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Evaluation of Property Management Agent Performance: A Novel Empirical Model

Yung Yau and Daniel Chi Wing Ho

Abstract

For many different reasons, property management agents (PMAs) are appointed for managing housing developments in both public and private housing sectors in many different cities. While third-party housing management eases the burdens of property owners and tenants in taking care of their properties, it may lead to agency problems. In fact, cases of mismanagement of multi-owned properties are common in Hong Kong and other Asian cities, leading to accelerated urban decay and augmented confrontations between property owners, users and PMAs. To promote better property management services, the performance of PMAs should be evaluated so market players can benchmark the performance of different PMAs for better-informed decision-making. This study reviews previous and existing measures for evaluating PMA performance and proposes a new evaluation model which is built upon the residual concept proposed by William Sharpe. The ideas underpinning the framework and how a PMA's performance is evaluated using the framework are detailed. Using this new model, 217 housing developments in Hong Kong are studied and the performance of the respective PMAs is evaluated and benchmarked. The evaluation outcomes are validated with the SERVQUAL scores of these 217 housing developments. Practical implications of the research findings follow.

Keywords: residual concept, performance evaluation, benchmarking, agency problems, property management agents, building stock management

1. Introduction

Strategic management is a very broad field accommodating literature focusing on strategy [1–3] and processes of strategy formulation and implementation [4–7]. It was branched out from management science into a new discipline in the 1960s [8]. Later, "strategic management" was once a big buzzword in the business sector in the 1970s and 1980s. While a large volume of literature has been contributed to the knowledge of corporate strategy, strategic management is still of little relevance to other disciplines, particularly urban and building studies. In fact, the principles and tools of strategic management can be employed in urban management to achieve the goal of urban sustainability [9, 10]. Given that there is a close link between quality of housing and life quality of residents, it is very important to make

sure that our housing stock is properly managed. Identification of good performers and poor performers can help different stakeholders, including homeowners, property management agents (PMAs) and public authorities, to make more informed decisions on the management of the housing stock in a city. In this chapter, we focus on two particular aspects of strategic management – performance measurement and benchmarking – in the arena of MOH management. We propose a new way to evaluate and benchmark the performance of PMAs in management of multi-owned housing (MOH) in high-rise cities. Hong Kong is taken as a case for illustrating the proposed paradigm.

2. MOH management: importance and challenges

MOH comes in many different forms such as apartments, condominiums and common interest developments [11]. MOH has gained its popularity in many high-rise Asian cities like Hong Kong, Kuala Lumpur, Shanghai, Singapore and Taipei. Compared with the case of single-family houses, management of MOH is more complicated. In a typical MOH development, common parts (or communal parts), including water pumps, underground sewers, lifts, service ducts, staircases, access corridors, lift lobbies and entrance halls, are co-owned. Owing to their co-ownership nature, these common or co-owned parts pose challenges in housing management as the associated management responsibility has to be shared by all homeowners [11]. In addition to the operation and use of the tangible, physical building fabrics and services, vigilant MOH management also needs to observe many other intangible aspects like security, quietness and environmental hygiene within the housing development. Proper management is crucial for assuring the quality of the residential environment and residents' well-being in the long run in several ways [12, 13]. First, it is conducive to the vigilant upkeep of the physical built environment and better built environment in turn safeguards the residents' health. Empirical evidence has shown that compared with those mismanaged or unmanaged, buildings which are properly managed have better safety and hygienic performance [14, 15]. Second, good MOH management can reduce neighbor conflicts and disputes by regulating the behavior of the residents (e.g. prohibiting littering in communal areas). Third, from the economic perspective, proper building maintenance can slow down value depreciation of the housing assets and preserve property value [16, 17]. Fourth, apposite MOH management facilitates timely building maintenance and repair which prolongs the serviceable lives of housing assets and relaxes the pressing need for redevelopment [18]. Accordingly, this reduces demolition and construction waste and eases the problem of resident displacement, going along with the principles of environmental and social sustainability.

On account of the technicality of building systems and services and large number of co-owners involved in MOH developments, particularly those high-rise ones, it is often not an unchallenging task for layman homeowners to manage their own MOH developments. Apart from a high level of cooperation among co-owners, effective management of MOH developments requires a lot of manpower and professional skills [19, 20]. Taking the very situation in MOH management into consideration, different parties such as professional bodies, scholars and governments advocate the engagement of a third-party or external property management agent (PMA) for managing a MOH development on the owners' behalf or in collaboration with the owners [14, 21, 22]. In Hong Kong, management services of an estimated 60% of apartment developments are entirely or partly outsourced to external PMAs.

