Analysis of the Rental Market in Informal Settlements Complementing Housing Needs in Cities: The Case of Port Moresby and Lae Citiesin Papua New Guinea

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Abstract

This paperanalysesthe rental housing markets in the informal settlementsof the cities of Port Moresby and Lae in PNG, whichare complementing urban dwellers' housing needs. The main purpose of the study is to investigate the operations and contributions of the rental housing market in informal settlements as submarkets to the mainstream housing market in the country.Purposive sampling technique was used to interview 75 respondents comprising landlords and tenants in the rental housing market in the informal settlements, based on several questionnaire surveys and a representative sample. Descriptive statistics and chi-square test are used for testing the relationship between selected key variables extracted from two research questions, namely: (i) What are the types of informal rental housing that are available in Port Moresby and Lae cities to complement housing in the formal market?, and (ii) How are the rental housing units in the informal settlements in Port Moresby and Lae cities managed and operated for purposes of sustainability? Findings reveal that there is no relationship between therental chargesand types of rental housing and housingstandards ($\chi^2 < 2.8 = 0.48$).Findings also indicate that houses in informal areasare usually low-grade, built with scraps from waste, locally sourced materials and hardware materials that are not amenable to conventional housing maintenance and management technology. The median rentper month in the informal settlements was K700 (USD $180) as of 2015 while the median cost of constructing a typical house for rent is about K40, 000 (USD $10,000) for the same year. Furthermore, findings also show that rental houses in the informal settlements are frequently advertised through word of mouth (50%) and local notice boards (60%). There are economic incentives that drive the market for informal rental housing. Government needs to introduce appropriate laws leading to formalisation of informal rental housing to inject life into this dead capital, transform the country's economy and increase the total housing stock.

Keywords: *Informal Rental Housing Market, Invasion, Economic Incentives, Sub-Markets, Formal Rental Housing, Port Moresby, Lae*

1. Introduction

Entry to the housing market in many cities in the global south is through the informal housing market (Anand & Rademacher, 2011; Huchzermeyer, 2009; Van Gelder, 2009; Landman& Napier, 2010). The informal housing markets are recognised as invisible real estate and they mirror the formal rental housing market (Kaitilla, 1999). The real estate in Papua New Guinea is left to the market forces to determine its activities. Consequently, informal rental houses are the outcome of the reaction of market forces and mirror the formal housing markets. The lack of access to the formal housing market is partly due to the shortage of affordable formal housing units at the lower end of the property market (Moollaet al, 2011; Arkuet al, 2012). This shortage

of affordable formal housing units is a problem for both home ownership and rental housing in the formal market (Fekade, 2000). The housing shortage has also brought about a proliferation of informal settlements and informal dwellings in the peripheries of Port Moresby and Lae, and is therefore, seen as the black housing market(Ramabodu*et al*, 2007; Moolla*et al*, 2011). Hence, formal rental stock in the low end of the market is rare and most of the rental accommodation is provided in either informal dwellings within formal suburbs or informal dwellings in informal settlements (Arku*et al*, 2011).In most Asian and Pacific Island cities, the informal sector is the greatest supplier of shelter, accounting for between 60% and 90% of the low-income rental units in a city (UN-HABITAT, 2008). Moreover, informal dwellings in this market segment are built without proper adherence to planning regulations and are not registered, making the growth and development of this segment of the market difficult to determine (Bargain &Kwenda, 2010). According to the UN-Habitat (2010), close to half of the population in both cities live in informal settlements

The purpose of this paper is to investigate and analyse the operations and contributions of the rental housing market in the informal areas of Port Moresby and Lae by complementing housing needs in the two cities. "Why do informal housing markets exist? Are there any economic incentives concerning squatting or is it only a last resort?" Despite the increasing number of slums and squatter settlements around the world, little is known about the economic incentives associated with the decision to develop or own a dwelling in informal settlements (Brueckner and Selod, 2008).Thestudy seeks to expose the operations ofrental housing market in the informal sector and examine how it complements the housing needs of residents in Port Moresby and Lae. The operationsof informal rental housing mirror those offormal rental housing in an urban setting; therefore, understanding the linkages between formal and informal housing is very vital for strategic planning and decision-making in cities (Poulsen, 2010&Kaitilla, 1999).

