforms and the absence of a unitary service model. Therefore, the authors propose strategic solutions to resolve these aforementioned problems. Specifically, the authors suggest centralizing property management service, the establishment of a KM-based digital platform and the upgrading of the service model, towards offering a new impetus for the development of companies in property management.*

Research limitations/implications – *The authors offer essential guidelines derived from knowledge and information management and explore their implications both from a theoretical, as well as pragmatic/practical perspective that overall would support property management companies' crucial transition from the traditional service model to a more digital-based foundation, and hence, provide a higher value-added service for the residents.*

Originality/value – *The current study is one of the first attempts to analyse property management services from the perspective of KM with digital transformation enabling its transition to an information-based internet of things infrastructure. The study not only offers practical guidance to the business of property management but importantly, also contributes to the theoretical underpinnings of KM especially as related to secure serviceability, well-being, security and efficiency of the residential environment by integrating people, place, process and technology.*

Keywords *Property management, Knowledge management, Digital transformation, Knowledge creation, Knowledge updating*

Paper type *Viewpoint*

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1. Introduction

With the transition to rapid urbanization in the past several decades, property management is a fast-growing industry in China and plays a vital role towards ensuring the citizen's quality of life. For example, despite being one of the earliest reported regions to be stricken

Received 20 April 2021
Revised 6 July 2021
30 September 2021
Accepted 21 October 2021

by COVID-19, China has achieved remarkable success in the containment of the coronavirus pandemic. Towards restricting viral transmission, the property management sector played a key role by managing the flow of people and monitoring and containing virus transmission using temperature checking, social distancing, quarantine and other such measures. However, at this current critical moment during the transition from the traditional property management service towards offering a high value-added service for residents, the property management companies, by and large, lack sufficient awareness and understanding of knowledge management (KM) to further advance and boost this up-and-coming industry.

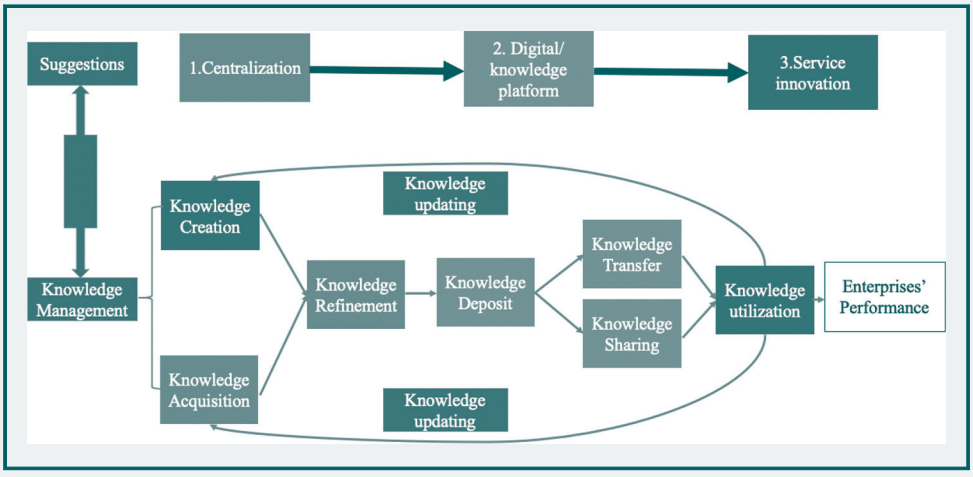
In the knowledge economy era, academia, as well as industry have introduced KM techniques to inform and guide performance for organizations, as well as companies (Agostini *et al.*, 2020; Bican *et al.*, 2017; Chin *et al.*, 2018; Del Giudice and Della Peruta, 2016; Ferreira *et al.*, 2018; King, 2009; Papa *et al.*, 2020). For instance, KM has been applied to enterprise innovation, startups, organizational learning and other endeavours (Chin *et al.*, 2020; Del Giudice and Maggioni, 2014; Gold *et al.*, 2001; Goswami and Agrawal, 2019; Oliva and Kotabe, 2019). However, perhaps due to both the low-added value and labour-intensive characteristics of the property management industry in its original service version, few studies have so-far systematically investigated the link between knowledge and property management (Najib Razali and Juanil, 2011). Accordingly, we suggest that the rapid growth and scaling up of the property management industry calls for the upgrade of the original service model and, notably, the application of KM to enrich the understanding, awareness and comprehension of the service and motivate property managers to perform their jobs in an ever increasing more efficient and professional manner.