As a matter of fact, MOH management has many similarities with corporate management. In a MOH development, the committee of a homeowner association (which can be named in different ways such as body corporate, owners' corporation, condominium association or strata committee) is analogous to board of directors in a company. On the other hand, the roles played by a PMA in MOH management are similar to those of a chief executive officer (CEO) in a company. The PMA (CEO) must keep the homeowners (shareholders) satisfied, make sure the housing development (company) running smoothly, oversee support staff and make regular reports to the homeowners (shareholders) and homeowner association (board of directors). Yet, relationship between the board of directors and CEO is vulnerable to the classical principal-agent problems because of the diverse incentives of the two parties [23–25]. The same also occurs in the case of MOH management [26–28]. It is very common that PMAs act for their own benefits at the homeowners' expense. Opportunistic PMAs may embezzle fund from the common financial pool (such as sinking fund and maintenance reserve) to their own pockets or make procurement decisions on their own instead of the homeowners. These malpractices of the PMAs have been widely reported in different parts of the world [29–32]. In this light, different measures have been devised or institutionalized to regulate PMAs' practices. For example, a property management license is needed for property managers in many states of the United States [33]. A new licensing regime for the property managers will be also in place in Hong Kong soon [34].

Aside from the regulation, principal-agent problems can be mitigated to a certain extent by offering market information or signals to the market players. In the arena of MOH management, a particular piece of information that the market players need to know in their decision-making processes is the PMA's performance. Therefore, measurement and benchmarking of performance of PMAs in MOH management are of paramount importance in the strategic management of housing stock in a city. Given that the PMAs' performance can be benchmarked, homeowners can be better informed in PMA selection for management of their MOH developments. PMAs themselves can also know their own performance relative to their competitors. Against this backdrop, we propose a framework for evaluating and comparing performance of PMAs in MOH management in Hong Kong in this chapter.

3. Measurement and benchmarking of PMA's performance

Performance measurement and benchmarking are essential elements of strategic management [35]. While there has been a large body of literature on benchmarking in the field of business management, little attention has been paid to benchmarking of housing or property management performance.

3.1 Existing performance indicators or measures

With a relatively short history, research on performance measurement or evaluation of property or housing management services started in the mid-1980s. In the very beginning, social housing was the main focus of research [36]. Over the past 30 years, various key performance indicators were employed or suggested in the literature for measuring or evaluating a PMA's performance. These performance indicators or measures can be broadly classified into four types, namely input-based measures, output-based measures, process-based measures, and hybrid measures. This categorization is based on the premise that provision of property management service can be analogous to industrial production. In industrial production, we

put in different resources in various amounts to produce a quantity of our desired products. The products are then purchased and consumed or used by customers to enhance their wellbeing. The resources we dedicate in the production process are the "inputs" which can be capital, raw materials and labor. In property management, in order to provide the service, PMAs have to put in labor and expertise. That is why monthly headcount of direct personnel involved in daily property management process, hours of staff training and professional development, and number of professional licenses a PMA has are common input-based performance measures for property management [37].

As for the "outputs", they generally refer to the products of the production process. In the case of property management, output-based measures concern the outputs can be the amount of service provided by a PMA or the assessable outcomes of property management process [38]. Frequencies of management activities (such as security patrol and cleansing of communal lobbies and corridors) within a specified time period are used as typical key performance indicators. Yet, these indicators represent the "immediate outputs" of the service provision of property management. Unlike manufacturing of consumer goods, the service provided by different PMAs is unlikely to be homogeneous even though they clean a building at the same frequency. Thus we need to recognize and identify the variations in the quality of property management service. In this light, it is also sensible to consider the "final outputs" which are the consequential effects or outcomes after the use of the service by the consumer. In property management, these final outputs can be the level of resident satisfaction and actual physical conditions of the MOH development.

Process-based performance measurement is key element in benchmarking which drives corporates and service providers to follow best practices in their fields [39]. With many variants, process-based measures focus on the operation process of PMAs. For instance, possession of certifications from the International Organization for Standardization (ISO) such as ISO9001 and ISO10002 is a common process-based measure in the property management sector [40–42]. In addition, whether specific practices (e.g. documentations and thoughtful emergency planning) are taken when managing a property can indicate PMA's performance [43].

Actually, input-based, output-based and process-based measures are not mutually exclusively. They can be used together to form some hybrid measures which typically come in a form of multi-attribute evaluation tool [44, 45]. However, the four measures aforementioned have their own weaknesses. For instance, input-based performance evaluation tends to overlook the service outcomes. In many cases, homeowners concern the management outcomes such as security level and environmental hygiene more than the management inputs. On the other hand, output-based measures ignore key factors affecting the outcomes of property management. Intrinsic characteristics of a housing development could be one of the examples of these overlooked factors. For example, the decent condition of a MOH development is probably the natural result of the young age of the property rather than the PMA's real efforts paid in housing management.