2. The duel-city case study: Portmoresby and Lae

2.1 Types of Informal Rental Housing

According to Mahadevia and Gogoi (2011), the urban poor have very limited choices for housing in urban areas. Regarding their limited options, there are various types of sub-markets in the formal and informal markets based on tenant selection and affordability. Broadly, both types of the housing market can be sub-divided into legal/illegal as well as owner/renter. Lim (1987) grouped the sub-markets as regular, invasion, slum and squatter (Table 1), with owners and tenants dominating the sub-markets.

Table 1: A schema of sub-markets in housing

Occupancy of Land / Physical Characteristics of Land and structure	Legal		Illegal	
Legal	**A** Regular Housing Market		**C** Invasion Housing Market	
	Owners	Renters	Owners	Renters
Illegal	**B** Slum Housing Market		**D** Squatter Housing Market	
	Owners	Renters	Owners	Renters

(Source: Lim, 1987)

The informal rental housing market is presented in Sections B, C and D of the schema of submarkets indicated in Table 1. As depicted in this table, regular housing markets are mostly found in the formal urban areas where the State intervenes through planning, allocating and regulating the residential land use. The slum housing markets were previously suitable for residence but are now deteriorating due to mismanagement and other factors within as well as externally. Good examples were government housing schemes in Morata in Port Moresby and Taraka and 4 Mile in Lae City. Invasion housing markets are mostly found on good buildable customary land in the peri-urban areas, such as the high-class informal residential housing areas built in Taurama Valley in Port Moresby and Kamkumeng in Lae City. Most squatters' housing markets are built on the marginal land or disputed land in the formal areas. For instance, the rental houses built at 6 Mile, 4 Mile and 2 Mile in Port Moresby and Boundary Road and Banana Block in Lae City are examples of squatter housing markets on marginal or disputed land. Such 'land grabbing' is used as a political instrument, whereby the supports of these squatters are used in return of a promise for non-eviction resulting in political patronage.

2.2 Types of Building Construction and Cost

Locally sourced materials and labour are used without adversely affecting the local economy or environment and enable the maintenance and upgrading of the house using local tools and resources. The types of construction materials for external walls, roof, and floor are mainly timber, plywood, corrugated iron and cement. They are also distinguished by the type of building: traditional/non-traditional, the overall permanence of structure, and whether it is attached, i.e. a flat or duplex (PNG Household Income and Expenditure Survey 2009-2010).

According to Nabutola (2004), most houses in informal settlements are self-constructed shelters under conditions of informal or traditional land tenure. Through empirical studies, it was discovered that the building materials are collected over a long period of time until all necessary building materials are fixed for the construction. They are common features in developing countries and are typically the products of an urgent need for shelter by the urban poor. As such they are characterised by a dense proliferation of small, makeshift shelters built from diverse materials causing degradation of the local ecosystem and severance of social systems. Through observation, Nabutola (2004) discovered that the houses on customary land are more permanent in nature than houses built on state and private lands in Port Moresby and Lae. This is due to tenure security and the level of certainty and property rights within the type of land occupied. A good example would be parts of Taurama Valley in Port Moresby and Kamkumeng in Lae City.

2.3 Demand for rental housing

According to De Leeuw (1971), the main determinants of demand for housing are demographic factors. The greater the population size and population growth, the more people in the economy, the greater the demand for housing. He further stated that, other factors like income, the price of housing, cost and availability of credit, consumer preferences, investor preferences, and prices of substitutes and complements, all play a critical role. As stated by Kumar (1994), the demand for rental housing determines the scale of rental housing in a city. Even though theory states that the commodification of land promotes rental housing, unless there is demand, the rental housing market will not strive. Demand for rental housing is directly linked to the migration rate into the city. Tenants of informal rental housing tend to be young and are usually at the bottom third income bracket of the population (Qiao, 2012). Qiao further reported that an increase in demand for urban housing in the latter half of this century had led to the emergence of housing as a priority sector for many national governments and public authorities around the globe. The Global Report on Human Settlements (UNCHS, 1986) indicates that 40-50% of the population lives in slums and informal settlements in many cities of the developingworld.

