Architectural Design in Rethinking the Future of Co-Housing in Malaysia

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Co-housing is a collaborative housing concept designed to foster close social bonding and sustainable communities. With the rapid population growth, urban sprawls and housing prices in Malaysia, this concept has gained traction in the housing sector as a viable housing alternative to the existing property market due to its social, economic and sustainability benefits. This paper aims to establish a set of design best practices by conducting a qualitative study on three selected Malaysian co-housing locations and design providers (DP). The methodology consists of interviews, literature reviews and case studies where data gained from the interviews are reviewed with data from the literature and case studies. The resulting analysis recommends that co-housing focus on the following design aspects: demography size, surrounding context, spatial configuration, space design, "environmental psychology theory" and sustainability considerations. This paper concludes by providing several potential co-housing issues and recommendations for enhancing the benefits of co-housing in Malaysia.

Keywords: Co-Housing, Design Strategies, Best Practices, Programmatic Requirements, Architecture.

1. INTRODUCTION

With the rise of the co-sharing economy across the world, a similar trend is emerging; co-housing. Co-housing is a collective housing concept that encourages social bonding among its community and is supported by an ongoing management structure that facilitates the connected community (Osborne, 2018; Sanguinetti, 2015). In retrospect, co-housing is not a new concept as the term was coined in late 1960s Denmark, known as “Bofællesskab” which means living community. Durrett and McCamant (2011) have stated that Danish co-housing is the gold standard worldwide. Co-housing is similar to co-living as both terms have many overlapping characteristics. Every resident has their own private spaces and organises group events and public spaces collectively (Thees, et al., 2020).

Cohousing as we know it today began in Denmark in the 1960s, with a group of families dissatisfied with existing housing and communities that did not meet their needs. In 1967, Bodil Graae published a newspaper article titled "Children Should Have One Hundred Parents, which inspired a group of 50 families to form a community project. This group split into two groups, one of which developed the Sttedammen and Skrplanet cohousing projects, which are the oldest known modern cohousing communities. Jan Gudmand Hyer, the main organiser, was inspired by his architectural studies at Harvard and his interactions with experimental American communities at the time. He published in 1968, a second group, the article entitled The Missing Link between Utopia and the Single-Family House. Two of the US architects Kathryn McCamant and Charles Durrett presented the Danish term bofællesskab (living community), as cohousing, to North America and wrote a book about it, visiting various cohousing communities.

The book echoed several existing and developing communities like Sharingwood in Washington and N Street in California, which embraced the notion of cohousing as an expression of their affairs. Although the majority of cohousing groups aim to create multi-generational communities, some focus on establishing senior communities

According to Jakobsen and Larsen (2018), co-housing is a combination of individual dwellings, common facilities and activities. Thus, a cohousing's physical layout must facilitate a strong sense of home and belonging using the aforementioned combination (LaFond, 2017). All private spaces are grouped together and are designed to overlook the common facilities, providing a chance for the occupants to socialize with each other (Ruiu, 2014; Jumadi, et al., 2016). The common house is a primary feature of a co-housing, which includes a shared kitchen and dining area, shared laundry and other relevant facilities (Berggren, 2016).

Co-housing is often characterized as a community-friendly neighborhood (McDannell and Branson, 2018). Based on a review of the relevant literature, co-housing requires its residents to be committed to contributing to the community (Jumadi, et.al, 2016). As such, the residents are involved in the planning of their community social development, making decisions collectively through consensus (Tummers, 2015). According to Berggren (2016), there are four essential characteristics of co-housing social planning; weekly shared dining, regular housing association meetings, resources sharing and diverse membership. In addition, residents can form community clubs, organize child and elderly care, and carpooling, thereby promoting personal, social and environmental wellbeing (Tummers, 2015).