Regarding process-based measurement, its similarity with a traditional check-and-tick practice is not favorable to service innovation. In order to secure a high performance score, a PMA can make reference to a prescriptive checklist and adopt all the practices enlisted. There is no need to invest in or adopt innovative practices which lead to good performance. As for the hybrid measures, they seems to be the most convincing approach. Nonetheless, there are often debates on what factors, indicators or attributes should be incorporated into the evaluation system or framework. Given that the choices of attributes can be quite scenario-specific, hybrid measures may not be able to offer genuine apple-to-apple comparison of the

performance across PMAs. A set of performance attributes that are more relevant to large-scale MOH developments may not be applicable to small-scale ones.

No matter which type of performance measure is used, it is crucial that only the component of performance that is controllable by PMA should be accounted for. Akin to what has been discussed before, it would be inapt to attribute a more pleasant environment and better physical condition of a MOH development to better performance of its PMA without holding other exogenous factors constant. This is a zone that the literature has yet to address. In this regard, a more rigorous and generalized method to evaluate the PMA performance in MOH management is needed.

3.2 New paradigm for evaluating and benchmarking PMAs' performance

To reiterate, we aim to propose a new paradigm for measuring and comparing the performance of PMAs in providing professional property management service to the homeowners of MOH developments in this chapter. The proposed paradigm is designed to allow the performance to be assessed in a *ceteris paribus* condition (i.e. holding other exogenous variables constant). In the paradigm, management performance of a PMA is defined as the achievement of the PMA in managing the MOH development such that the residents are satisfied with the living environment and the MOH development is maintained in a good condition. In fact, this definition is justifiable because professional property management service provided by PMAs have dual dimensions – namely the tangible and intangible dimensions. Tangible dimension concerns the upkeep of the physical condition of the development which is an important indicator in PMA performance evaluation as most homeowners employ a PMA with an expectation that the environmental hygiene and safety of their housing developments can be safeguarded. Intangible dimension, on the other hand, includes how PMAs deliver their services to the residents.

How much does a PMA contribute to the good (or poor) condition of a MOH development? Similarly, how much does a PMA contribute to the high (or low) level of residential satisfaction within a MOH development? Regarding these two questions, the true contribution of the PMA to the physical condition and residential satisfaction of the development cannot be ascertained directly or explicitly. Therefore, resort is made to an indirect measurement. As a matter of fact, the role of a PMA in MOH management can be, to a large extent, analogous to the role of a CEO in corporate management. Both PMA and CEO serve their respective clients or principals (i.e. homeowners and boards of directors) in return for a fee-for-service. Upon this premise, we propose a residual concept for evaluating the performance of a PMA following the idea of William Sharpe [46]. As illustrated in **Figure 1**, PMA's performance is believed to be one of the factors affecting existing physical condition and residential satisfaction of a MOH development. Nevertheless, there are other factors affecting building condition and residential satisfaction. For example, inborn characteristics of a MOH development such as building age and types of material used may affect the degree of wear and tear and durability of the building fabrics, which will in turn determine the level of maintenance required for the housing development. Besides, works of a PMA may be held up or aided by different coordination mechanisms among homeowners (e.g. whether a homeowner association exists or not). Moreover, the characteristics of the residents (e.g. income and education levels) may bear impacts on the building condition because these factors affect how the common areas and facilities of a MOH development are used. All in all, these three groups of exogenous factors are assumed to exhaust all the determinants of building condition that are beyond the control of management. In
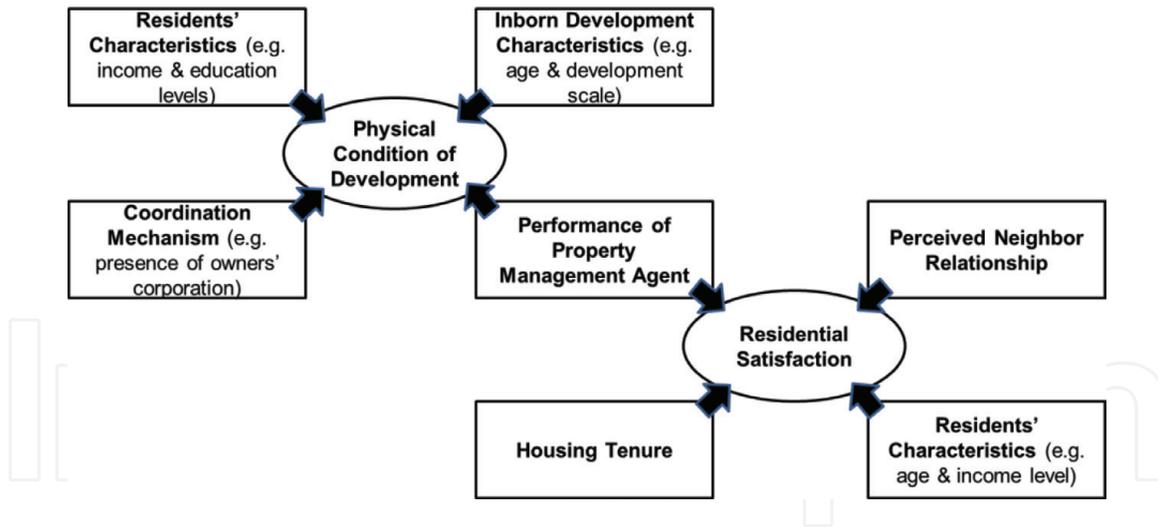
Figure 1.
Factors affecting building condition and residential satisfaction.

