A Study on Residents’ Self-built Improvements at MRB Dwelling Units in Metro Manila

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Abstract

The purpose of this study is to examine and clarify the residents’ adjustment behaviors in reference to the process of self-built improvements they made into their dwelling units as in the case of the Medium Rise Buildings (MRBs). Three MRB sites in Metro Manila (two in the City of Manila and one in Quezon City) were investigated. A chronological account of the residents’ self-built improvements was investigated together with two parameters (the household structure growth and change and the profession change). In the analysis, we combined the self-built improvements with the two parameters, and as a result, there were eight typical patterns of transformation found in these samples. In addition, we further analyzed these patterns and there were three cases (A, B and C) that described the characteristics and relationships between the self-built improvements and the two parameters. In B case, the self-built improvements were influenced by the two parameters, while A and C cases were not affected by them.

Keywords: household structure; profession change; self-built improvement; medium rise building (MRB); Metro Manila

1. Introduction

The cities of Metro Manila and other urban regions have seen the rapid increase of urban poor groups that are in urgent need of housing¹. Affordability to acquire a decent and permanent housings for these groups has been a major factor for the government to initiate different programs aimed to solve these problems. One of these programs was focused on the provision of Medium Rise Building (MRB) type in the housing projects. Since this type of housing is quite new to the Philippines, there are many aspects that have to be examined in order to come up with the designs that are appropriate to the needs of Filipino families². Unfortunately, due to unavoidable circumstances, these MRBs were planned in such a way that they provide the most number of dwelling units that will accommodate as many households as possible within the limited lands³ and budgets. As a result, these dwelling units are made up of single room core units with a limited floor area space. Therefore, coping and adjusting to this new type of housing environment have been the focus of this study that these urban poor residents have been accustomed to live in these limited space dwelling units.

The self-built improvements are considered to be one of the major factors in understanding the adjustment behaviors of the residents. Moreover, these self-built improvements also indicate how the residents have provided the lacking requirements they needed in the stages of their residency. Residents could feel at home and secure when they gradually improved and maximized the space. Thus, knowing and understanding such kind of adjustment behaviors are the keys to determine whether the stay will be long or not. This paper, will also provide a better understanding on how the residents have initiated the self-built improvements and also how the limited space can be managed as in the case of the MRB dwelling units. Residents have undertaken these improvements in response to the continuous changes in the households’ demographic and economic status, while improvement expenditures were constrained by the households’ income, wealth, and financial obligations⁴.

The main purpose is to make clear the characteristics of the self-built improvements (transformations) initiated by the residents into their dwelling units. And also aims to explain these self-built improvements by two more transformation parameters (household growth and change and profession change). In the context of housing adjustment, household growths and changes are considered to be one of the main factors in the choice of residents to improve their dwelling units⁵ and it is more likely that the change of profession also contribute to the transformation process. Thus, these issues will be examined and analyzed using a chronological pattern analysis.
2. Past Studies

These following studies are focused on the user-initiated and self-help transformations which occur in the housing projects by the government. Kellett et al (1993)\(^5\) and Tipple (1992)\(^6\) consider this user-initiated transformation as a potential means of improving the quality and size of the dwelling. Kellett et al (1993) viewed this housing transformation as a process of continual changes of both residence and the residents in which it should be encouraged and recognized as a natural phenomenon, while Tipple (1992) concluded that residents’ self-help transformations were initiated not only concerning the increasing of space but also improving privacy and access to services.

Friedman (1996)\(^7\) investigated two affordable housing projects and found out that the open and unfinished spaces are an important valid design concept in the residential modifications. It was observed that residents’ involvements in such activities had provided them with sense of pride, confidence and establish a feeling of attachment to their dwelling unit.

Otsuki (1999)\(^8\) and Salama (1998)\(^9\) identified some valid issues that affects the changes occurred on both dwelling and neighborhood levels. Otsuki (1999) concluded that residents could easily adapt to multi-unit dwellings, and further explained that transformations varied in accordance with the neighborhood situation which influenced the changes of space usage in the residents’ life cycle. Salama (1998) observed the number of increasing multi-storey transformations (extensions) and viewed this as a progressive changes from individual to community involvement.