The housing community in Malaysia, especially in Kuala Lumpur, can be very isolated as people tend to keep to themselves, (Aminuddin, A.M.R., Yong, G.K. 2009), potentially leading to various social issues (Ali, et al., 2012). According to Durrett and McCamant (2011), co-housing offers a contemporary approach for instilling a sense of community and responds to today’s needs for a less constraining environment. There are various benefits in co-housing living, such as a strong sense of security, emotional support and eliminating social isolation and loneliness (Katja,

et al., 2019). Furthermore, co-housing can contribute to sustainable community development and residential security by building social capital among each other, thus positively affecting a person's wellbeing as housing affordability is recognized as a material pathway to health. (Carrere, et al., 2020; Jarvis, 2011).

In this paper, the aim is to study co-housing in the Malaysian context through observation and data collection, to increase awareness, desirability, and accessibility of contemporary co-housing as a viable housing alternative to the existing property market. Some precedents show the willingness of adopting this housing typology, especially on the young adult demographic (Kim, J., et al., 2020; Ling, et al., 2016). The first objective is to study existing co-housing in Kuala Lumpur to learn its planning requirements and other development factors, with the end goal of establishing a set of design best practices. The second objective is to ascertain the key concepts, priorities, benefits and challenges (social, logistics, financial) of implementing co-housing in Malaysia. The results of this study can potentially build a better understanding of the potential of Malaysian co-housing.

2. RESEARCH METHODOLOGY

To reach the presented aim and objectives of the study, a qualitative approach is applied using an obtrusive method such as interviews as well as unobtrusive methods such as content analysis of existing co-housing design theories and standard guidelines or policies (Ali, et al., 2012). According to Yin (2014), qualitative research is a study that uses techniques such as subject observation or case studies to offer a narrative, detailed account of an area or activity. These narratives are important in gaining an insight into the community development and influence of the local context on the co-housing design, using current overseas examples as a reference.

2.1 Area of Study

This study primarily focused on three co-housing design providers in Kuala Lumpur. This is so that interview questions are formulated to ascertain contemporary co-housing, its planning strategies, the data collected is based on the investigation of real-life situations. Additionally, basic data were also compiled from other sources, typically the co-housing's own websites and homepages (Jakobsen and Larsen, 2018). As stated previously, this study will not differentiate between co-housing and co-living as both concepts share many similarities. The Design Providers (DP) themselves are located in Kuala Lumpur and have professional backgrounds in co-living, co-working services and startup support as well as in property developments. The DPs and their locations are selected to reflect the characteristics and variables often associated with architectural design and mode of development (Jarvis, 2011).

Co-Living @ Damai Residence is a high-rise residential building, located in the city center, converted into a co-living space, resulting in a modern idea of hybrid accommodation. Youtopia Co-Living is a co-living service provider managing multiple communities, working with developers and purchasing properties that are under construction so they can convert them into co-living spaces. Thus, an interview with them can provide an insight on the development and management of multiple locations concurrently. The L.VE Space is a co-housing residence located in the bustling commercial district of Taman Tun Dr.Ismail. Unlike the others, L.VE space is a small-scale dwelling as it is a converted shophouse. Being located in Kuala Lumpur, all three co-housing have access to various amenities and are highly accessible. One selling point of all locations is their adaptability to its inhabitant lifestyle, offering flexible rental contracts along with a "one bill pays all" concept.

2.2 Method of Data Collection - Interview

The semi-structured interview is used to explore relevant topics and themes to obtain a closer understanding of co-housing and its community. Interviews with open-ended questions allowed us to gain insight into the respondents' experiences, beliefs, and actions. In this research, the

co-housing benefits and the overall thoughts on the current and future of co-housing from the

DP's experiences. Additionally, relevant information regarding the schematic and technical design aspects such as the building's layout, facilities and context can also be obtained through this method. This allows us to learn about the preliminary study, spatial programming, affordability considerations, community and economic concerns that went into the architectural design and development process.

As a preparation for the interviews, the DPs were provided with brief guidelines containing relevant topics and explanations for the upcoming interview (Sanguinetti, 2015). All interview sessions were digitally recorded to allow for future review. Several key issues were discussed during the interviews themselves. The interview starts with an open question about the background and development of their co-housing spaces. Then, the discussions were aimed at learning about how the shared features function within the community infrastructure (Jarvis, 2011). Feedback on the effectiveness of these features was also collected. The next part then focuses on the challenges and implications of collective living concepts (Thees, et al., 2020). Additionally, the DPS preferences and views on how to proceed with future Malaysian co-housing were also addressed.

