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Neglected Aspects and Maladaptation to Rules in Low-Cost Housing, Malaysia: Social Practices of Commoning

Cheong Peng Au-Yong[1,*], Hong Kok Wang[2], Gabriel Hoh Teck Ling[3], Kian Aun Law[4], Bawa Chafe Abdullahi[5], Wan Nor Azriyati Wan Abd Aziz[6]

[1] Centre for Building, Construction and Tropical Architecture (BuCTA), Department of Building Surveying, Faculty of Built Environment, Universiti Malaya, 50603 Kuala Lumpur, Malaysia
[2] Department of Surveying, Lee Kong Chian Faculty of Engineering & Science, Universiti Tunku Abdul Rahman, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Malaysia; wanghk@utar.edu.my
[3] Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, 81310 Skudai, Johor Bahru, Johor, Malaysia; gabriel.ling@utm.my
[4] Faculty of Accountancy and Management, Universiti Tunku Abdul Rahman, Bandar Sungai Long, Cheras 43000, Kajang, Selangor, Malaysia; lawka@utar.edu.my
[5] Department of Estate Management, Faculty of Earth and Environment Sciences, Bayero University, PMB 3011, Kano, Nigeria; bawachafe@gmail.com
[6] School of Built Environment, University of Technology Sarawak, 96000 Sibu, Sarawak, Malaysia; azriyati@uts.edu.my

* Corresponding author: auyongcp@um.edu.my

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ABSTRACT

The enactment, monitoring, and enforcement of rules play a crucial role in determining the success of self-organisation in common properties within high-rise housing developments. However, maladaptation to these rules can arise from diverse factors such as the parcel holders' backgrounds, history, norms, and culture, leading to disrepair or the emergence of urban slums. This study examines two key issues: the influence of rules on the self-organisation of common properties, particularly in high-rise apartments, and the occurrence of maladaptation due to the forced relocation of urban squatters to new environments. Employing a mixed-method approach involving a questionnaire survey, interviews, and field observations, the findings underscore the significant impact of rules on self-organisation in high-rise housing. Furthermore, the forced relocation of urban squatters to unfamiliar environments comes at a heavy cost. The paper advocates heightened attention to soft human infrastructure, placemaking, and the introduction of commoning as a social practice to enhance adaptation to new living environments.

1.0 INTRODUCTION

The influx of rural individuals seeking employment in urban areas posed a significant housing challenge in Kuala Lumpur during the 1970s, with one in three residents residing in informal squatter colonies (Johnstone, 1983). To address this, Malaysia implemented an inclusive housing policy, constructing formal high-rise low-cost housing to provide a more decent urban environment. Some may view the process as forced resettlement/displacement (Billig, 2016; Shuid, 2016; Tilley et al., 2019).

By the year 2000, concerted efforts by the state and market led to the disappearance of squatter colonies in Kuala Lumpur, with 1.3 million low-cost houses built from 1971-2010 (Shuid, 2016). Approving authorities mandated the private sector to include at least 30% of new residential units as low-cost housing before granting any planning permission. In Q2 of 2021, Malaysia's cumulative low-cost housing stock stood at 1.17 million units, or 20% of the total residential housing units, which numbered some 5.90 million units (NAPIC, 2021). However, despite this housing initiative, research revealed dissatisfaction among low-cost homeowners regarding the quality and maintenance of their units and shared common areas/common properties (Musa et al., 2020; Tiun, 2009; Wang et al., 2023).

Notably, many low-cost homeowners expressed displeasure with the self-organisation of these housing schemes (Musa et al., 2020), highlighting issues in the management and maintenance of common areas/common properties (Wang, 2013). This discontent often resulted from challenges in collecting maintenance funds and the degradation of common areas/common properties into sub-optimal conditions, leading to urban slums (Chong, 2020). This paper identifies maladaptation to rules as an ongoing problem, with many parcel holders refusing to adhere to the prescribed Malaysian law (Strata Management Act 2013, Act 757, or in short SMA 2013, Act 757), particularly regarding maintenance fees. In their landmark book, Ostrom et al. (1994, p. 38) defined rules as a "prescription that defines what actions (or outcomes) are required, prohibited, or permitted, and the sanctions authorised if the rules are not followed."

This paper defines rules as both formal laws, such as the SMA 2013, Act 757, outlining duties for local management and parcel holders, and informal constraints reflecting community culture that shapes group behaviour. Rules, as "institutions", play a pivotal role in managing and maintaining shared resources (North, 1990, p. 67).

Shared resources can include both natural common-pool resources (CPR) such as grazing grounds, water irrigation systems, coastal fisheries, and communal forests, or man-made urban resources such as low-cost housing schemes (Baland & Platteau, 2000; Ostrom et al., 1994). For a shared resource to be functional, adherence to rules/institutions by appropriators of natural CPR or by parcel holders of low-cost housing is imperative. However, users in these communities tend to freeride at the expense of their more compliant counterparts. Indeed, unless there is coercion (for example, strict enforcement of rules), Rationality Theory dictates that individuals prioritise their interests over the interests of the group (Olson, 1965, p. 2). This results in a lack of collective action for the welfare of the community. Researchers have paid more attention to "institution for collective action" when it comes to studying the functionality of natural CPR or man-made urban commons (Van Laerhoven et al., 2020). North (1990) argued that institutions are "the rules of the game in a society", which ensures social order, and "institutional constraints define the opportunity set of individuals are a complex of formal and informal constraints."

There is a dearth of Malaysian literature investigating the functionality of rules and institutions in the context of low-cost housing, particularly regarding maladaptation among parcel holders in relation to their upbringing, history, community, and social structure (Billig, 2016; Inglehart & Baker, 2000).

This study aims to fill this gap by examining the role of rules and institutions in shaping the self-organisation of high-rise low-cost housing. Additionally, it seeks to understand the reasons behind the failure of these rules/institutions to gain traction among newly arrived parcel holders.