Salama (1998) and Tipple (2000)\(^10\) presented two types of transformation patterns. Salama (1998) conducted a field survey on 20 public housings and classified them as activities (interior and exterior transformations) that were carried out on an individual or on a collective basis, while Tipple (2000) classified them as the transformers and the non-transformers. The transformers were further classified as recent and established.

Andou et al (1998)\(^11\), Salama (1998), Tanaka et al. (1998)\(^12\), and Tipple (2000) focused on the transitional process of residents’ extensions, modifications and remodeling. Andou et al (1998), Salama (1998), and Tipple (2000) concluded that residents continuously made illegal transformations (modifications, and extensions) in order to adapt their dwellings to their housing needs and lifestyle. Tanaka et al. (1998) investigated the low storey core houses in Bangkok, and concluded that improvements were done step by step.

De Guzman et al (2001)\(^13\) and Tipple (2000) both used space syntax diagrams for analyzing their data. De Guzman et al (2001) showed the relationships between two different collective housing projects, focused on the spaces of the interior units using syntactic analysis, that were planned and designed by the users’ themselves. Tipple (2000) used this diagram to show particular features of the house and the house as a whole.

In reference to previous studies, we also presented a documentary proof on how the user-initiated transformations occurred in the government-built housing. De Guzman et al (2001) examined two different MRBs with different social classes (lower-lower and upper-lower classes), while we investigated three different MRBs with one social class (lower-lower class). They found out a common pattern while observing the improvement of spaces inside the units and translated it into space syntax diagram. Tanaka et al. (1998) focused on low storey core houses, while we focused on multi-storey core houses. They analyzed the core houses by examining the dwellers’ profile and process of housing extensions. They found out that there were similar spatial patterns of dwellings even though core houses varied, and residential improvements were done gradually. In contrast with the two previous studies, we aims to find out common patterns of transformation using chronological pattern analysis. This is used as a guiding tool in the examination of the data and the analysis of each housing transformation. This paper also classified the residents and transformation activities into types of transformers as Salama (1998) and Tipple (2000) did in their studies, while we present that there are three types of transformers (original transformers, secondary transformers, and non-transformers). Otsuki (1999) used three points of view in analyzing the data, these were “change of people”, “multi-unit use” and “change of space use”, while we examined the self-built improvements using two transformation parameters (household structure growth and change and profession change). These were analyzed and relate to each other in a sequence of events (chronological pattern) in order to provide a clearer understanding of the characteristics and relationships to self-built improvements. Thus, at this point it is a newer approach that has not been done in previous studies. Furthermore, each household units were classified and grouped according to the types of residency (Long, Mid and Short Stay) and divided them into stages using a 12 years period (1990-2001).

3. Methods

Three government built MRB housing projects in Metro Manila were selected as sample sites for this study. They are the Vitas MRBs, the Domus Mariae MRBs, (both located in the City of Manila), and the National Government Center (NGC) MRBs (located in Quezon City) as shown in Figure 1. All of the housing projects were under the supervision of the National Housing Authority (NHA). These MRBs were chosen since their physical characteristics and profiles are more or less typical to each other (Table 1). We gathered a total of 120 households as samples in this investigation.

A qualitative survey was conducted through an interview (a simple hearing), sketches, measurements and photo survey of each individual MRB dwelling unit. The survey was conducted in July-August, 2001, with the assistance of the students from the College of Architecture, University of the Philippines. A five-pages ques-
A questionnaire was used in interviewing the respondents based on the following criteria:

a) the profile of household (profession, age, income, education);

b) the history of their previous dwelling;

c) the 12 year (1990-2001) chronological events of improvements in which they initiated and made to their dwelling units;

d) their opinion on future improvements.

Sketches of the plan for each dwelling unit were drawn and indicated the measurements, the furniture layout, the usage of space and the chronological event of self-built improvements done by the users.

Photographs were also taken on each dwelling unit to support the documentation of the present status of the unit.

4. Results (Transformation Process)

4.1 Household Residency, Structure and Changes

There are three types of household residency that are present in these MRBs (Table 2). Mid and Short Stay residency are found to be prevalent, implying that most of the residential units have been occupied in this duration. One reason for this is that the original occupants have moved out and looked for another place to live in. Thus, most of the present occupants are secondary users.