KM as initially defined by Davenport (1994) is the process of capturing, distributing and effectively using knowledge. Following its introduction across various industries, it gradually evolved from a three-stage model (Generate, Codify/Coordinate, Transfer) to a KM process model with seven stages (creation, acquisition, refinement, memory, transfer, sharing and utilization, King, 2009). Within the context of property management, the plethora of daily tasks and the complex procedures required to coordinate among employees crucially require skills at KM. Surprisingly, few studies have examined this connection between the requirement of property managers to multitask and their KM abilities. For instance, Talamo (2015)'s book has systematically summarized the application of KM in building maintenance and facility management. However, their study mainly focused on physical assets rather than personal service for the residents, which is the key ingredient of KM. Najib Razali and Juanil (2011) and Najib Razali (2015) have empirically investigated the application of KM strategies in property management companies in Malaysia. To our knowledge, however, there are no studies that have systematically examined the extent to which the different stages in the KM framework could contribute to the all-inclusive services of property management. It is likely that the workforce spontaneously makes use of implicit KM to offer needed service, however, without conscious awareness of its application. As Sousa and Rocha (2019) noted in a recent review, as information workers, such employees should use, transmit and adopt knowledge to facilitate work productivity. This is especially urgent for the upgrade of service quality of property management companies in the current digital age (Figure 1).

To our knowledge, this is one of first studies to examine property management companies in China as an example, within the framework of KM to analyse, from a theoretical perspective, the characteristics of these companies and identify the key KM processes that are likely bottlenecks of the service upgrade (Figure 2). As a consequence of this analysis, we are positioned to make practical recommendations in a point-by-point manner to enhance property management in China, and by implication across the globe. The application of KM, we suggest, would guide businesses and accelerate the development of

Figure 1 Slowdown of real estate industry and the boom of the property management in China

Figure 2 KM suggestions for the property management industry



this industry in the coming decades, is of great significance not only for the companies themselves but also which is vital for the well-being of property residents' service in urbanized China. Additionally, the practical application of this model also enriches the theoretical framework of KM, especially the periodic and dynamic updating of knowledge, creating a new closed loop for the original KM model (Figure 2).

2. Challenges of knowledge management in the property management industry

2.1 The knowledge is fragmented for knowledge acquisition and refinement

The urbanization of Chinese society is, not surprisingly, accompanied in parallel by a boom in the property management industry, namely, a rapid increase in term of its size and scale,

that will likely reach 43 billion square meters with 10 million jobholders in the next 5 years (Deloitte, 2020). However, the distribution of property management across the whole market, nevertheless, reveals a long, prominent tail (Anderson, 2006). Given the geographically distributed characteristic of the industry, property management is perforce intrinsically difficult to centralize, leading to unbalanced development of property management companies, resulting in a fragmented and dispersed KM industry. With the exception of several top-tier companies, the industry as a whole is still at the early stage of development. This situation will likely generate problems, especially for the acquisition and refinement of knowledge within the KM organization itself (Gaviria-Marin *et al.*, 2018; King, 2009). On the one hand, for the small and medium-sized property management companies and similar enterprises that are struggling to offer essential services, their lack of KM skills is the most salient and difficult challenge. For example, although there is currently in place a standardized procedure that could offer high-quality service for residents in the housing estate, property managers lack the resources and awareness to exploit such knowledge and use these assets towards introducing higher-value service for their clients (Gold *et al.*, 2001).

For example, property managers fail to regularly implement the appropriate search functions access the necessary knowledge to fulfil their daily tasks. Therefore, in such housing estates, this deficiency results in the absence of high standard service for the local residents. On the other hand, for the large, top-tier companies, resulting from their current stage of scale expansion to boost development, they often fail to pay adequate attention towards knowledge refinement (Dalkir, 2017; Agostini *et al.*, 2020). Notwithstanding, compared with the small sized property management enterprises, in the large companies, at least some of their professional employees already possess sufficient skills of KM enabling them to cope with their daily tasks with a high standard of job performance. Nevertheless, given that jobs in the property management context are heterogeneous and sometimes intangible the refinement of KM capabilities is stilted (Gold *et al.*, 2001; Maravilhas and Martins, 2019). Altogether, both for small and large companies in this industry, they lack both the awareness and the organizational capability to cope with the problem of knowledge acquisition and refinement of the KM process (Figure 2).