2.0 INFLUENCE OF RULES ON SELF-ORGANISATION IN THE COMMONS

This section is structured into three discussion sub-sections: a hierarchical approach for studying the influence of rules (Ostrom, 1990); Ostrom (1990, p. 90) design principles; and the causes contributing to the maladaptation of ex-squatters living in high-rise low-cost housing. The term "governance system" will be used interchangeably with "rules", "rules-in-use", or "institutions," according to Ostrom (2007) in her efforts to expand the concept of institutions for collective action.

2.1 Vertical Approach to Multiple Levels Analysis of Institutions/Rules

The Institutional Analysis Development (IAD) framework, closely associated with Ostrom (1990) and Cole et al. (2019), rooted in classic political economy, has been widely used to study collective action for shared resources. Numerous papers in the field of lower-income individuals in multi-owned residential buildings have utilised the IAD framework: Adamu (2012); Donoso and Elsinga (2018); Gao and Ho (2016); and Walters and Kent (2000).

The IAD framework identifies four elements (context, attributes of the physical world, attributes of the community, and rules-in-use) influencing action arenas (common areas/common properties/social spaces) where actors (in this case, parcel holders of high-rise low-cost housing) socially engage in daily routines, problem-solving, or conflicts (Ostrom et al., 1994, p. 28).

These action arenas are interconnected across multiple levels of analysis, constituting multiple levels" (Ostrom et al., 1994, p. 46). See also Kiser & Ostrom (1982). In the self-organisation of high-rise low-cost housing in Malaysia, three levels of rules applied: constitutional-choice rules; collective-choice rules; and operational rules.

Constitutional-choice rules pertain to the country's laws. In Malaysia, collective-choice rules include the Strata Management Act 2013 (Act 757), Strata Management (Strata Management Tribunal) Regulations 2015, and the Strata Management (Maintenance and Management) Regulations 2015 (both Regulations describe operational rules or house rules by the management), collectively known as SMA 2013 (Act 757).

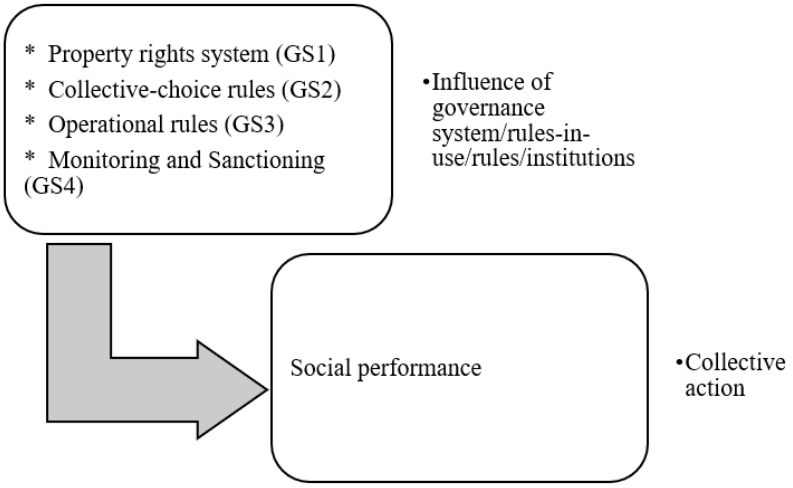

Figure 1. Vertical approach: the theoretical framework of the governance system

Figure 1 provides a partial depiction of Ostrom's (2007, p. 15183) Social-Ecological System (SES) framework, building on the IAD framework. The SES framework comprises eight first-tier variables: social, economic, and political settings (S); resource system (RS); resource units (RU); governance system (GS); users (U); interactions (I); outcomes (O); and related ecosystem (ECO). The complex interaction of variables occurs in action arenas, determining the success or failure of self-organisation. For this study, the focus is on the governance system (rules-in-use, rules, or institutions) and its influence on social performance (collective action) (Koestler, 1973). Therefore, four substantial second-tier variables of the governance system (GS) in the SES framework are included: property rights systems (GS1), collective-choice rules (GS2), operational rules (GS3), and monitoring & sanctioning (GS4).

2.1.1 Property rights systems (GS1)

Property rights systems encompass the ownership structure of resources and how they are utilised. As an example, a parcel holder of a privately-owned low-cost housing unit can reside there with family members, sell it, or transfer ownership to any of their children. Conversely, the shared use of common areas/common properties (a form of local public goods) by all parcel holders presents a different ownership scenario. The defining characteristics/weaknesses of shared resources are non-excludability and rivalry (Choe & Yun, 2017; Ostrom & Ostrom, 1977). Given that a parcel holder residing in a low-cost housing unit cannot be denied entry or use of common areas/common properties (such as lifts) by the local management (non-excludability), issues arise when a defaulter of maintenance fees, by occupying a parking spot, may hinder other rule-obeying homeowners (rivalrous). As Libecap (2009) highlighted, "all environmental and natural resource problems associated with over-exploitation or under-provision of public goods arise from incompletely defined ad enforced property rights."

Addressing the degeneration of shared resources involves strengthening property rights systems – formal laws sanctioned by the state – since their owners "do not consider or internalise social benefits and costs in the production or investment actions" (Libecap, 2009). In the Malaysian context, the establishment of the Strata Management Tribunal under SMA 2013 (Act 757) serves as the state's direct response to reducing default rates in maintenance fees. The main objective of property rights systems is to safeguard asset value for the benefit of resource owners. Poorly defined property rights systems result not only in the loss of resource rents but also has broader economic ramifications, including high transaction costs that can discourage market trade and investment in new production and organisational methods (Qi & Li, 2021).

2.1.2 Collective-choice rules (GS2)

Such rules are employed by parcel holders (appropriators) in high-rise low-cost housing and government officials. For example, Building Commissioners, acting as a Local Authority, determine appropriate monthly maintenance fees in disputes, and the Strata Management Tribunal intervenes if disputes escalate. Policies at this level provide guidelines for both management and parcel holders (dos and don'ts), with the option for dispute resolution through competent authorities.