Table 2. Frequencies of Households per Type of Residency on each MRB Project

| Types                | Vitas | Domus | NGC | Total |
|----------------------|-------|-------|-----|-------|
| Long Stay (1-12yrs)  | 15    | 4     | 0   | 19    |
| Mid Stay (1-8 years) | 8     | 24    | 30  | 62    |
| Short Stay (1-4 years)| 11   | 14    | 14  | 39    |

Households’ size and structure have transformed during the stages of the family life cycle. Based on the 120 units surveyed, 79 units were occupied by nuclear families while the other 33 units were occupied by nuclear plus extended families in which either relatives, household helps, and friends are living in the same place. These findings validate and reflects the typical Filipino household structure, which are made of nuclear families as well as extended families and members known as the *kasambahay*. There are 13 prevalent types of household structure growth and change present in this sample (Table 3). The frequencies of changes in the Household structure were highest on the 2nd, 3rd and 4th years of household residency. In these periods the prevalent types of household structure growth and change are the additional.
tion of nuclear member to a nuclear household (Nu+NuM) and the addition of extended member to a nuclear extended household (NuE+EM). Mid Stay residency has the highest number of changes.

4.2 Profession Change

Changes of professions vary in the stages of each resident’s lifecycle. The constitution of profession changes varies into five categories these were the change of breadwinner, increase of breadwinner, change of work, promoted, and retired/ lose of work. Change of breadwinner and increase in breadwinner are both further categories in three types as shown in Table 4. The frequencies of profession change were highest on the 2nd, 3rd and 4th years of household residency. In these periods the change from one member with work to two members with work was the prevalent type, while change of work followed. Mid Stay residency has the highest number of changes. All of these findings imply that the more household members have work and contribute to the financial aspect, the better they can afford to make some self-built improvements.

4.3 Self-built Transformers and the Self-built Improvements

There are three types of transformers found in this study (Table 5). They are the original transformers, the secondary transformers, and the non-transformers. Original Transformers are the first hand users and they transformed the housing units when it was still a core unit. Secondary Transformers are the second hand users of the already transformed dwelling units and they continue to make transformation. Non-transformers are residents who did not make any improvements to their dwelling units. They are usually the second hand users and just renting the unit or recently became the occupants of the dwelling units.

Table 5. Frequencies of Households per Type of Self-built Transformers on Each MRB Project

| Types              | Vitas | Domus | NGC  | Total |
|--------------------|-------|-------|------|-------|
| Original Transformers | 14    | 21    | 30   | 65    |
| Secondary Transformers | 17    | 13    | 12   | 42    |
| Non-Transformers    | 3     | 8     | 2    | 13    |

The survey revealed that some of the residents who are renting did not want to make any major improvements to the dwelling units because of their status as tenants.

These improvements have been classified and categorized into different types in relation to their needs. There were seven prevalent types of self-built improvements present in the MRB dwelling units. These were the needs for finishing works, security, alteration, increased of space, storage space, privacy and maintenance. Samples of these self-built improvements are shown in Figure 2.
4.4 Classifications and Groupings

A period of 12 years (1990-2001) was sub-divided into six stages, starting from 1st year (occupation period), then 1st to 5th stages. This was done in order to have a clearer view of the chronological events of changes that occurred in each stage of household residency. This was then used as a guide in the analysis of the characteristics and the relationships between the residents’ self-built improvements and the two transformation parameters (household structure growth and change and profession change). And as a result, there were eight groups of transformation patterns as shown in Table 6 & Figure 3. These groups are as follows:

**Group 1** represents 16 residential household samples that have made self-built improvements even without household structure growths and changes and profession changes. These improvements were only made during the 1st year. Three prevalent types of improvements were present in this group and they consist of the need for alteration (demolition of rear walls and removal of existing rear doors and windows in provision for the construction of a cantilever extensions, re-tiling of existing kitchen counters, extension of kitchen counter). Finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and painting works) was the second priority of the residents.

**Group 2** represents 15 residential household samples that have also made self-built improvements even without household structure growths and changes and profession changes. This group did not make any improvement during the 1st year and only started to make improvements from the 2nd year (1st stage) to the 5th year (5th stage). A gap of 2 years has passed before other improvements during the 12th year (5th stage) were performed. In these self-built improvements, the most common type was the need for alteration (demolition of existing rear walls and removal of existing rear doors and windows in provision for the construction of a cantilever extensions, removal/relocation of existing kitchen counters, extension of kitchen counter). Finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and painting works) were the priority of the residents.