2.2 Digital platforms are absent for knowledge sharing and transfer

In China, as urbanization advances, the cities and urban areas gradually evolve into the gathering sites of the citizens. The majority of these populations live in residencies maintained by property management companies. However, given the traditional features of the industry, namely, the impression that the market is labour intensive and the profit rate is low; accordingly, low income for the employees in the property management companies, results in an overall labour-intensive feature of the industry (Abidoye and Chan, 2016; Vial, 2019). Hence, the reality is that the knowledge base or the quality of the human/intellectual capital are not yet sufficient enough to keep pace with the need of its booming development (Agostini *et al.*, 2020). Notably, we suggest that KM will be a key ingredient to drive and foster the development and upgrade of the property management service. Altogether, there is a cognitive gap between the needed skills of KM and the cognitive understanding both for managers and their employees in property management companies. In particular, a considerable number of them lack the knowledge awareness both at the strategic and operational level for knowledge sharing and transfer. At the strategic level, for most of the property management companies, they have not yet set up a systematic mechanism for knowledge sharing, due to both the physical and mental cost (Gaviria-Marin *et al.*, 2018). At the existing operational level, even for the top companies in this industry, there are still considerable obstacles to overcome. For example, when the areas of ownership property management companies expand, over wide geographical areas in China, it become

increasingly difficult to make full use of the current manual and electronic platforms to transfer knowledge from top to bottom of the chain and guarantee service quality.

Even when the enterprises arrive at a consensus and gain a coherent attitude that the KM platform is a necessary step for the organizational transformation, several barriers still remain. The first barrier is that of knowledge deposit (see above discussion regarding *challenges*). For example, given the labour-intensive feature of the industry, much knowledge is stored at the brains of the frontline workforce. Without an in place professional KM platform, such kinds of knowledge are hard to use. Notably, the knowledge base of property management is heterogeneous and plural and may be explicit, implicit or even tacit. These characteristics of property management raises questions of how to examine and cope with such information, which is of vital importance for property services. The nature of information available to property managements requires a cutting edge understanding in the field of KM to see how to deposit or treat variously characterized bits of knowledge (Crane and Bontis, 2014). The second barrier is knowledge sharing (Cabrera and Cabrera, 2002; Ipe, 2003; Wang and Noe, 2010). Despite the fact that some key knowledge already exists in the organization, especially for the large property management companies, a knowledge sharing mechanism has yet to be established. The third barrier is the problem of knowledge transfer. For example, for the large companies, that are witnessing a rapid development in term of scale through such measures as mergers and acquisitions (M&A), inter alia. This development naturally involves the management of new property and there is a lack of a regular mechanism or system that allows new knowledge to be transferred to new sectors in an efficient and complete manner. Last but not least, even if the information is already acquired and deposited in the system, the key ingredient is its integration and application to daily management and service. More specifically, it entails the practitioners to have a certain degree of KM awareness towards carrying out their regular job. However, given the current rules and remuneration system, this might be not a small hurdle to overcome. In short, the development of the KM platform is a crucial step to achieve the digital transformation of the industry and which roads need to be followed to achieve this aim is a crucial area of future study.