2.3 Method of Data Collection - Literature Review and Case Study

The literature review is used to provide a research framework and was followed by the case study method. The literature search begins with databases in architecture, social sciences and health (Carrere, et al., 2020). All applicable primary information from the materials was analyzed. Materials presenting only secondary design information and findings are not included in the analysis. For the selected document, we extracted findings in regards to the studies or examples of systems, dynamics and characteristics of contemporary co-housing spaces. Additionally, if the material presents a suitable design practice baseline that we could use to determine the proper strategy for the Malaysian context, it will also be included.

To evaluate the findings from the literature review and interviews, an additional case study method was also used to understand co-housings within a different context from ours and the reasons behind its implementation with the input of their respective design providers. Based on the case study, an examination of the specified co-housing was conducted; (i) a review on its characteristics, (ii) social aspects and (iii) design-related outcome. The characteristics were its layout design, strategies, context, development process and considerations. The social aspects were the community's daily life infrastructure and its social-cultural approach. Lastly, the design-related outcome was its performance and longevity as a co-housing facility (Tummers, 2015).

2.4 Method of Data Analysis

This study takes a two-part approach of data analysis. The interviews are the first step of identifying the operations and effectiveness of the selected co-housings. These interviews were transcribed and reviewed accordingly. From the transcript, relevant information was highlighted and given codes according to the margin notes. The data gained from the transcript analysis as will be listed and grouped based on their common themes, variables or categories to create an affinity diagram. The second part involves data gained from the interviews being evaluated to the literature and case studies to finally review the common points and elements. The findings would then be used to form a simple hypothesis of the strategies used, which would define the possible problems and solutions that would arise from a project in a similar background and typology to the precedents.

3. RESULTS AND DISCUSSIONS

3.1 Design and Planning Best Practices

3.1.1 Demography Size

While co-housing inherently encourages community interaction, it is important to find the right balance of a good number of people for sharing responsibilities, but small enough that occupants can know everyone well. As such, the demography size of co-housing developments is intentionally limited by design. Durrett and McCamant (2011) have outlined a size framework for a co-housing community as shown in Table 1.

Small Community: 8-15 household	Small communities are advantageous as they are less complicated and require less hands-on management. Residents must be highly compatible as disagreements may result in members having to leave the community.
Medium Community: 16-25 household	Good number of people for sharing responsibilities, but small enough that you can know everyone well. Reasonable size for management. This size community is considered the ideal size for co-housings.
Large Community: 26-35 household	Large communities are more difficult to manage, and residents may be less likely to engage with the community due to increased anonymity. May require subdivision to keep groups small enough to be familiar and encourage social interaction.

Table 1. Size framework for co-housing community (Source: Durrett and McCamant, 2011)

The overall size is evaluated in terms of overall square footage, the number of residents and the amount of space provided for socialization (Osborne, 2018). According to interviews, the findings suggest a strong preference for small or medium-sized developments with respondent's ideal starting sizes to be no larger than 25 households. Among the facilities studied, the smallest community was the L.VE @ TTDI, being considered a small community. As noted by the DP, this small amount allows them to properly manage the communal environment within their facility efficiently using fewer resources and manpower. Findings have also suggested that reasonably sized community possesses a very high level of camaraderie with each other (Rusinovic, et al., 2019).

This suggests that smaller groups are desired by not only the residents but also the management as it provides a degree of control over the distribution of the demography and a balance between different types of households (Thees, et al., 2020). However, depending on the development needs, a larger community may be preferable as they are likely to deliver higher yields and thus accommodate more amenities in terms size and quality (Pirinen and Tervo, 2020). This also allows for the potential of future growth albeit requiring additional management and resources.

3.1.2 Surrounding Context

The surrounding context is important for co-housing as it can provide vital information for the development of the co-housing (Thees, et al., 2020). Figure 1 outlines some of the information that can be gathered from the location.