**Group 3** represents 8 residential household samples that have also made self-built improvements even without household structure growths and changes and profession changes. Most of the improvements were done during the 1st and the 3rd year (1st stage). The prevalent types of improvements during the 1st year was the need for finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of kitchen counters). This was followed by the need for alteration (demolition of existing rear walls and removal of rear doors and windows for the provision of construction of a cantilever extensions and extension of kitchen counter). While in the 3rd year (1st stage) finishing works (plastering of walls, tiling of floors and kitchen counter) was most frequent. With regards to household structure growths and changes and profession changes they were evident during the 1st stage. The increase in the number of relative members was the prevalent household structure growth and change during the 2nd year and the 4th year (both on the 1st stage), while the increase in the number of members with work was prevalent during the 2nd year (1st stage) as a profession change.

**Group 4** represents 19 household samples that have made self-built improvements with household structure growths and changes and/or profession changes. In this group, most of the improvements were made during the 1st and 2nd year (1st stage) and gradually decreasing from the 3rd year (1st stage) to the 9th year (4th stage). A gap of 2 years has passed before other improvements during the 12th year (5th stage) were performed. In these self-built improvements, the most common type was the need for alteration (demolition of existing rear walls and removal of existing rear doors and windows in provision for the construction of a cantilever extensions, removal/relocation of existing kitchen counters, extension of kitchen counter). Finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and painting works) were the priority of the residents.

**Group 5** represents 26 residential household samples that have made self-built improvements with household structure growths and changes and/or profession changes. In this group, most of the improvements were made during the 1st and 2nd year (1st stage) and gradually decreasing from the 3rd year (1st stage) to the 9th year (4th stage). A gap of 2 years has passed before other improvements during the 12th year (5th stage) were performed. In these self-built improvements, the most common type was the need for alteration (demolition of existing rear walls and removal of existing rear doors and windows in provision for the construction of a cantilever extensions, removal/relocation of existing kitchen counters, extension of kitchen counter). Finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and painting works) were the priority of the residents.

**Group 6** represents 26 residential household samples that have made self-built improvements with household structure growths and changes and/or profession changes. In this group, most of the improvements were made during the 1st and 2nd year (1st stage) and gradually decreasing from the 3rd year (1st stage) to the 9th year (4th stage). A gap of 2 years has passed before other improvements during the 12th year (5th stage) were performed. In these self-built improvements, the most common type was the need for alteration (demolition of existing rear walls and removal of existing rear doors and windows in provision for the construction of a cantilever extensions, removal/relocation of existing kitchen counters, extension of kitchen counter). Finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and painting works) were the priority of the residents.

**Group 7** represents 26 residential household samples that have made self-built improvements with household structure growths and changes and/or profession changes. In this group, most of the improvements were made during the 1st and 2nd year (1st stage) and gradually decreasing from the 3rd year (1st stage) to the 9th year (4th stage). A gap of 2 years has passed before other improvements during the 12th year (5th stage) were performed. In these self-built improvements, the most common type was the need for alteration (demolition of existing rear walls and removal of existing rear doors and windows in provision for the construction of a cantilever extensions, removal/relocation of existing kitchen counters, extension of kitchen counter). Finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and painting works) were the priority of the residents.

**Group 8** represents 26 residential household samples that have made self-built improvements with household structure growths and changes and/or profession changes. In this group, most of the improvements were made during the 1st and 2nd year (1st stage) and gradually decreasing from the 3rd year (1st stage) to the 9th year (4th stage). A gap of 2 years has passed before other improvements during the 12th year (5th stage) were performed. In these self-built improvements, the most common type was the need for alteration (demolition of existing rear walls and removal of existing rear doors and windows in provision for the construction of a cantilever extensions, removal/relocation of existing kitchen counters, extension of kitchen counter). Finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and painting works) were the priority of the residents.