Customary land offers a housing development alternative in the absence of formal residential

plots (Kaitilla, 1999). In an earlier study of 400 employees from 90 businesses in Lae, Kaitilla and Sarpong-Oti (1993) found that only 16 percent of all respondents owned houses in Lae. Rapid urban growth is making more people reliant on rental housing for accommodation, but housing production levels are not meeting demand either in terms of quantity or quality (Mwangi, 1997).

2.4 Supply of Rental Housing

Rental housing plays a key role in supplying housing to the market in a dynamic situation of ever-increasing demand on account of urbanisation (Mahadevia and Gogoi, 2011). Housing supply is achieved using land, labour, and various inputs, such as electricity and building materials (George, 1985). The quantity of new supply is determined by the cost of these inputs, the price of the existing stock of houses, and the technology of production (fhttp://www.investopedia.com/terms/e/inelastic.asp#ixzz3dHpQ40dZ, accessed on 21 March 2016). An understanding of the current rental housing supply mechanisms suggests that housing in urban areas is primarily the responsibility of individual residents.

About 90 per cent of housing investment and 70 percent of housing supply can be found in the private sector (Kundu, 1993). This is a consequence of the fact that, starting in the 1980s, and in much of the developing world, the illegal sub-division of agricultural land seems to have become the largest source of informal urban development (AlSayyad & Roy, 2003, p. 2). In the formal residential areas, houses are built by the private developer and through self-help efforts. According to the UN-Habitat (2008), most urban landlords tend to be small scale entrepreneurs who live on the same premises as their tenants and who share a similar social and economic status. Poor landlords tend to rent out rooms to poor tenants, whereas better-off landlords tend to rent to better-off tenants.

The rental housing market can be produced formally and informally (Table 2). Most private companies and individual developers produce rental housing in the formal or informal areas for profit and return on their investment. The government produces rental housing normally below the open market rates, and under a rent control policy in some areas, to mitigate housing shortage due to unaffordable rents. Most land grabbers and slumlords see opportunities in the market to produce rental housing market.

Table 2: Producers of rental housing in formal and informal areas

	Formal Housing	Informal Housing
Who Produces Rental Housing?	Produced formally by: • Developers • Contractors Investors within the privatesector, or produced by: • Smalllandowners • Individuals • State	Produced informally by • Landowners, • Individual slum-dwelling Households, • Slumlords • Landgrabbers

Source: Adopted from the UN-Habitat (2010)

3. Nature of the problem and contributions to knowledge

Property market especially residential property market in Papua New Guinea is not fully developed and organised (Ezebilo, 2017). The residential property market has not adequatelymet the demand of all actors in the residential market (Hausples, 2017). Furthermore, there are no proper and clear mechanisms and policies in place to control and regulate the property market for check and balance purposes. However, the property market in Port Moresby and Lae is left for the market forces (demand and supply) to determine the prices and options for development (Ezebilo, et al, 2016).Hence, the supply of new housing is inelastic in the short run. Therefore, housing rentallevels are determined mainly bydemand factors (Pozdena, 1998). Consequently, the supply of houses for high income, medium income and low income in Papua New Guinea's main cities of Port Moresby and Lae is not fairly and evenly distributed causing a disparity in the supplystream. There are more houses at the top end of the market and less supply of houses at the lower end of the market causing an imbalance in the demand and supply structure (Arku,et al, 2011).

As a result, the by-products of demand and supply have ignited the speculative behaviour of buyers and sellers in the market. The speculator in the market is taking a high risk hoping for better economiccondition targeting high profits in their investments if prices change. Furthermore, the economic boom resulting from the LNG and mining projects in Papua New Guinea over the last decade has lured property developers and investors to build and invest in more high and medium income housestargeting expatriate workers and speculating on high capital gain and turning a blind eye on low income residential housing. However, low income housing canaccommodate more that 45% of the labourforce working in the formal businesses who pay tax to the government and would have been homeless (UN-Habitat, 2010).