this sense, we can extract the PMA's efforts from the building condition by holding other exogenous factors constant.

After collection of data from a pool of MOH developments, a regression model is established to relate a MOH development's physical condition (PC) with its inborn attributes (IA), residents' characteristics (RC) and features of coordination mechanism (CM) based on the conceptual framework in **Figure 1**. Mathematically,

$$PC = f(IA, RC, CM) + \varepsilon \qquad (1)$$

where f is a mathematical function to be determined; and ε is the error term, which is also called the residual. The advantage of using regression is that other factors can be held constant. Most importantly, the residual series ε specified in Eq. (1) captures implicitly the performance of the PMAs in managing their respective MOH developments. The residual accounts for the variations in building condition that cannot be explained by the exogenous factors incorporated in the model. Given the same building inborn attributes, residents' characteristics and coordination mechanism features, the differences in the physical condition of different housing developments, if any, should be attributed to the variations in the performance of PMAs managing these developments. In other words, the residual series ε measures the extent to which management performance of a PMA is higher or low than that of PMAs under similar circumstances. Likewise, as **Figure 1** shows, the overall satisfaction of the residents with the living environment of a MOH development (RS) is contingent not only on the PMA's performance. It may also be affected by the residents' demographic characteristics (DC) like age and income level, housing tenure type (HT) such as renter, owner-occupier or investor and general perception of neighbor relationship within the housing development (NR). The PMA's performance can be extracted from the residual series γ of regression results of the following equation:

$$RS = g(DC, HT, NR) + \gamma \qquad (2)$$

A property management performance index (PMPI) for a PMA with respect to a particular MOH development m managed by the PMA can be computed with the following formula:

$$PMPI = \varepsilon_m + \gamma_m \qquad (3)$$

where ε_m and γ_m are extracted from the residual series of Eqs. (1) and (2) respectively. The PMPI can be used to evaluate and benchmark management performance of the PMAs.

4. Benchmarking PMA performance in Hong Kong

For the purpose of illustration, the performance of selected MOH developments in Hong Kong was measured using the framework outlined above.

4.1 Measures of the variables

To operationalize the extraction of a PMA's performance in management of a MOH development from building condition, the physical condition of the MOH development (PC) was assessed using the Building Condition Index (BCI) [47]. The BCI is a multi-attribute assessment indicator of the existing condition of private multi-story residential developments, specifically-designed for the Hong Kong's context. To compile the BCI for a particular MOH development, various condition aspects including environmental hygiene, structural integrity, fire safety and presence of unauthorized appendages were rated in accordance with the respective pre-determined rating scales. The BCI ranged from 0 (for the worst scenario) to 100 (for the best scenario). As for residential satisfaction (RS), it was measured by asking a resident to indicate if his or her residential development was a good place to live using a five-point scale (1 = a very poor place to live; 2 = a poor place to live; 3 = a fair place to live; 4 = a good place to live; 5 = a very good place to live) [48]. A higher rating denoted a greater degree of residential satisfaction. An aggregate level of residential satisfaction for a MOH development was obtained by taking an arithmetic mean of all individual residential satisfaction scores.

Residents' characteristics of a MOH development were indicated using the official census data. Apart from the median monthly domestic household income (INC) and median age of the residents (RAGE), education profile of the residents (EDU) was also included in the measurement. It was measured as the percentage of population aged 15 and over in the MOH development with post-secondary education attainment. Housing tenure (TEN) was indicated by the percentage of households in a MOH development that were owner-occupiers. Regarding inborn building characteristics, age of a MOH development (DAGE) was taken as a simple average of the ages of all domestic buildings in the development measured in years. Development scale (SCL) was denoted by the total number of residential units within a MOH development. The coordination mechanism of housing management for a development (COM) was assessed based on whether an owners' corporation has been formed or not within the development. The variable was equal to 1 if the MOH development had an owners' corporation and zero if otherwise.