### Table 6. Frequencies of Household Structure Growths and Changes, Profession Changes, and the Self-built Improvements on Stages of the Residents’ Residency

| Grp No. | TP | FREQUENCY OF CHANGES PER LIFE STAGES |
|--------|----|-------------------------------------|
|        |    | 1<sup>st</sup> stage | 2<sup>nd</sup> stage | 3<sup>rd</sup> stage | 4<sup>th</sup> stage | 5<sup>th</sup> stage |
| 1      | HSQC  | 40 |  |  |  |  |  |
|        | SBI  |  |  |  |  |  |  |
| 2      | HSQC  | 35 | 12 | 8 | 3 | 2 | 1 | 5 | 2 | 2 | 1 |
|        | SBI  |  |  |  |  |  |  |
| 3      | HSQC  | 8 | 7 | 8 | 2 |  |  |  |  |  |  |
|        | SBI  |  |  |  |  |  |  |
| 4      | HSQC  | 58 | 9 | 4 | 2 |  |  |  |  |  |  |
|        | SBI  |  |  |  |  |  |  |
| 5      | HSQC  | 13 | 12 | 4 | 11 | 6 | 2 | 1 |  |  |  |
|        | SBI  | 107 | 9 | 4 | 8 | 4 | 3 | 1 |  |  |  |
| 6      | HSQC  | 13 | 2 | 1 | 1 | 1 | 2 | 2 | 1 |  |  |
|        | SBI  |  |  |  |  |  |  |
| 7      | HSQC  | 9 | 3 | 7 | 5 | 2 | 3 |  | 1 | 8 | 3 |
|        | SBI  | 27 | 12 | 10 | 13 | 10 | 2 | 2 | 2 |  |  |
| 8      | HSQC  | 1 | 1 | 3 | 1 | 1 |  |  |  |  |  |
|        | SBI  |  |  |  |  |  |  |

*Index unit: time*

- HSQC - household structure growth & change
- PC - profession change
- SBI - self-built improvements
- n - total no. of changes per year of residency
- TP - transformation process
- A - occupation stage
Figure 3. Typical Samples of Chronological Events of Self-built Improvements (Groups 5,6,7) as Shown in Table 6
improvements with household structure growths and changes and/or profession changes. This group had a regular pattern of changes in such a way that most of them occurred during the 1st year (occupation stage), 1st and the 3rd stages. Most of the self-built improvements were done during the 1st year. The prevalent types were the needs for finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and kitchen counters) and the security (installation of security grilles for doors and windows). The increase in the number of relative members was prevalent as a household structure growth and change during the 2nd, 3rd year (both of the 1st stage), and 5th year (2nd stage). The increase in non-relative members with work, change of work, and loss of job/work were most frequent during the 2nd and 3rd year (both of the 1st stage) as a profession change.

Group 6 represents 4 residential household samples that have made self-built improvements with household structure growths and changes and/or profession changes. This group had an irregular pattern of changes with a length gap of 4 years in the execution of improvements. Self-built improvements were highest during the 1st year and the prevalent type was the need for alteration (demolition of existing rear walls and removal of existing rear doors and windows, extension of kitchen counters). During the 10th year (4th stage), the needs for security (installation of security grilles and increased of space (construction of balcony extensions) were of equal importance. There was no prevalent type of household structure growth and change in this group. For the profession change, the prevalent type was the increase in the number of relative member with work during the 10th year (4th stage).

Group 7 represents 19 residential household samples that have made self-built improvements with household structure growths and changes and/or profession changes. This group did not improve during the 1st year and only started on making their improvements from the 2nd year (1st stage) to the 8th year (3rd stage), with a gap of 1-year on the 9th year (5th stage). Then continued on doing improvements during the 10th year (5th stage). Self-built improvements of this group were highest during the 2nd year (1st stage). The prevalent types were the need for finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and kitchen counters) and followed by the increased of space (construction of cantilever extensions). During the 5th year (2nd stage), the need for storage space (fabrication and installation of cabinets and shelves) was the prevalent type. While the needs for finishing works (plastering of walls, tiling of toilet & bath floors and walls, tiling of floors and kitchen counters) and increased of space (construction of cantilever extensions) were equally important. The increase in the number of relative members and non-relative members were prevalent as household structure growth and change during the 2nd year (1st stage) and the 11th year (5th stage), respectively. The increase in the number of non-relative members with work were highest during the 2nd year (1st stage), while the increase in the number of non-relative members with work, members working abroad or members receiving pension were found prevalent during the 2nd and the 3rd year (both of 1st stage). In addition, the increase in the number of non-relative members with work was prevalent during the 11th year (5th stage) as profession changes.