Therefore, this study investigates and analyses the operations and contributions of rental housing in informal settlements as a distinct sub-market capable of contributing significantly to the total housing stock of Port Moresby and Lae cities. Based on the factors highlighted above, this paper seeks to explore this uncharted territory of housing informality that nevertheless fills the gap in housing created by a dire shortage of formal housing units in the cities of Port Moresby and Lae. The paper attempts to contribute to housing literature by means of answering two research questions andtesting one hypothesis. The two research questions are as follows:

 i) What are the types of informal rental housing that are available in Port Moresby and Lae cities to complement housing in the formal market?; and

 ii) How are the rental housing units in the informal settlements in Port Moresby and Lae cities managed and operated for purposes of sustainability?

In addition, the hypothesis tested in this paper (H_1) states: "That there is a positive relationship between the rental charges and types or standards of housing needs."The findings from this study will hopefully provide insights into the dynamics of informal housing market as well as provideinsights into the role of informal housing in developing economieslikethat of PNG.

4. Theoretical framework

As the informal rental market has some commonalities with the formal housing market (Poulsen, 2010), examples are drawn from the broader low-end formal rental market to provide a framework with which to analyse the state of the informal rental housing sector in Port Moresby and Laecities. For example, theneoclassical economic theory of the consumer was applied to housing within the framework by Muth and Olsen (1966).In the same vein, the researchers have adopted the Housing Demand Theoryalong with the empirical data collected in Port Moresby and Laeto explain the relationship between demand and supply of housing that affects the stock of housing in the formal areas, which invincibly affectsthe dynamics of rental housing in the

informal areas. Moreover, a demand functions $(Q = f (P, I, U)$, where Quantity demanded is the function of the price, income & utility) illustrates important concepts of substitution and income effects as follows:

4.1 Substitution Effect

This explains show a change in the price of goods affects the amount consumed because the consumer switches to an alternative good (rental housing in informal settlements). For example, an increase in the price of rental accommodation in the formal areas will cause the demand for rental housing in the formal areas to fall as more people substitute unaffordable formal rental housing with cheaper informal rental housing. According to Gibler and Nelson (1998), the criteria that a consumer uses to choose between alternative products are the product's attributes that the consumer considers important. However, the income of the consumerplays a vital role in choosing the types of rental housing as well.According to Ezebilo, *etal* (2016), property prices in Port Moresby and Lae in the formal housing market are beyond the reach of many people, therefore, the renters look for substitute housing in the informal areas.

4.2 Income Effect

According to Muth and Olsen (1966), a change in the demand for a good or service is induced by a change in the consumer's discretionary income. Furthermore, any increase or decrease in price correspondingly decreases or increases the consumer's discretionary income, which in turn causes a lower or higher demand for the same or some other good or service. Poulsen (2010) defines demand as the willingness and ability to put one's desires into effect. Theconnection between income and housing decisions is irrefutable for most households. Income is fundamental to explaining housing demand because it is the source of funds for renters' payments of rent (Lee and Trost, 1978). Hence, it is universally accepted that income is integral to all analyses of housing demand. The propensity to rent a house depends on thechange in the income level of the renter (Hendershott and Haurin, 1998), up or down. Therefore, renters with more income tend to rent or consume houses with high rental fees in a better location with better housing attributes, and vice versa.

Residential housing demand in urban areas is driven by households'desires to live in cities due to increasing taste for urban living, which is characterised by employment, social amenities, and consumption opportunities (Sinai, 2007).On the demand side, consumer behaviour of individuals, groups, or organisations is important in selecting, purchasing, using and disposing of housing to satisfy needs and desires. When formal urban housing becomes too costly, consumers will switch over to cheaper alternatives in the informal sector within the same urban area. Furthermore, utility theory in economics and attitude theory in social psychology have strong similarities and constitute a basis for consumer decision and choice processes (Gibler and Nelson, 1998).