2.3 Business model is unitary and knowledge is not updated

As illustrated in the introduction, although the real estate economy is evolving from building towards maintaining, the business model of property management is still, by and large, unitary. For example, according to a report from the China Index Academy (2020), the property management fee accounts for the overwhelmingly majority (80.49%) of revenue for the top 100 property companies in 2018, not to mention the medium and small sized property management companies. However, with the rapid increase of the resident's living standards, their needs are becoming diverse and increasing rapidly. Accordingly, the current historical moment offers a precious opportunity and narrowing the time window for property management companies. The key question is whether they can take advantage of KM to exploit and cope with these rapidly evolving developments. A key challenge for satisfying the needs of the residents is knowledge creation, which lies at the heart of the property management companies' competitive advantage (Bican *et al.*, 2017; Choi and Lee, 2002; Goswami and Agrawal, 2019; Santoro *et al.*, 2020). Notably, if well handled, the property management companies can become quickly aware of the newly emerging needs of the residents and be in a position to offer the required plethora of services in a need-oriented manner. However, the key obstacle to this process is that the employees in the industry still mainly focus on the traditional business model and have little awareness of the importance of knowledge creation within the framework of knowledge conversion theory (Bican *et al.*, 2017; Seidler-de Alwis and Hartmann, 2008).

With the increasing development of society and a growing middle class, the companies in the property management industry gradually evolved into the post-real-estate establishment

stage, and are currently positioned to exploit this lucrative market by offering a range of services for the residents. However, given the problems discussed above, we suggest that efficient exploitation of the middle-class market requires the application of the KM strategy to tackle the diverse business features characteristics of the property management landscape.

3. Key practical suggestions for application of knowledge management in property management

3.1 Centralize the knowledge source

To upgrade the service quality of the property management companies, we first suggest to increase the scale and geographical distribution of property/estate management, e.g. through the action of M&A. Company size is a prerequisite for enhancing service quality for property management. The aggregation of resources either from the services offered for residents or from physical spaces maintained could pave the way for the centralization of knowledge. Therefore, such types of changes could facilitate the employees' knowledge acquisition. With professional management, the property could have the chance to upgrade its hardware quality, namely, the introduction of the internet of things to the domain of daily property management. This could facilitate the recordings of daily incidences, making the data and knowledge acquisition more convenient (Santoro *et al.*, 2018).

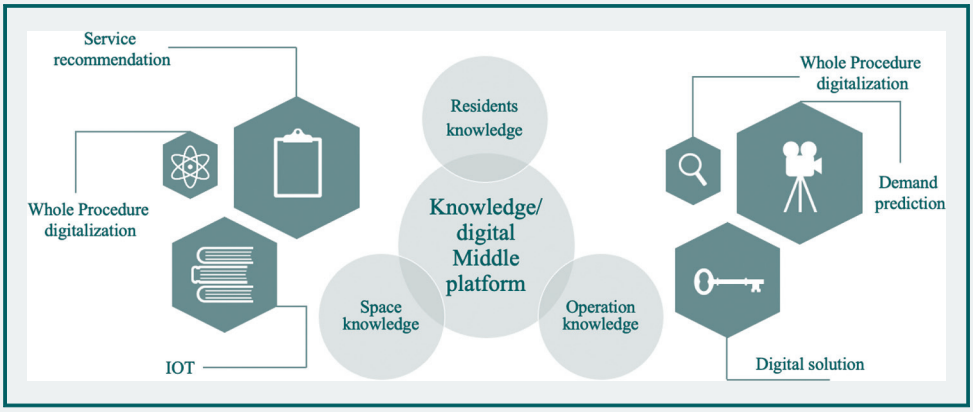
Additionally, upgrading the quality of the worker's job will consequently promote the refinement of knowledge, which is an essential step for the subsequent KM process coupled with professional ability and know-how to refine the knowledge from different sources and perhaps most importantly their integration. Notably, upscaling company size, would not only integrate the knowledge within the community but also makes it possible to gather knowledge across the whole expanse of China such that the knowledge refined could be truly generalizable for subsequent knowledge utilization.

3.2 To set up a digitalized knowledge management platform

Due to the coronavirus pandemic, China has accelerated the process of digital transformation. Nevertheless, compared with other developed countries, the current digital transformation status in property management companies notably lags behind (Verhoef *et al.*, 2021; Vial, 2019). Given its inherent nature, the KM process requires companies and organizations to acquire computer-based communications and information systems (King, 2009). Therefore, in this digital zeitgeist, it is important to further upgrade the traditional KM process to a new level, adapt to the new environment and guide the business in the context of property management. Therefore, for the property management companies, by virtue of the "new infrastructure" tide now ongoing in China, it is vital to establish digital platforms to facilitate KM, especially knowledge sharing and transfer. Building on this process, it is important to allow knowledge updating in a regular manner.