Since the 1980s, Malaysia's collective-choice rules (SMA 2013, Act 757) have undergone three stages of evolution. Initially, maintenance and management laws, perceived as more favourable to developers, were included in the Strata Titles Act 1985 (Act 318) (Tiun, 2009).

Later, the enactment of the Building and Common Property (Maintenance and Management) Act 2007, Act 663 (BCPMM Act, 2007) limited the power of developers, who previously acted as management. The

roles of Commissioner of Building (COB) and the Joint Management Body (JMB) were introduced to balance this power dynamic.

In the third stage, BCPMM Act 2007 was repealed, and SMA 2013 (Act 757) was enacted in July 2015 to further strengthen legal authority (Wan Abd Aziz et al., 2014). This latest law facilitated the establishment of the Strata Management Tribunal, promoting more equitable resolution of disputes between management and parcel holders. Despite legal improvements, challenges such as free-riding and vandalism persisted in the commons.

2.1.3 Operational rules (GS3)

In the Malaysian context, operational rules are outlined in SMA 2013 (Act 757), encompassing three key aspects: parcel holders' commitment to monthly maintenance fees; the roles of the management; and the establishment of the Strata Management Tribunal.

Firstly, Clauses 12, 25 and 52 of SMA 2013 (Act 757) mandate that parcel holders must pay monthly maintenance fees to the respective management entity (developer, Joint Management Body, Management Corporation, or sub-Management Corporation). Outstanding sums from delinquent parcel holders can be recovered under Clauses 33 and 35, potentially involving the attachment of movable properties.

Secondly, the roles of management, whether the developer in the initial period, Joint Management Body, Management Corporation, or sub-Management Corporation, are outlined in Clauses 9, 21, 48 and 59. Thirdly, the establishment, jurisdiction, and power of the Strata Management Tribunal are detailed in Clauses 102, 105, and 117.

Despite improvements that created a more transparent operational environment and enhanced monitoring for compliance with the rules, the progress remained modest. For instance, the number of cases filed with the Strata Management Tribunal increased from 2,642 in 2016 to 4,964 in 2018 (Aziz, 2019). In 2019, the number of cases rose to 5,675 (MIEA, 2020). Hamzah & Abdullah (2018) reported that 81.4% of these cases were initiated by local managements regarding delinquent parcel holders. Consequently, the operational rules seemed to have limited effectiveness (Musa et al., 2020).

North (1990) opined that rules change alone might not yield the desired "norms". Rules need to be complemented by informal constraints (culture), which takes time. Williamson (2000) also noted that formal rule changes would take between 10-100 years (as per the economics of property rights), while customs, norms, tradition, and religion might take at least 100-1,000 years (as per Social Theory).

2.1.4 Monitoring & sanctioning (GS4)

Monitoring and sanctioning involve the management's responsibility to oversee the behaviour of parcel holders. In the Malaysian context, the management consists of elected officers chosen by the parcel holders, as specified in Clause 19 of SMA 2013 (Act 757), and they may include peers or former neighbours, particularly in the case of high-rise low-cost housing in Kuala Lumpur, where a large majority of such management were former neighbours living in the same squatter colonies.

Research by Slough et al. (2021) indicates that regular monitoring by the management or appropriators themselves is more effective than considerations like social capital, dependency on the resource, and the community's degree of organisation. Instances where parcel holders recognise the prevalence of social capital

within the community tend to make monitoring and sanctioning more straightforward (Portes, 1998). However, Wong (2019) argues that SMA 2013 (Act 757) requires reform as its structure, largely based on Company Law, which may not hold the management accountable for the conditions of the commons.

From the above considerations, the hypotheses for this study are formulated as follows:

H0. There is no significant correlation between the governance system (property rights systems, collective-choice rules, operational rules, and monitoring & sanctioning) and social performance in high-rise low-cost housing.

H1. There is a significant correlation between the governance system (property rights systems, collective-choice rules, operational rules, and monitoring & sanctioning) and social performance in high-rise low-cost housing.

2.2 Horizontal Approach to Institutions/Rules: Design Principles and Commoning

The design principles (DP) serve as operational rules at the group level. The horizontal approach to institutions/rules refers to Ostrom's design principles, derived from empirical studies conducted since the 1980s (Cox et al., 2010). Over time, DP's robustness has been tested across various settings, emerging as a valuable predictive model for assessing the self-organisation of natural Common Pool Resources (CPR) and urban commons. In summary, successful commons must exhibit substantial adherence to eight elements, as outlined in **Table 1**: clearly defined boundaries; congruence of appropriation and provision rules; collective-choice arrangements; the presence of a monitoring mechanism; degree of sanction depending on the type of violation; the presence of a conflict-resolution mechanism; appropriators allowed to make local rules; and nested enterprises allowed at multiple levels.

While the DP offer valuable insights and organisation, they should not be considered a universal blueprint due to contextual complexities (Edwards & Steins, 1998; Seaward & Yu, 2019; Slough et al., 2021). Successful self-organisation of natural CPR shares common characteristics: uncertain and complex environments; stable population size over extended periods; homogeneous groups with shared norms; acceptance of specific rules; operational rules varying between settings; and the success of rules being contingent on physical systems, cultural perspectives, and economic and political relationships.

For urban commons like public open spaces, the DP can be relevant, but they may face challenges, as seen in urban parks – usually considered a non-competitive public good – that become competitive due to increased demand (population increase) or regulatory issues (Choe & Yun, 2017; Ling, 2019). In the Malaysian context, the presence of tenants in many low-cost housing schemes adds complexity (Ariff & Davies, 2011), as users are not homogenous groups.

However, DP has limitations. A meta-analysis across 69 cases of three activities (irrigation, fishery, and forestry) revealed that the success of CPR self-governance heavily relies on "the congruence of investment and extraction, beyond human hard infrastructure" (Baggio et al., 2016).

Secondly, Gari et al. (2017) highlights a significant limitation of DP. Their findings indicate that "DP do not conclusively diagnose the functionality of young and viable CPR institutions." While DP may be effective in assessing either short-lived (failed) or long-lasting institutions," it falls short in explaining the complexities behind the success or failure of young CPR institutions.