Lastly, perceived neighbor relationship (NREL) was gauged with a single-item scale. A resident was asked to rate the neighbor relationship in his or her housing development using a five-point scale (5 = very good; 4 = good; 3 = neither good nor poor; 2 = poor; 1 = very poor). Very often, single-item indicators are regarded as less valid and less reliable. However, we did not think that there would be any reliability and validity issues for this measurement item. The question is very straightforward so no interpretation concern is envisaged. The better was the neighbor relationship perceived by a resident, the higher would be the rating given for the variable. Similar to residential satisfaction, an aggregated level of perceived neighbor relationship for a MOH development was obtained by taking a simple average of all individual neighbor relationship scores.

4.2 Sampling of MOH developments and data collection

Primary and secondary data were collected in Sham Shui Po and Tsuen Wan, Hong Kong in 2016 and 2017. These two districts were chosen because they accommodated a large number of MOH developments with a wide variety, ranging from old medium-rise standalone buildings to newly-built high-rise estate-type developments. Since the most precise level of official census data publicly released in Hong Kong was the street-block level, we targeted only medium- and large-scale MOH developments for our empirical study. If small-scale housing developments were included in the research, the socio-demographic data obtained from the census could not be mapped exactly with the development-specific data as a street-block contained domestic buildings belonging to different developments. Random sampling is adopted to achieve a representative and useful sample. First, a roster of MOH developments with at least 350 domestic units was compiled. Then, 350 MOH developments were then randomly selected. An invitation letter was sent to the PMA or homeowner association of each of these selected developments to participate in the research. Finally, 217 invitees, or 62.0% of the invited MOH developments, agreed to partake in the research.

The processes of data collection are portrayed in **Figure 2**. First, basic information of the MOH developments was obtained in a desk study in which record building plans were studied and data were retrieved from various government databases (e.g. building management database [49] and 2016 Population By-census dataset). This stage aimed to gather development-based information such as development scales, building ages and resident socio-demographic profiles. In the second stage, site visits were conducted for assessing the actual building conditions of the MOH developments under investigation. In the third stage, a resident survey was conducted. Not less than 5% of the domestic units in each of the 217 housing developments under investigation were randomly sampled. The householders of these units were invited to complete a structured questionnaire online. The questionnaire included questions regarding respondents' perceived levels of residential satisfaction and neighbor relationship, and perceived quality of the PMA's service. The questionnaire was pretested and fine-tuned before official start of the survey. A total of 9000 invitations were sent out and 1649 complete replies were received, representing a response rate of 18.3%.

Table 1 summarizes the characteristics of the 217 MOH developments under investigation. The mean age of the MOH developments was 23.4. These developments had quite diverse scales, ranging from 353 to 6324 domestic units. Similarly, education and income profiles of the MOH developments varied a lot. The
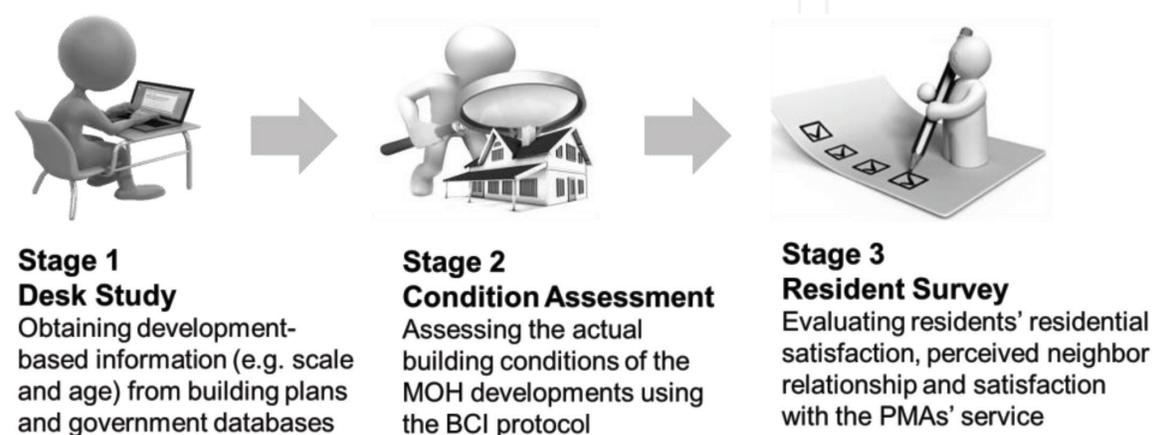

Stage 1
Desk Study
Obtaining development-based information (e.g. scale and age) from building plans and government databases

Stage 2
Condition Assessment
Assessing the actual building conditions of the MOH developments using the BCI protocol

Stage 3
Resident Survey
Evaluating residents' residential satisfaction, perceived neighbor relationship and satisfaction with the PMAs' service

Figure 2.
Processes of data collection for the empirical study.