In property management sectors, the application of the newest and most advanced IT technology should be promoted towards establishing a digitalized mechanism to make the sharing and transfer of knowledge painless (Figure 3). A digital platform could serve as a depository and conduit into the system for the required data including the residents' features, information of the real estate space and other relevant information. With all this in place, the companies can then use both data science and text mining techniques to extract both explicit and hidden implicit knowledge like the *persona* of the residents (Figure 5), which make it applicable to carry out *pull* and *push* manipulations among employees for knowledge sharing and transfer (Botha *et al.*, 2014). With respect to the property service, for both explicit and implicit knowledge which it could be articulated, e.g. the steps to respond and solve the complaints of the residents, it could make use of the digital system to implement. Importantly, although the automatic transmission of the knowledge with the

Figure 3 Digital/knowledge platform of property management



digital platform could measurably promote the operation of property management, daily face-to-face interactions are still vital for property management as considerable knowledge is implicitly represented and cannot easily be articulated and standardized in the digital system. On the pull side for knowledge sharing, when the employees in the property management context offer a service for the residents, and knowledge is required, they can refer to the digital system as a knowledge source, as well as library and search for the required knowledge towards its retrieval. Alternatively, if the knowledge is not directly available in the system or is implicit by nature, with the assistance of the system as a corporate "yellow pages", employees can quickly seek out the expert or the matched person to make inquiries to obtain the required information. On the push side of knowledge transfer, as the expansion of the market for property management and the new enrolment of the labour force gains momentum, it is important to transfer knowledge to the new members who need to master the knowledge and then offer their service in a professional manner. Thus, the structured digital platform with the knowledge repository makes the transfer of the knowledge to new employees convenient and efficient. At the implementation side, this could introduce a work order system for the property management service. This not only introduces the flow management of service (e.g. Hydropower repair service) but also prompts usage of the knowledge in the form of an intelligent aid, which can make the job response timely and the service procedure traceable. To go a step further, for the standardized service found in the field of property management, the companies can formalize and integrate professional knowledge into the digital and intelligent system, which can then be used to replace some of the human resources and boost the efficiency of service provided for the residents.

From the understanding of KM itself, as a result of the establishment of the digital platform, it now becomes possible to set up a closed loop to update both data and knowledge in a periodic manner. Specifically, this process has two implications. Firstly, the business and the service offered by the property managers make it possible to get additional knowledge which could be useful for subsequent labelling and *persona* plotting, thereby creating a closed loop for knowledge transmission with digital characteristics. Secondly, the experiential feature of service indicates that this process would provide direct feedback from the property owner and tenants, namely, property managers can obtain first-hand knowledge about the quality and degree of their service satisfaction. Theoretically, within the concrete scenarios of property management, the introduction of knowledge updating entails the establishment of a dynamic feedback mechanism which could potentially contribute to enrich the connotation of KM framework.

3.3 To upgrade the traditional service and create new service models

The traditional property management service is by no means the essential part of the comprehensive service model. However, the singular feature of the service provided at the

current stage, makes it not only restrictive for the further development of the companies but also fails to meet the increasing demand of the local residents. Therefore, innovation is important towards creating new service models beyond the traditional business ones as well as generating new growth points for business. Therefore, knowledge creation is a necessary key step for the property management enterprise, which should take advantage of the new knowledge to create new revenues. Within the context of the property management, knowledge creation would have two implications. On the one hand, the creation of knowledge provides better service for the traditional property management. On the other hand, it makes possible for the extension of service beyond its traditional scope and offers services that could not only create new business growth points but also is a focus areas in which that the property management enterprises possess a natural advantage.

For the traditional property management service, following knowledge transfer and sharing through the digital platform (suggestion 2), knowledge creation is also an indispensable step for a service upgrade. For property management, given the inherent variety of services in their daily jobs, it is common to interact, practice and learn, which ipso facto results in new knowledge generation (Nonaka and Takeuchi, 1995, 2007). Therefore, in the context of service offering, companies should establish a routine mechanism of KM in employees' daily jobs, which makes use of both formal and informal communications to produce new knowledge for property management companies, which, in turn, generates new and higher value for the residents.