Table 1. Design principles

		Design principles	Remarks
1	1A	Clearly defined boundaries	In high-rise low-cost housing, project boundary is well defined, often through external fencing.
	1B	Clearly defined biophysical boundaries	The commons may degenerate into open access due to defaulting parcel holders, or an influx of tenants (Ariff & Davies, 2011).
2	2A	Congruence between local conditions and rules	Access to common areas/common properties is open to all residents.
	2B	Investment/extraction proportionality	Under-investment is a prevalent norm, leading to resource mismanagement caused by behaviours like free-riding and vandalism (Chong, 2020).
3		Collective-choice arrangement	The regulatory framework is outlined in SMA 2013 (Act 757)
4	4A	Monitoring	The effectiveness of monitoring against abuse depends on the attributes of the local community (Slough et al., 2021; Wang, 2013).
	4B	Monitoring the monitors	Depending on the quality of local leadership.
5		Graduated sanctions	Can be sensitive, especially when management and rule violators are peers and neighbours.
6		Conflict-resolution mechanism	Relatively uncommon in high-rise low-cost settings.
7		Rights to organise	Possible and observed in successfully run commons.
8		Nestedness	Yes, but only visible in certain commons, especially those with accessible local leadership and cooperation with the Local Authority, often involving regular training assistance.

Note: Column 2 is adopted from Cox et al. (2010)

The study involving 29 community forestry conservation practitioners emphasises that, even a comprehensive DP design does not guarantee the success of commons. The findings suggest that state assistance is required in addressing external threats to the sustainability of commons (Wilkie & Painter, 2021).

Given these challenges, and in response to the limitations of relying solely on rules, researchers have explored alternative solutions. Euler (2018)'s perspective highlights that "commoning is conceptualised as voluntary and inclusively self-organised activities and mediation of peers who aim at satisfying needs. The factual form of commoning is heavily dependent on the circumstances (e.g., cultures, societal structures, time, space, physical attributes) and on learned behaviours as well as thinkable narratives." Simply put, commoning can be defined "as the actions by groups with shared interests towards creating shared social and relational processes as the basis of governance strategy," as articulated by Partelow & Manlosa (2022).

Partelow & Manlosa (2022) present examples where "commoning the commons" is more viable when users can economically leverage existing resources (Partelow & Manlosa, 2022). Partelow & Manlosa (2022) offered two such examples: tourism governance on Gili Trawangan in Indonesia and aquatic food production systems in Bulacan, Philippines.

2.3 Rules and Maladaptation to Rules

The recent surge in research focuses on the forced relocation of urban poor from urban informal housing (squatter-colonies) to high-rise low-cost housing in various Third World countries, such as Jakarta, Indonesia (Tilley et al., 2019); Mumbai, India (Alam & Matsuyuki, 2020); Bogota (Columbia) and Quito (Ecuador) (Donoso & Elsinga, 2018); Ghana (Obeng-Odoom, 2011); Chongqing, China (Deng, 2017), Fushun City, China (Li et al., 2015); and Singapore (Lee, 2000, p. 207). Despite the acknowledged benefits of modern

housing, many parcel holders expressed challenges adapting to high-rise living, citing difficulties in networking, loss of community identity, technological challenges, and struggles with rigid living rules. This maladaptation reflects the parcel holders' struggle to adjust to their new living conditions (Ogburn, 1966).

An illustrative case is the relocation of thousands of ex-Kuomintang soldiers in Taiwan who fled from mainland China in 1945. Initially housed in communal single-storey informal houses in a village outside Taipei, Taiwan, they formed a close-knit community where everybody knew everybody, and helped each other wherever possible. They were a happy lot despite having to share communal bathrooms. However, when relocated to modern multi-storey blocks, adherence to prescribed house rules and technology requirements, like security checks, intercom, etc., created discomfort (Tamburo, 2020). This transition led to a loss of community identity, placemaking, and social networking (Barnhart et al., 2016; Murphy et al., 2019; Rasnayake, 2019). Despite improved housing security and proper addresses, challenges such as isolation, helplessness (Barnhart et al., 2016), and restrictions on economic activities for some women emerged (Tilley et al., 2019).

The case study led by Abdul Aziz et al. (2020) sheds light on the social implications of squatter relocation in Taman Desa Menteri, in the outskirts of Kuala Lumpur, Malaysia. Policymakers faced challenges such as the breakdown of community structure; the emergence of social issues; challenging living conditions; insufficient shared amenities (including places of worship and community halls); and racial conflicts, emphasising the need for more attention to these aspects during relocation initiatives.

The maladaptation to rules highlights a gap in addressing the social practices of commoning, considering the complexity of managing high-rise low-cost housing (Vergara et al., 2019). Policymakers and local management should prioritise the social needs of parcel holders. Addressing the infrastructure of everyday life, encompassing five key elements as shown in **Figure 2** (Gilroy & Booth, 1999), could offer a more comprehensive approach.

In his paper "Conceptualising the commons: moving beyond goods-based definition by introducing the social practice of commoning as vital determinant," Euler (2018) suggested that we should shift from a goods-based perspective to recognising the self-organisation of common areas/properties as a social practice. Rather than a transactional approach (paying maintenance fees), communities of parcel holders can engage in non-monetary self-help measures to meet various social needs. For a more comprehensive approach, policymakers and local management, as illustrated in the paper "Building an infrastructure of everyday lives" by Gilroy and Booth (1999), should consider the social, economic, and political settings in formulating public policies, beyond mere rule-setting (Ostrom, 2007, p. 15183). Gilroy and Booth (1999)'s paper also addressed the social change facing women so that policymakers (including the local management) could be aware of the environmental challenges faced by women (see **Figure 2**). Drawing further from Ostrom (2007), we pose the following for consideration: Firstly, if social relation is crucial (home/neighbourhood, sources of support, and enjoyment), are steps taken to promote better communications among parcel holders? Secondly, if having a say in decision-making brings personal development, are the conditions conducive for the election of local management by parcel holders? Thirdly, if finance is a constant struggle in lives (making ends meet), are lower-income earners able to find additional means to supplement their income? Such a holistic approach can contribute to the well-being and enjoyment of all residents.