	Maximum	Mean	Minimum	σ
Age (years)	48	23.4	2	9.9
Number of domestic units (no.)	6324	956.4	353	1352.7
Percentage of owner-occupiers (%)	99.2	78.5	58.4	9.7
Median monthly domestic household income (HK$)	75,980	41,305.9	13,700	16,081.1
Percentage of population aged 15 and over attaining post-secondary education level (%)	62.9	42.1	17.1	11.6
Median age of population (years)	48.0	39.4	27.9	4.3

Table 1.
Characteristics of the 217 MOH developments included in the final analysis.

	Maximum	Mean	Minimum	σ
BCI	95.7	62.1	30.2	18.1
Residential Satisfaction	4.1	3.2	2.2	0.4

Table 2.
BCI and residential satisfaction scores of the 217 MOH developments.

percentage of population aged 15 and over attaining post-secondary education level ranged from 17.1 to 62.9%, with a standard deviation of 11.6%. The median monthly domestic household income ranged from HK$13,700 to HK$75,980, with a standard deviation of HK$16,081.1. On average, 78.5% of the households in each of these housing developments owner-occupied their domestic units. The average median age of population was 39.4. 124 out of 217 developments (57.1%) have an owners' corporation. **Table 2** tabulates the summary statistics of the BCI and residential satisfaction scores of the 217 developments.

4.3 Findings

For simplicity, the functions in Eqs. (1) and (2) are expressed in linear form such that

$$PC = \alpha_0 + \alpha_1 RAGE + \alpha_2 INC + \alpha_3 EDU + \alpha_4 DAGE + \alpha_5 SCL + \alpha_6 COM + \varepsilon \quad (4)$$

and

$$RS = \beta_0 + \beta_1 RAGE + \beta_2 INC + \beta_3 EDU + \beta_4 TEN + \beta_5 NREL + \gamma \quad (5)$$

where α_i (for $i = 0, 1, 2, ..., 6$) and β_j (for $j = 0, 1, 2, ..., 5$) are coefficients to be estimated. Eqs. (4) and (5) were estimated using the ordinary least square (OLS) technique with the development-based data of the 217 MOH developments. Before model estimation, all continuous variables, including both dependent and independent variables, were rescaled to the range [0, 1] so the error series of the two estimated models can be integrated in a meaningful manner. The results of the OLS estimation were shown in **Table 3**. Generally speaking, the two models had very high explanatory power as demonstrated by the high adjusted-R^2 values. From the estimation results of Model (1), RAGE, EDU and DAGE were found to be significant determinants of PC. On the other hand, the estimation results of Model (2) indicate that INC and TEN were the only two variables with significant impacts on RS.

Variable	Model (1)		Model (2)	
	Coefficient	t-statistic	**Coefficient**	t-statistic
Constant	1.0361***	21.2868	0.8139***	20.8062
RAGE	−0.1160**	−2.0976	0.0674	1.4964
INC	−0.0052	−0.1595	−0.4690***	−18.4349
EDU	0.1073 *	1.7103	0.0018	0.0376
DAGE	−0.7754 ***	−28.7315	—	—
SCL	1.0361	−0.2112	—	—
COM	−0.1160	1.6763	—	—
TEN	—	—	0.0011*	−2.6407
NREL	—	—	0.8139	0.1297
Dependent Variable	PC		RS	
*R*2	0.9030		0.8360	
Adjusted *R*2	0.9002		0.8321	
F-statistic	325.7408 ***		215.0589 ***	

*Notes: *** denotes p < 0.01; ** denotes p < 0.05; and * denotes p < 0.1.*

Table 3.
Results of the OLS estimation.

	Maximum	**Mean**	**Minimum**	**σ**
ε	0.1822	0	−0.1577	0.0563
γ	0.0981	0	−0.1235	0.0446
PMPI	0.2089	0	−0.2801	0.0695

Table 4.
Descriptive statistics of the PMPI and its components.