For the extension of service beyond the scope of traditional property management service, the employment of knowledge creation to invent a new service model appears crucial (Seidler-de Alwis and Hartmann, 2008). Taking e-commerce service as an example, with its inherent physical advantage of last-mile delivery, e-commerce would profitably launch a new retail online-to-offline modality, which would then have a competitive edge *vis-à-vis* regular online e-commerce platforms, and hence, capture a place in the community group buying segment. With respect to aging services, China is experiencing a rapid transition to a large greying population (Wang and Chen, 2014). Since 90% of the aging population in China will choose to receive home-based care, the property management enterprises have first-hand information and knowledge, and accordingly have an excellent advantage to offer such "aging" service, as well as create new business models. With the spirit of knowledge creation, the property management sectors can either choose to offer professional health care-related services for the aging population within a residential complex or alternatively, themselves layout dedicated residential units for the aging population where both high quality life-necessities and entertainment-related services are offered. Therefore, as systematically illustrated in Figure 5, with the application of the KM/digital platform, property management could extend the service beyond its traditional scope and foster new service modalities. Such modalities could include Rent/Sale, aging/children services, as well as home delivery inter alia, thereby generating impetus for the property management and also offering high quality service for the residents.

3.4 Policy implications

In the post-real-estate era as a result of the COVID-19 pandemic, for both government and property management companies the aim for both is to offer support for the citizens towards leading a high-quality life trajectory. The policy implications are for government to provide guidelines of KM used by the property management companies and work both synergistically and seamlessly together with them. Together with the deepening of the reform to promote the digitalization of the property management industry as part of the building of "smart city", the government would be committed to act as a supervisory and regulatory role to ensure standards and rules regarding KM in the property industry. Such a government role would not only protect the interests of the residents but also offer standardized templates for the property industry towards implementing KM perspective in their business.

3.5 A knowledge management exemplar of property management company in China

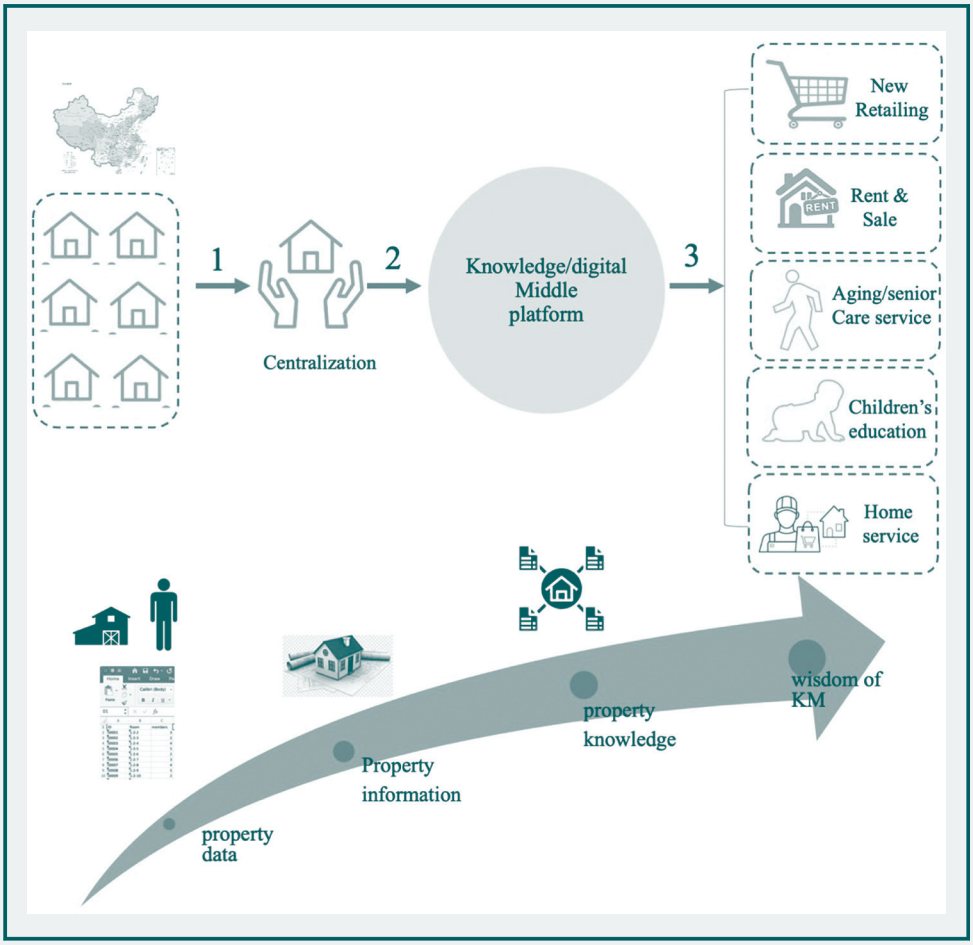
To implement the key ideas as elaborated above, one of the top tier property management companies has set up a knowledge/digital middle platform to maintain KM in this digital age (Figure 5). With the digital platform, the company centralizes its service within a wide geographical area which covers 2.33 million families located in 114 cities located in 29 provinces (municipalities) across mainland China. Such a centralized knowledge system makes it possible to provide services with a stable and high standard across wide territorial expanses. Moreover, the establishment of the middle platform also makes the maintenance of the KM process efficient. As indicated in Figure 2, at the front end, this process regularly allows knowledge acquisition, refinement and standardization of knowledge with minimal manual intervention. Critically, at the back end, the pipeline of the KM procedure also promotes knowledge creation both for traditional and the newly derived service modalities. In China, challenged by an aging population in coming decades, the KM platform present in the traditional property management setting can be upgraded and transferred to the new aging service sector and provide professional services such as operating the Continuing Care Retirement Community (see Figure 5 for full-service modalities). Therefore, along with the expansion of the traditional business sectors, KM with added digital ingredients would advance the extension of the business to related sectors, creating a new impetus for the development of property management companies (Figures 4 and 5).