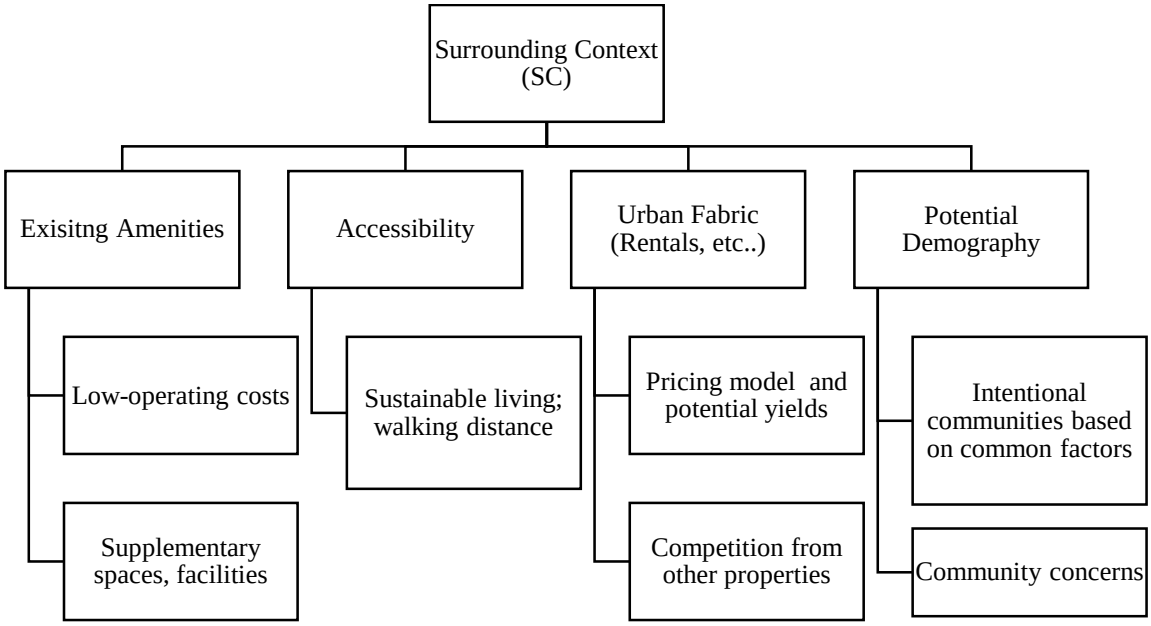

Figure 1. Design considerations based on the surrounding context (Source: Author)

Findings suggest that co-housing should be located within large metropolitan areas. During the pre-planning stage, the DP and case-study prefer urban locations as the surrounding amenities and accessibility features play a major role in the co-housing's success. Additionally, to promote a sustainable lifestyle, co-housing should be near to various amenities within a walking distance (Williams, et al., 2007). The design and planning should be informed by the location's characteristics (Jenkins, et al., 2006). In the case of Co-Living @ Damai Residence, due to its proximity to embassy row, the DP intentionally curate their aesthetics and facilities towards foreigners and expatriates. During L.VE @ TTDI planning, the DP discovered that the location has several successful co-working spaces nearby. As such, they decided early on to appeal to the working young adult demography.

3.1.3 Space – Overall Planning

The spatial planning must emphasize balance between the private and community areas (Jarvis, 2011; LaFond, 2017). As stated in interviews, special care is needed when planning 2 or more user groups especially the physical aspects (shared amenities) and the cultural aspects (cultural and religious sensitivity). Findings suggest that the residents should be able to observe communal spaces from secondary spaces such as circulation or transition space where they feel less obliged to engage in group events and, if necessary, be able to choose whether to return to their private rooms. The ability to observe also provides the opportunity for surveillance; promoting a sense of security. Ideally, these spaces should be centrally located and flexible so that the resident does not feel as if the common spaces are intruding into their private space (McDannell and Branson, 2018).