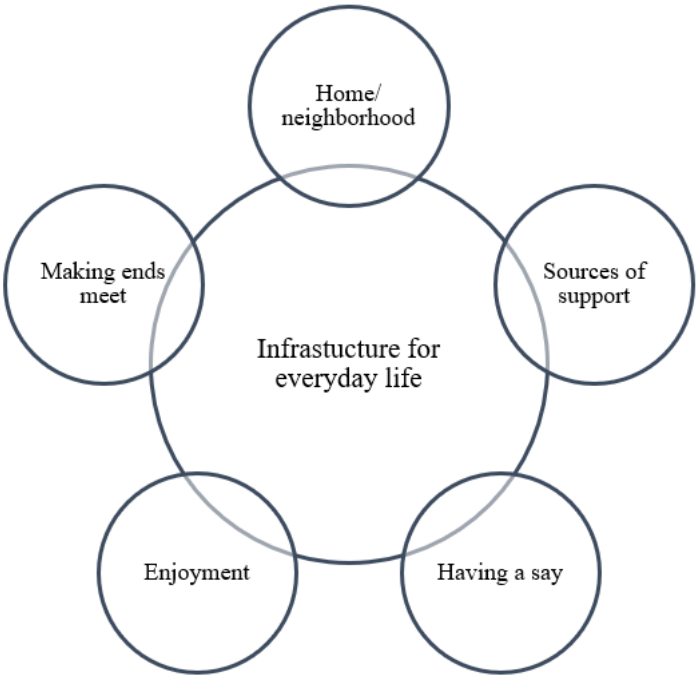

Figure 2. Infrastructure of everyday life of a lower-income earner (Source: Gilroy and Booth (1999))

3.0 MEASURING SOCIAL PERFORMANCE

Efficiency, equity and accountability are three pivotal variables gauging social performance, as posited by Ostrom (2007), and McGinnis and Ostrom (2014). The satisfaction of a parcel holder with the housing development is often influenced by the collective assessment of these three elements.

Firstly, efficiency, defined as achieving tasks with minimal effort, expense, or waste, necessitates a thorough evaluation for apartment management. Kiris (2020) identifies five key elements for this assessment: financial indicators; organisational indicators; technical indicators; information indicators; and communication indicators. In Malaysia, challenges in lift system repair due to budget constraints (Au-Yong et al., 2018) highlight the need for a holistic approach to address repair issues and energy-saving initiatives (Ilina et al., 2021).

Secondly, equity, involving the input of time or money into a task and the resulting outcomes, raises concerns about fairness. One example is ground floor residents paying the same monthly maintenance fees as upper-floor residents who make more extensive use of the lift system. Recent research employs proximity-based techniques, utilising a geographical information system, to assess environmental justice (EJ) and minimise disputes (Zou et al., 2020).

Thirdly, accountability in the self-organisation of high-rise low-cost housing requires the management to be open to scrutiny in all operational aspects, including finance, technical matters, personnel, and procurement (Hutt & Polikoff, 2020). Full public disclosure, such as transparent procurement systems and co-production initiatives, enhances governance and public goods delivery. It is “a collaborative governance structure where it encourages citizens and/or non-government actors in public value co-creation assemblies” (Campanale et al., 2021).

4.0 METHODOLOGY

In this section, the methodology comprises a vertical (hierarchical) approach to rules; a horizontal approach to rules at the group level; and the selection of four low-cost housing units.

4.1 Vertical Approach: Governance System (Rules-in-Use) and Social Performance

In the initial phase of the methodology, the focus is on investigating the impact of rules on the self-organisation of the selected four high-rise low-cost housing developments. This involves correlation analysis and logistic regression analysis to assess the relationship between the governance system (rules) and social performance (outcome), as illustrated in **Figure 3**'s 6-step research process.

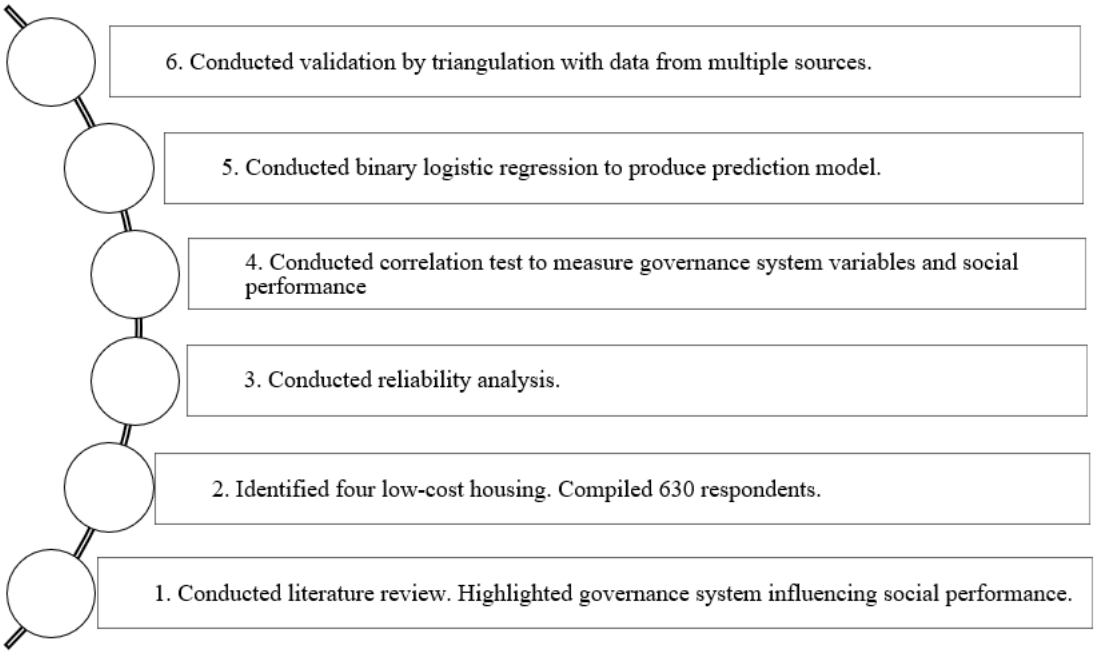

Figure 3. Research process

This study employs a mixed-method approach, following the methodology proposed by (Tashakkori & Creswell, 2007). A questionnaire survey, utilising a 5-point Likert scale, was developed to gather information on demographic details from parcel holders. Additionally, their perspectives on the governance system (rules) and the social performance of the management (Ostrom, 2007) were also sought.