Figure 3.
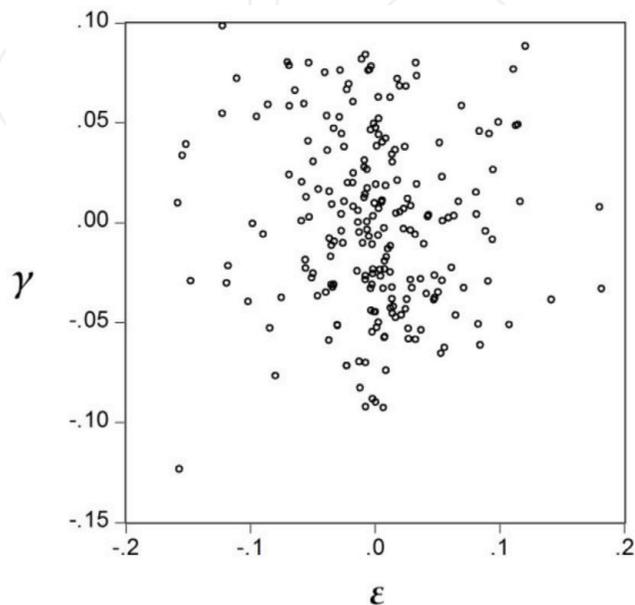*Scatter plot of ε and γ.*

The residual series of the two estimated models were then extracted and the PMPI scores of the 217 MOH developments were computed accordingly. As illustrated in **Table 4**, the highest PMPI score was 0.2089 and the lowest was −0.2801. **Figure 3** shows the scatter plot of ε and γ. As a whole, while 107 PMAs (49.3%) received a positive PMPI score, only 50 PMAs got positive values for both ε and γ.

5. Validation of the PMPI framework and discussion

5.1 Validation of the framework

At this point, one may argue that the performance of a PMA in the management of a MOH development can be evaluated based on the opinions of the residents in the development. Many previous studies on the quality of property management or facility management service adopted the subjective approach [50–55]. Yet, the reliability of the subjective quality service measures is often undermined by evaluators' biases and sensitive to evaluators' expectations and previous experiences [56, 57]. Nonetheless, such subjective assessment of PMA's performance can be a good candidate for validating the proposed PMPI. It is believed that the PMPI for a PMA managing a particular MOH development should have an unambiguous positive relationship with the PMA's service quality perceived by the clients, i.e. the residents, in the development.

We adopted the SERVQUAL model to evaluate a PMA's service quality because it has been widely used in the property management and facility management industries [50, 58, 59]. Based on the SERVQUAL model, five dimensions of a PMA's service quality were evaluated. As shown in **Table 5**, these five dimensions were further broken down into 19 statements or items for operationalization [60–62]. Residents were asked to rate their levels of agreement with the each statements using a five-point scale (with 1 = strongly disagree and 5 = strongly agree). For each resident, the overall SERVQUAL is taken as a simple average of the scores for the 19 items. An aggregate SERVQUAL score was calculated for each MOH development by taking a simple average of all individual residents' overall SERVQUAL scores.

To validate the PMPI, Pearson's correlation test was performed based on the 217 pairs of PMPI and SERVQUAL scores. A correlation coefficient of 0.84 ($p < 0.01$) was returned, signifying that there is an unambiguous strong positive relationship between the PMPI and SERVQUAL scores. Such findings confirmed the validity of the proposed PMPI framework.

5.2 Discussion

Professional property management is crucial for the long-term sustainability of housing assets, particularly the MOH developments. For various reasons like agency problems, PMAs need not necessarily perform well when managing a MOH development. To realize strategic management of housing stock in Hong Kong, we need to apprehend how the PMA perform. While different performance measures have been proposed in the literature, they have different limitations. Actually, the performance of PMAs in MOH management remains largely unobserved or incomparable in practice. The PMPI framework proposed and validated in the chapter aims to fill up the extant research gap by offering a tool for evaluating a PMA's performance in a *ceteris paribus* condition. From the perspective of knowledge contribution, the current study advances the research frontier of strategic management to the arena of property management. Besides, there are several practical implications of this

Dimension	Items
Tangibles	• Your PMA has modern equipment and tools for housing management. • The physical facilities in your housing development are properly maintained. • Employees of your PMA are neat-appearing.
Reliability	• Employees of your PMA tell you exactly when the service is performed. • When your PMA promises to do something by a certain time, they will do so. • When you have a problem, your PMA will show a sincere interest in solving it. • Your PMA performs the service right the first time.
Responsiveness	• Employees of your PMA give prompt service to you. • Employees of your PMA are always willing to help you. • Employees of your PMA are never too busy to respond to your requests.
Assurance	• The behavior of employers of your PMA instills confidence in you. • You feel safe in your housing development. • Employees of your PMA are consistently courteous with you. • Employees of your PMA have the knowledge to manage your housing development.
Empathy	• Your PMA will give you enough attention. • Your PMA has operating hours convenient to you. • Your PMA have employees who give your personal attention. • Your PMA have your best interests at heart. • Employees of your PMA understand your specific needs.