3.1.4 Space – Communal Features

Based on the findings, the common spaces and programming should be decided based on the target demography. Figure 2 shows some of the demography design considerations. As suggested by the interviewees, a preliminary market research study should be conducted so that the design features are catered to the prospective residents. However, the resident's involvement does not stop there. Most co-housing communities are involved in the management. The level of community involvement varies from fully self-control and co-creation to a more guided participatory process (McDannell and Branson, 2018). To aid them in this process, they typically require on-site community managers. They act as mediators to address daily issues and schedule events that are relevant to the community. Community managers are also responsible for selecting new members by gauging the prospect's compatibility with the co-housing's vision of community living. This is usually done through interviews (Osborne, 2018).

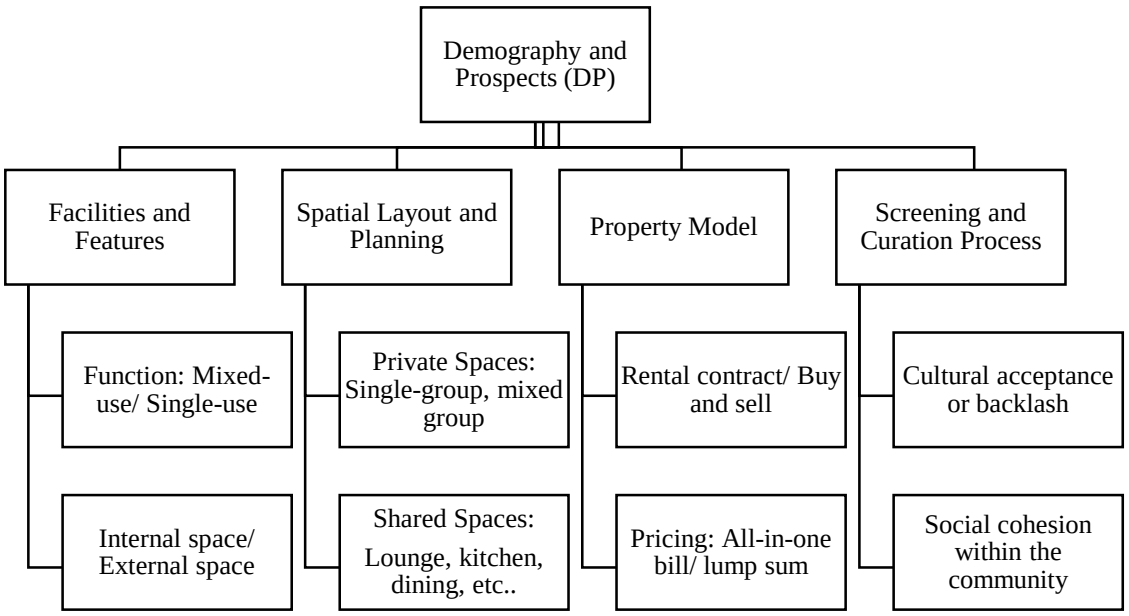

Figure 2. Design considerations based on the demography (Source: Author)

Having a multitude of common facilities helps build community and they must be centrally located, good-quality and appropriate for their designed use. While every co-housings common space is different, most share several typical areas and amenities. The communal lounge is the most significant space, as it is the primary place to promote social interaction and host events (Magelund, 2019). All the case-studied communities have communal lounges included with lounge furniture and multimedia fixtures. Communal kitchen and dining is another area that is important as most social events are planned around meals and kitchens can serve as the main hub for encouraging social interaction in co-housing. In some of the studied locations, it is found that some residents don't want to share a kitchen due to concerns over cleanliness and halal concerns. These issues are solved by hiring housekeeping and designating separate space for food storage.

According to the findings, workings spaces are preferable in co-housings especially as sharing an office space has become common in this digital age (Thees, et al., 2020; Jarvis, 2011). Co-Living @ Damai Residence provides discussion rooms while L.VE and Youtopia provide designated co-working spaces. These spaces are fitted with workstations and office equipment. Other facilities to be considered are dedicated media rooms, fitness amenities, laundry area and

outdoor recreational spaces. When planning for smaller communities, it is advisable to combine amenities as to not spread out residents and reduce social interaction. However, in large-scale communities, multiple dedicated areas help in reducing the overall scale of the community by breaking it into smaller spaces (Samsudin and Osman, 2014).