Cronbach's alpha reliability analysis yielded a value of 0.823, indicating good reliability as it surpasses the 0.70 threshold. Spearman ranked-order correlation analysis was then employed to examine the relationship between governance system (rules) and social performance (outcome) using SPSS (Coakes & Ong, 2011). Following this, a predictive model was generated through binary logistic regression analysis (Chua, 2009). Both Spearman ranked-order correlation and binary logistic analyses are non-parametric analyses chosen for their suitability with ordinal data. The logistic regression equation is outlined as follows:

$$Z = \beta 0 + \beta\ 1X1 + \beta\ 2X2 + ... + \beta\ kXk + \varepsilon$$

where Z was the latent variable; X1, X2, …, Xk the independent variables; β0 the constant; β1, β2, …, βk the change in Y for a change of one unit in X1, X2, …, Xk, respectively; and ε the error term. Z value was transformed using a link function to obtain the probability of an event occurring:

P (parcel holders' satisfaction) = e2/(1+e2); the value was between 0 and 1.

Validation through the triangulation method was executed to illustrate the impact of the governance system (rules) on social performance, utilising data from multiple sources: literature review; expert interviews, interactions with local management, discussions with Selangor Housing and Property Board officers, Ampang Municipal Council officers; field observations; and insights from local newspapers (Denzin & Lincoln, 2005; Rejeki et al., 2021).

The authors engaged in discussions with eighteen stakeholders closely connected to the self-organisation of the four low-cost housing schemes between January-February 2023. This group included developers (2); contractors (2); consultants (2); local management (8); Selangor Housing and Property Board officers (2); and Ampang Municipal Council officers (2). Notably, interviewees from developers, contractors, and consultants boasted extensive experience exceeding 20 years, having been integral to the planning, construction, and maintenance of the projects. On the other hand, officers from the Selangor Housing and Property Board and Ampang Municipal Council were relatively young civil servants with over 5 years of service in their roles. Given their familiarity with the physical conditions of these low-cost housing developments, they were queried about the effectiveness of both formal laws and informal constraints (culture) in the action arena, covering property rights systems, collective-choice rules, operational rules, and monitoring and sanctioning.

The triangulation procedure "reflects an attempt to secure an in-depth understanding of the phenomena," according to Flick (2002). This method is employed with the objectives of achieving data convergence; mitigating researcher biases; and enriching findings by corroborating or challenging data sets (Noble & Heale, 2019).

4.2 Horizontal Approach: Ostrom's Design Principles at Group Level

The second part of the methodology focuses on understanding how and why rules may not have been effective among newly arrived parcel holders. It was done in two steps. Following Yin's (2018, p. 177) theoretical replication logic, four high-rise low-cost housing developments in Kuala Lumpur were categorised based on the percentage of fees collected (**Table 2**): Apartment A (good); Apartment B (average); and Apartment C and Apartment D (poor). This selection was guided by the Selangor Housing and Property Board, providing a comparative analysis facilitated by the differing performances of their respective local managements.

Second, the authors conducted on-site inspections of the maintenance in the four housing developments, evaluating common areas/common properties such as guardhouse, carparks, common corridors, corridor lighting, lift systems, garbage centres, landscape, etc. A table was then compiled to assess the adherence to Ostrom's (1990, p. 90) eight design principles in each high-rise low-cost housing. The extent of compliance with these design principles was considered in relation to the timely payment of maintenance fees, aiming to understand the effectiveness of up-keeping common areas/common properties (Baggio et al., 2016; Ling, 2019; Ling et al., 2019; Seaward & Yu, 2019; Wang et al., 2019; Wilkie & Painter, 2021).

Table 2. Population and sample size

	N	Apartment A	Apartment B	Apartment C	Apartment D
Population count	1,598	200	488	700	210
Sample size count	630	114	188	214	114
Percentage of maintenance fees collected on billed	--	85%	60%	40%	40%

Note: Sample size in each case followed the generalised scientific guidance of Carvana et al. (2000, p. 278)

4.3 Selection of four low-cost housing

Apartment A, Apartment B and Apartment C enjoy strategic locations with convenient access to the metropolis via Kuala Lumpur Middle Ring Road II. In contrast, Apartment D is accessible from the Old Airport Road of Kuala Lumpur. Apartment C holds the most advantageous location, being the closest to the city centre. These four low-cost housing projects, developed as part of the Government's squatter relocation initiative, were constructed at different times: Apartment C in 1998, Apartment B in 2004, Apartment D in 2005 and Apartment A in 2012. Before relocation, Apartment A homeowners lived on a plot of land that served as a Muslim burial ground, which they had informally occupied. Apartment C and Apartment D were established 7.7 km and 8.4 km away from their original squatter colonies, respectively. Apartment B homeowners originally came from a Kampong Pandan squatter colony, located 16.2 km away.

In terms of facilities, each housing scheme benefitted from the convenience of lifts for home access, except for Apartment A homeowners who had walk-up flats. In 2019, the government replaced all eight outdated lifts in Apartment C due to aging. Similarly, one lift in Apartment D was replaced, and another is scheduled for replacement. Community halls were uniformly provided across all low-cost housing schemes, along with ample parking spaces and motorcycle bays for residents' use.