Table 5.
The SERVQUAL scale adopted for validation of PMPI.

research which can induce the cultivation of a culture of quality MOH management in Hong Kong in the long run.

First, the PMPI framework allows the extraction of hidden property management performance from a number of observable or measurable variables. For homeowners or residents, the PMPI provides a useful tool for benchmarking PMAs with regard to their property management performance. The index serves to inform people on the relative performance of the PMAs. For instance, homeowners, potential buyers, and potential tenants can refer to the PMPI to decide whether or not to make a property transaction or rent a property. It is of paramount importance to these parties because PMAs play vital roles in shaping the quality of the living environment which in turn determines residents' life quality and property values.

Second, the PMPI framework enables an objective inter-PMA comparison for distinguishing the good from the bad. It is believed that a well-publicized and well-received PMPI can serve as a benchmarking tool to measure and compare PMAs' performance in MOH management. Such performance benchmarking can introduce competition in the property management sector. The PMPI informs the PMAs of their performance relative to their competitors. In order to get a higher PMPI score, they need to continuously monitor and improve their services. Under-performing

PMAs, as identified by the low PMPI scores, will be punished by the market as no one is willing to appoint them for managing properties.

Third, PMPI contains important information, which assists property management companies to make more sensible decisions in resource allocation. Sizeable property management companies usually manage a large portfolio of MOH developments with different teams. The PMPI can be used to compare the performance of different teams. Resources from the head office can be directed to the most needy teams (i.e. teams with lowest PMPI scores), say by providing more staff training or conducting more frequent performance audits. Fourth, the PMPI can serve as a policy tool to identify substandard management service providers. The licensing authority can make reference to a PMA's PMPI when making decisions regarding licensing and disciplinary actions.

This study demonstrates how PMAs' performance is measured and benchmarked in a novel way. In fact, its findings can be associated with other principles of strategic management. For example, in order to stay ahead of the curve, a PMA should either do something in achieving better building condition or a higher level of residential satisfaction. The PMA should think about what goals it should aim at to establish sustainable competitive advantages over its competitors [63]. It may need to offer different services than its competitors or deliver similar services in different ways [64]. Strategic management concerns with adaptation of an organization's internal environment to the changing external business environment or contexts [65]. In this light, PMAs should observe and proactively respond to the changes in the external business environment such as advancement in information and communication technology (ICT) and law revisions. Further studies should be carried out to investigate if PMAs that are more responsive to these external changes (e.g. by earlier application of ICT in the property management processes) will perform better.

6. Conclusion

"Best of the class" today may not stay on the top of the league tomorrow [66]. Therefore, continual improvement in service quality is needed in the world of changes. Property management is no exception to this rule. In many high-rise cities, homeowners and residents engage an external PMA in the management of their MOH developments with the expectation to ensure the living environment is healthy, safe and pleasant. Nonetheless, as a profit-making entity, the PMA do not often share the goals and interests with its client. Agency problems are natural results in MOH management in many cases, leading to poor management performance and bringing about negative social, economic, and environmental implications. To cope with the existing challenges, evaluation and benchmarking of performance of PMAs are becoming essential. On one hand, these help homeowners and residents to make more informed decisions in PMA selection. On the other hand, competition is introduced through benchmarking so better services provided by PMAs can be promoted. Nonetheless, extant indicators and measures of PMA performance have different limitations. In this regard, a new paradigm for evaluation of PMA performance in management of MOH developments in Hong Kong was proposed.

The PMPI developed in this chapter have multiple applications which can make valuable contributions to the property management field. From the practical perspective, the PMPI facilitates performance benchmarking given that when a critical mass of PMAs have been evaluated using the index. The index serves as a tool for informing the general public about the management performance of PMAs in MOH

management. In the procurement of management service and service contract renewal, homeowners can make reference to the performance indices of different PMAs for better decision making. For the PMAs themselves, the framework allows the PMAs to know their relative positions in the performance league so they can continuously monitor and improve their services. In the medium to long run, under-performing PMAs will be identified by the PMPI and crowded out from the market. This is promising for a culture of quality property or MOH management to foster in Hong Kong.

On the academic side, with the PMPI, research opportunities to explore the determinants of PMA performance in the future are opened up. Researchers can identify what kinds of contractual arrangement lead to better performance of PMA. Furthermore, the relationship between property price or rent and PMPI can be tested. From the viewpoint of economics, properties managed by a better-performing PMA should command higher values or rents than those managed by a poorly-performing PMA. In this regard, the PMPI can further be validated with property value or rent. The average property price or rent of a MOH development is expected to change positively with the PMPI of the PMA managing the development, keeping other things constant.

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Conflict of interest

The authors declare that there is no conflict of interest.

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