3.1.5 Space – Private Spaces

All the locations studied share similarities in regards to their private spaces. All of the private accommodations were fully furnished, including at a minimum a bed and wardrobe. This correlates with the idea of flexible co-living, which allows community members to move-in easily and be less burdened with possessions. To compete with other rental markets, all the studied co-housing offers flexible rental contracts and all-inclusive room rentals (Kim, J., et al., 2020). Private bathrooms for each unit are recommended as the findings suggest that majority of users are not willing to share bathrooms. Furthermore, providing a kitchen within each unit is recommended. While it would likely result in diminished social interactions that otherwise would occur in the communal kitchen, this can address concerns over cleanliness and the sharing of food resources which is important in Malaysia's cultural diversity.

3.1.6 Environmental Psychology Theory

Due to co-housing's community-oriented goals, preliminary studies on environmental psychology can be consulted to understand the influence of specific design elements. Environmental psychology is an area of study that explores the relationship between individuals and their environment. Kopec (2012), explores how the natural world and our built environments shape us as an individual in three layers of analysis, as stated below:

- A person's perception, cognition, and personality serve as the filter and framework of their understanding and experience of the surroundings.
- Social spatial management; referring to one's personal space, territory, privacy and publicity.
- The influence of the physical environment on the individual's everyday life and their typical habits in the home or community and their interaction with the environment.

According to Osborne (2018), these theories can be used in determining co-housing physical characteristics and spatial boundaries. One relevant environmental psychology theory is the classification of functional spaces. These functional spaces can be broken down for evaluation into 3 classifications (Kopec, 2012):

- Primary spaces are communal areas where the majority of social interaction and communications occur. In the context of this study, examples include the communal lounge, media room, communal kitchen and dining.
- Secondary spaces are a combination of communal and transitional spaces; where social interaction and communication moves to and from. Relevant examples are small enclosed workspace, laundry area and other small communal facilities.
- Tertiary spaces are considered to be private spaces for individuals to retreat to. The most obvious example is their private rooms and units.

Another relevant theory is the theory of territoriality. Territoriality is characterized as the occupant's effort to control and enforce power over a specific space (Kopec, 2012). Concerning co-housing facilities, spaces can be grouped into these three categories:

- Primary territories are areas that are typically occupied and managed permanently by a single owner or party. The psychological value and importance to an individual is very high. An example is a resident's private rooms.
- Secondary territories are less significant, having only moderate importance to the

occupants. The need to own and control these domains is lesser and is more likely to be shared with others. Examples are common facilities such as workspace and laundry area.

- Public territories are available to everyone trusted within the complex, and residents should not claim to have any influence over them. The most obvious example is the communal lounge that is accessible to others.

An important consideration when applying these theories in design is the proximity of the functional spaces and territories (Osborne, 2018). An example of this is that primary spaces should be located away from tertiary spaces. Secondary spaces function as buffer zones between the two other spaces, allowing for spontaneous interaction to occur (Durrett and McCamant, 2011).