Regarding the quality of local management, Apartment A emerged as the best, evident in the efficient collection of maintenance fees and the well-maintained condition of common areas/common properties. One contributing factor was its unique five-storey walk-up structure without lifts. However, maintenance fee payments for the other three schemes experienced a decline. Until 2019, all four low-cost housing schemes were self-organised through homeowners' associations (HOA). Apartment A and Apartment C only began employing property management companies (PMC) in 2019.

5.0 FINDINGS AND DISCUSSION

The questionnaire survey asked each respondent a set of six questions regarding rules. The findings revealed that all independent variables (governance system/rules) significantly correlated with social performance, with a significance value of 0.05 or below (see **Table 3**). This suggests a notable influence of rules on the satisfaction of parcel holders.

Additionally, the logistic regression, incorporating four independent variables, identified them as significant predictors of social performance (Hills & Eraso, 2021; Meyers et al., 2006). The p-value for Hosmer-Lemeshow goodness of fit was 0.424, exceeding 0.05, suggesting that the model is suitable as it fits the data. Step 4, detailed in **Table 4**, indicated that D3.2, D3.1, D3.4, and D3.6 were the significant predictors of social performance.

Table 3. Correlation between rules and social performance

As in the questionnaire survey		Rule-in-use	Social performance	
D3.1	I hold the community leaders in high esteem	GS1. Property rights system	Correlation Coefficient	.510**
			Sig. (2-tailed)	.000
D3.2	I observe house rules because I know everyone else follows them too	GS3. Operational rules	Correlation Coefficient	.505**
			Sig. (2-tailed)	.000
D3.3	The house rules are reasonable	GS3. Operational rules	Correlation Coefficient	.225**
			Sig. (2-tailed)	.000
D3.4	Those who do not follow the rules will be held accountable	GS4. Monitoring and sanctioning	Correlation Coefficient	.496**
			Sig. (2-tailed)	.000
D3.5	If I don't pay service charge, the management can hold me accountable.	GS4. Monitoring and sanctioning	Correlation Coefficient	.369**
			Sig. (2-tailed)	.000
D3.6	Officially the law is there to enforce the payment of service charge.	GS2. Collective-choice rules	Correlation Coefficient	.143**
			Sig. (2-tailed)	.000

Table 4. Variables in the equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	D3.2	1.461	.135	117.629	1	.000	4.309	3.309	5.611
	Constant	-4.945	.500	97.868	1	.000	.007		
Step 2[b]	D3.1	.934	.197	22.409	1	.000	2.544	1.728	3.745
	D3.2	1.115	.153	53.084	1	.000	3.050	2.260	4.118
	Constant	-7.195	.722	99.293	1	.000	.001		
Step 3[c]	D3.1	.796	.205	15.123	1	.000	2.216	1.484	3.308
	D3.2	.963	.159	36.665	1	.000	2.619	1.918	3.577
	D3.4	.487	.165	8.713	1	.003	1.628	1.178	2.249
	Constant	-7.938	.783	102.685	1	.000	.000		
Step 4[d]	D3.1	.866	.209	17.247	1	.000	2.378	1.580	3.578
	D3.2	1.004	.161	38.655	1	.000	2.729	1.989	3.744
	D3.4	.551	.168	10.799	1	.001	1.735	1.249	2.409
	D3.6	-.414	.138	9.011	1	.003	.661	.504	.866
	Constant	-6.812	.858	63.052	1	.000	.001		

a. Variable(s) entered on step 1: D3.2
b. Variable(s) entered on step 2: D3.1
c. Variable(s) entered on step 3: D3.4
d. Variable(s) entered on step 4: D3.6

Table 5 presents the ranking of the rules in use, with all variables having a mean score above 3.5. The top scoring rule was: "the rules are reasonably set because they are good for us" (GS3, operational rules).

Overall, the findings indicate that the respondents agreed with the statements, rejecting H0 and supported H1. This suggests a significant correlation between the governance system and social performance.

Table 5. The ranking of rules-in-use

	As in the questionnaire survey	Rules-in-use	N	Mean	Standard Deviation
D3.3	The house rules are reasonable	GS3. Operational rules	630	4.4825	.60642
D3.6	Officially the law is there to enforce the payment of service charge	GS2. Collective-choice rules	630	4.3048	.72814
D3.5	If I don't pay service charge, the management can hold me accountable.	GS4. Monitor and sanction	630	4.0619	.66071
D3.4	Those who do not follow the rules will be held accountable	GS4. Monitor and sanction	630	3.7762	.74108
D3.1	I hold the community leaders in high esteem	GS1. Property rights system	630	3.7746	.63295
D3.2	I observe house rules because I know everyone else follows them too	GS3. Operational rules	630	3.6127	.94145

These results were thoroughly examined through a triangulation approach, aiming to corroborate the findings by cross-referencing evidence from various sources concerning the connection between rules and social performance. The comprehensive insights gained from this triangulation process are detailed in **Table 6**.

Table 6. Validation of findings from quantitative data analysis by triangulation

		Property rights system (GS1)	Collective-choice rules (GS2)	Operational rules (GS3)	Monitoring & sanctioning (GS4)
i.	Literature review	Libecap (2009) ; Qi & Li (2021)	SMA 2013 (Act 757)	All rules contained in SMA 2013 (Act 757)	Slough et al. (2021)
ii.	Interviewed				
	*Experts	-	-	✓	-
	*Selangor State Housing Board	-	-	✓	-
	*Ampang Municipal Council officers	✓	✓	✓	-
	*Local leadership	✓	✓	✓	✓
iii.	Field observations by authors	-	-	✓	✓
iv.	Local newspaper	-	-	-	✓

Property rights system (GS1). The ill-defined and enforced property rights system, as reflected in item D3.1 (mean score 3.7746, fifth placing) resulted in sub-optimal maintenance of assets (Libecap, 2009). During discussions with the officers of Ampang Municipal Council, a recurring issue was the fixing of maintenance fees, contested by some parcel holders who perceived them as excessively high. There was a lack of universal conviction among parcel holders regarding their obligation to pay maintenance fees, often attributed to perceived financial constraints.