Group 8 represents 13 residential household samples that had household structure growth and changes and/or profession changes but without any self-built improvement made in their life stages of residency. These residential households were classified as the non-transformers. The prevalent household structure growth and change was the increase in the number of relative members during the 4th year (1st stage).

5. Conclusions

We presented a chronological account on how the residents and their dwelling units transformed during the stages of their residency. After they occupied a small core housing units they have managed to improve it gradually. Thus, this action reflects their housing adjustment behavior while living in a highly constrained condition. In analyzing the residents’ self-built improvements we combined it with the two transformation parameters (household structure growth and change and profession change). The frequencies of changes in each combination were identified and analyzed through chronological approach analysis. The importance of this approach is that it presented a view of the relationships and characteristics between the self-built improvements and the two parameters. And as a result, we found that there were eight typical patterns of transformation process while combining the self-built improvements and the two parameters as shown in Table 6. These groups of patterns also differ in three cases as shown in Table 7.

Table 7. Self-built Improvement, Household Structure Growth and Change, and Profession Change Present on Each Case of Transformation

| Cases | Group (Table 6) | Household Structure Growth & Change | Profession Change | Self-built Improvement |
|-------|-----------------|------------------------------------|-------------------|-----------------------|
| A     | 1,2,3           | X                                  | X                 | O                     |
| B     | 4,5,6,7         | O                                  | O                 | O                     |
| C     | 8               | O                                  | O                 | X                     |

O - found
X - not found

In A case, all changes occurred are self-built improvements. Most of these improvements were done in the 1st year (occupation stage) until the 4th year (1st stage) then it becomes less. The need for alterations (demolition/removal of existing walls, removal of existing doors and windows), increased of space (construction of cantilever extensions), and storage space (fabrication and installation of cabinets and shelves) are the prevalent types. There are also household residents who did not make any self-built improvement during the 1st year (occupation stage) and started to make them only during the 2nd year (1st stage). There are no household structure and profession changes on these patterns.

In B case, self-built improvements such as alterations...
(demolition/removal of existing walls, removal of doors and windows, and extension of kitchen counters), finishing works (plastering and painting works), and increased of space (construction of extensions and mezzanine floors) were the prevalent types. There are irregular patterns of improvements found in this case because there were gaps between the years of execution. These improvements were done due to the changes in households’ structure and profession of members. These changes occurred during the 1st and 2nd stages of residents’ occupancy to their dwelling units. During these periods the increase in number of relative members and increase in number of members with work were the prevalent types.

In C case, there were no self-built improvements made by the residents, only the two parameters (household structure growth and change and profession change) transformed during the stages of households’ residency. This case was later classified as the non-transformers. The increase in number of relative members are the prevalent types during the 4th year (1st stage).

We show not only how the dwellings and the dwellers transformed, but clarify the behaviors of the residents while in the process of household and profession change. This is useful to understand the characteristics of extensions, remodeling and occupation of spaces that are supplemental to the field of housing adjustment behaviors.

Although, we present a documented proof on how the dwelling units transformed through user-initiated transformations. There are more housing issues that needs to be studied. Issues that are related to these user-initiated transformations such as housing mobility and residential satisfaction toward the implementations of self-built improvements. It is recommended to carry out a deeper research on this user-initiated transformations and relate this as a determinant to residential mobility and housing satisfaction of the residents. The propensity whether they stay long or not in this multiple dwelling environment is the focus of the next study.

Lastly, it should be taken into account in the planning stage, that the dwelling units should be design in such a way, that it is open for improvements such as alterations and extensions and make it as flexible as possible. As it was presented on this paper, that most of the residents’ self-built improvements were done during the 1st year (occupation stage) and these improvements were the needs for alteration, increased of space and storage space. Finishing works were done during the 2nd and 3rd year (1st stage). From the 1st to 2nd stages (2nd to 6th years) the household started to change its structure and profession of the members. Construction of cantilever extensions and fabrication of cabinets and shelves were done during the 5th year due to the increase in number of household members and members with work. Therefore, this paper can be used as a basis for predicting some of the residents’ actions toward self-built improvements and gives an image on how and when we should assist them in their housing improvements.

6. Acknowledgments
We would like to acknowledge the invaluable support extended to us by the University of the Philippines, College of Architecture through its Associate Professor Grace C. Ramos, and her Architecture students (Design Class 42) who assisted us in conducting the survey.

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