4. Conclusion

With the systematic introduction of professional KM into the property management industry, we contribute to the greater understanding of the workings of KM platforms both from an application viewpoint as well as providing a deeper theoretical perspective of KM. The three key suggestions we made above, generate a salient signal behooving both the managers and practitioners in property management companies to take advantage of the KM stream within the organization to facilitate service delivery and innovation. One key point is that with the aid of knowledge creation, the resulting expansion of the service model could serve as a reminder to the companies within the industry, to avoid locking themselves into competitive battles within the traditional services and to pay more attention towards service innovation. Such a strategy would not only create a benign business environment for the property management industry but also promote the well-being of the residents with high added value service. Additionally, the current study offers a precious opportunity for KM researchers in academia to make use of property management as an indispensable milieu to apply the KM model. This approach not only expands the application of the KM into novel contexts but also enriches the theoretical underpinnings of KM. From the theory perspective, the current study suggests to form a cyclic closed-loop for knowledge maintenance through knowledge updating, which is not only advantageous for the services

Figure 4 Digital interface example for the property management

Figure 5 Practice of KM in a top tier property management company in China



provided by property management but also has major implications for industries with similar characteristics by expanding the theory landscape of KM.

The current study mainly focused on a qualitative analysis of the need to apply a KM strategy to the industry of property management. One limitation of this approach is the lack of rich enterprise performance data, which reflects the exact leverage effect of the KM for the jobs in property management. This is especially so for the different roles or processes of KM required for a variety of business needs. We propose that future work can be undertaken both at the practical and theoretical perspective. On the practical application side, given the business and labour characteristics of property management, future studies could examine the precise organizational capabilities needed for the transformation of programmes of KM towards creating knowledge-based companies throughout the property management industry. Both the KM application and the KM thinking of the managers and practitioners in the property management industry can be major assets for the companies thereby providing a competitive edge in the industry. From a research perspective, future KM studies should carry out empirical studies using quantitative methods (e.g. partial least squares structural equation modeling, Cepeda-Carrion *et al.*, 2019) towards evaluating the knowledge process capability that is essential for the business of property management including acquisition, refinement, transfer and utilization of knowledge. In addition to the knowledge process, attention would also be profitably paid to knowledge infrastructure

including technology, structure and culture (Gold *et al.*, 2001) that are all indispensable for the launch and maintenance of KM in property management.

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