Collective-choice rules (GS2). Item D3.6 (mean score 4.3048, second placing). Meetings with Ampang Municipal Council officers and local leadership revealed that the management exhibited competence in applying the rules outlined in SMA 2013 (Act 757). Notably, the management of Apartment A excelled, garnering recognition from authorities and even being invited to conduct training sessions for other building managements.

Operational rules (GS3). Items D3.3 (mean score 4.4825, the first placing) and D3.2 (mean score 3.6127, the sixth placing). The effectiveness of operational rules emerged as a crucial factor, as affirmed by all interviewees and validated by the authors' field observations. Striking a balance between seeking maximum utility and collective action is essential to prevent rule violations, such as non-payment of maintenance fees (Ostrom, 1990, p. 5). Maladaptation to rules might be attributed more to a rigid regulative regime, as seen in the case of ex-Kuomintang soldiers in Taipei (Tamburo, 2020).

Monitoring and sanctioning (GS4). Items D3.5 (mean score 4.0619, third placing) and D3.4 (mean score 3.7762, fourth placing). Active local leadership played a crucial role in vigilantly addressing rule violations, such as improper disposal of rubbish bags, as observed by the authors in the field. Local media regularly reported on parcel holders' misbehaviour (Chong, 2020). Transgressions against the rules could stem from factors like the absence of established norms in new CPR, (Gari et al., 2017); parcel holders' dissatisfaction with the management (Wong, 2019); lengthy court actions against defaulters (Wang, 2013); and limited sanctions imposed by the management on rule violators. Slough et al. (2021) found that community monitoring proved effective in reducing CPR misuse and increasing users' satisfaction.

5.1 Adaptability of Design Principles

Table 7 shows the adaptability to Ostrom's design principles applied in each high-rise low-cost housing.

Table 7. Adaptability of Ostrom's design principles

	Apartment A	Apartment B	Apartment C	Apartment D
DP1. Clearly defined boundary	✓	✓	✓	✓
DP2. Appropriation and provision of rules	✓	✓	-	-
DP3. Collective-choice arrangement	✓	✓	✓	✓
DP4. Monitoring	✓	✓	-	-
DP5. Graduated sanction	✓	-	-	-
DP6. Conflict-resolution mechanism	✓	-	-	-
DP7. Minimal recognition of rights	✓	✓	✓	✓
DP8. Nested enterprise	✓	-	-	-
Score	24	15	9	9

Note: Maximum score was 24. Each tick (✓) earned 3 points

Firstly, Apartment A's management distinguished itself by exemplary adherence to all eight DP (DP 8). Secondly, Apartment B, comprising two blocks, demonstrated a disparity in management styles. The first block, using a block-head system, communicated effectively with parcel holders. Conversely, the second block, employing a laissez-faire style, exhibited poor communication, resulting in weak monitoring (weak DP5, 6). Thirdly, Apartment C faced challenges with out-sized tenants, leading to minimal contributions to the self-organisation of the commons (DP4, 5, 6). Lastly, Apartment D's parcel holders were divided into groups supporting two different political parties (DP4, 5, 6).

6. CONCLUSIONS

Managing the maintenance of low-cost housing, especially involving lower-income earners, is comparable to managing a complex system due to various challenges (free-riding habits of parcel holders, incidences of vandalism, lack of collective action, poor construction materials, inadequate rules/institutions, etc). This study showed a significant relationship between rules and the social performance of high-rise low-cost housing's self-organisation. The governance system/institutions/rules, encompassing property rights, collective-choice rules, operational rules, and monitoring and sanctioning rules, significantly correlated with social performance, supporting H1 of the research. Notably, the study revealed that not all design principles (DP) were consistently followed in the four high-rise low-cost housing developments, emphasising the need to address maladaptation from the context of ex-squatter colonies. Calls were made to focus on soft human infrastructure (education, job training for example), placemaking, and the social practice of commoning to enhance adaptation to new living environments.

What policy implications arise from this study? In addition to endorsing the enhancement of institutions/rules for the self-organisation of common areas/common properties (as in this paper), researchers suggest that the Government, together with relevant stakeholders, could consider fostering the following:

- That well-managed and maintained common areas/common properties are not serendipitous but rather the outcome of intentional efforts from every stakeholder. This realisation necessitates an action plan. If we consider the well-being of people, the condition of low-cost housing reflects the health of society.
- Poverty among parcel holders should not be seen as a permanent feature/state. The subsequent generation of low-cost housing homeowners can have access to improved education, healthcare, and employment opportunities as integral components of economic development.
- NAPIC, the custodian of national data on low-cost housing, should consider making their data accessible to all researchers.
- Properly motivated, the self-help social practices of commoning can serve as a catalyst for enhancing the performance of common areas/common properties without relying solely on monetary exchange.
- While expecting Local Councils to fully take over the task of managing and maintaining common areas/common properties might be revolutionary, it could be a positive start for Local Councils to share part of the costs of maintenance.

This paper stands out in two key aspects. Firstly, by adopting a partial SES framework rooted in the IAD framework, it underscores the significance of governance systems/institutions/rules through the vertical approach of rules. This supports the enduring notion that rules play a crucial role in the self-organisation of commons. Secondly, by leveraging Ostrom's design principles through the horizontal approach of rules, the study validates the applicability of these designed principles (DP) in each high-rise low-cost housing scenario. The findings demonstrated that adherence to substantial DP establishes an environment conducive to successful self-organisation, as observed in Apartment A.

A potential limitation for future research lies in delving deeper into the role of governance system/rules in the Malaysian context, with a specific focus on the social practice of commoning in high-rise low-cost housing or medium-cost housing. This area currently remains unexplored and warrants further investigation.

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CONFLICT OF INTEREST

There is no potential conflict of interest to be declared under this research.

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