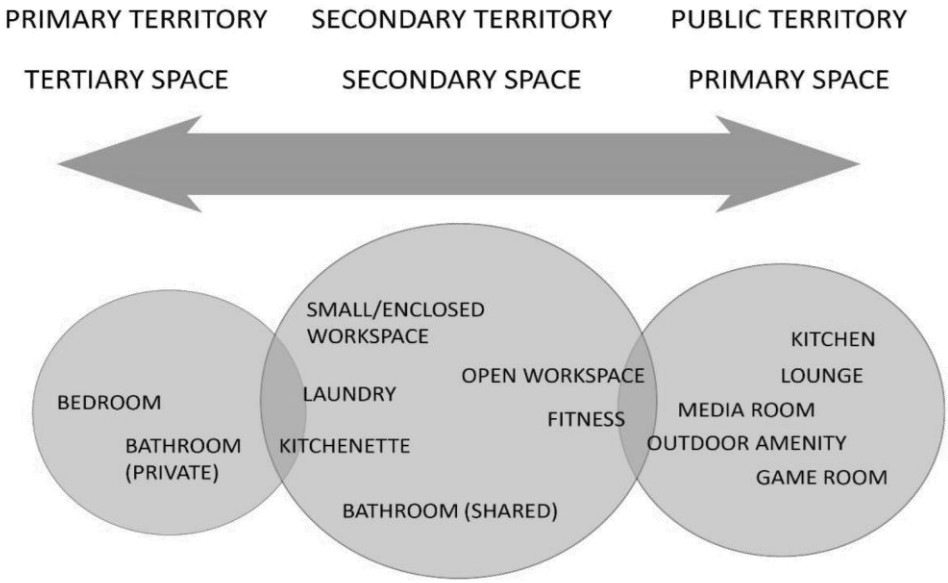

Figure 3. Proximity of functional space and territories (Source: Rachel Osborne, 2018)

3.1.7 Sustainability Considerations

According to the findings, most co-housing aims for sustainability to be part of their design. Typically, renewable energy features are included in their sustainable strategy. To use the land as efficiently as possible so they could have green open spaces and garden areas, most of the co-housings examples overseas used underground car parking. To limit unnecessary consumption, residents tend to share many resources among themselves such as equipment, videos, laundry appliances and gardening tools (Mellner, et al., 2021). Similar households may have different behavioral patterns based on their specific situation, attitudes and preferences (Guerra-Santin, et al., 2017). As such, it is important to provide basic monitoring strategies to keep track of the energy expenditure in the co-housing. Also, supplying areas for recycling, bicycle storage, and swapping encourage sustainable activities.

3.2 Implementation of Co-Housing in Malaysia

The co-living market has been described as a niche market in Malaysia, targeting single, working young adults ranging in the 20s – 30s age group (Ling, et al., 2016). This resulted in the co-housing and co-living typology being largely untested within Malaysia, unlike its western counterparts. This is possibly due to our cultural background and preference for ownership rather than renting (Ahmad, F., et al., 2011). A lack of awareness has also been noted in several of the interviews as a reason why there is so few co-

housing in Malaysian cities. It has been suggested during the interviews that a different form of co-housing based on our cultural needs should be considered instead of the European and American models. While most of the concepts can still be applied, special considerations such as religious concerns can be emphasized more. However, due to the lack of Malaysian precedents and exploration, not enough data were available to provide a more comprehensive strategy.

According to the findings, one obstacle that was brought up was that co-housing facilities require a large start-up capital and high operational cost. Depending on the economy and the value of the current rental market, co-housing can become either affordable or expensive (Kim, J., et al., 2020). To reduce the cost, all DP have adopted the retrofit strategy by redeveloping underutilized infrastructures such as unused shop houses or residential buildings into a co-living space. This does not only allow them to reduce the start-up capital, but this also addressed the issue of the abundance of unused buildings in our cities. Co-housing can potentially be used to address the social housing issues of the B40 group as not only it can reduce economic burdens but also provide a solution to problems such as depression caused by chronic loneliness, among others.

4. CONCLUSION

By offering many design principles and best practices for co-housing design, the study presented in this paper has met its aims. Demographic size, surrounding context, spatial layout, communal and private space design, "environmental psychology theory," and sustainability concerns are among the proposals. In addition, based on the inquiry done on the selected areas of study, the report identified numerous possible advantages, challenges, and solutions that might come from constructing co-housing in Malaysia. Even though it is still in its infancy, co-housing has the potential to spread to other areas, particularly in areas where living costs are high. This alternative housing typology attempts to promote stronger community building, sustainable living by providing flexible, affordable communal housing at an increased density within the urban environment.

The results given here may assist and further strengthen co-housing and/or co-living design providers in creating new sites in Malaysia. An observational study of people living in those areas is suggested to better explore this issue. Over some time, it is vital to study these communities and discover how members of their co-habitation co-ordinate their everyday activities. Further research may be carried out to address the community factor;this was also expressed Aminuddin, A.M.R., Yong, G.K. (2009) regarding the community development and issues working with scientists and a thorough analysis of the community component.

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