5. Methods

The study adopted a mix-method design; this was because it provided the avenue for the collection of both qualitative and quantitative data on*Analysis of the Rental Market in Informal Settlements Complementing Housing Needs in Cities: The Case of Port Moresby and Lae Cities in Papua New Guinea*. Studying the entire Port Moresby and Lae metropolitan areas could not be possible considering the cities' sizes and time within which to complete the study; therefore, a proportion of the population was selected to represent the entire metropolis of Port Moresby and Lae informal rental housing. Based on the selected sample, findings from the data collected were generalised for both Port Moresby and Lae. The data for both cities were collated to give a fair representative sample based on similar housing activities resulting in the similar responses. The

quantitative data requirements include rental values, cost of building materials and number of houses. Qualitative data requirements include identification of different property management activities, types of building materials used to build the rental houses in the informal areas and general perceptions and photographs on informal rental housing. The choice of mix approach was appropriate since numeric data and textual information were required for the study.

The total population of Port Moresby is approximately 364,125 and that of Lae is approximately 148,934 (Census, 2011) including both formal and informal dwellers. The total households for Port Moresby are 47 559 and for Lae City is 21 901 (Census, 2011). The study used three informal settlements in Port Moresby (Morata, 6 Mile and 4 Mile) and three informal settlements in Lae (Boundary Road, Bumbu and Kamkumeng). These locations of informal settlements are very close to the cities' low and medium formal rental housing areas. The criteria used to select the study locations are based on the structure of sub-markets for housing stated by Lim (1987). Three typologies of informality are invasion market, slum housing market and squatter housing market. Unfortunately, there are no records of the total informal rental housing in Port Moresby and Lae. The operation of informal rental housing in Papua New Guinea is a relatively recent phenomenon, coming after the nation's independence in 1975, and it is not regulated and seen as extra-legal. Therefore, this study has no total population in the data base to draw its sample population from, instead the researchersused purposive sampling method until arriving at a data saturated point.

For this study, in-depth interviews were conducted,and questionnaires were handed out to informal landlords (n=75) and informal tenants (n=75).The sample size was determined through data saturation point. Data saturation refers to the point in the research process when no new information is discovered in data analysis, and this redundancy signals to researchers that data collection may cease. Saturation means that a researcher can be reasonably assured that further data collection would yield similar results and serve to confirm emerging themes and conclusions. When researchers can claim that they have collected enough data to achieve their research purpose, they should report how, when, and to what degree they achieved data saturation. While it is recognised that this sampling method has not created a representative sample, the method is most useful because there are no pre-existing databases of the target population involved in the informal housing business. Therefore, the sample size is determined through data saturation point, a method that is widely used when it is hard to reach and identify the population.

Both paper questionnaire and interview method were used to collect data from the selected informal settlements. The informality and imperfect market nature of the housing market have further restricted the sampling to purposive sampling technique. Moreover, purposive sampling technique was used to interview 75 respondents comprising landlords and tenants in the rental housing market in informal settlements, based on several questionnaire surveys that yielded a combined representative sample. The interview was conducted by the researchers face to face with the illiterate or semi-educated participants while the questionnaires were given to the educated landlords and tenants to answer and return after a few days.

Landlords and tenants from the same households were interviewed, however not at the same time and neither the landlords nor the tenants were privy to the information obtained from each other. The individuals were then asked to identify another person who might be interested in participating in the research. They were then asked to contact that person and arrange a meeting between the researchers and the new interviewees. All interviews were conducted by the researchers andindividuals from each community who are fluent in both English and the local vernacular. The interviewsused semi-structured interview questions with open-ended answers. The time for conducting the research was between 4pm and 6pm for working class tenants and landlords during week days and continuedthrough the weekends. However, those with no formal

jobs especially the landlords were interviewed at the central place where they congregate for their daily pastimes, such as storytelling, local market activities and other communal gatherings.

Questionnaires were used during the research to collect different data that grasp the attributes, behaviours, attitudes and beliefs of the landlords and tenants that are involvedin the informal rental housing market. Each question in the questionnaires was written with clear instructions while the questionnaires consisted of both closed and open questions. Closed questions seek quantitative information aboutrespondent attributes(for example, level of educational attainment, age of landlord and tenants, rental fees and cost of construction). Moreover, closed questions asked respondents to select rental categories, rank items as an indicative measure of attitudes or opinions or select a point on a scale as indicative of the intensity with which an attitude or opinion is held.

In general, open questions were used in the questionnaires of informal rental housing with greater potential to yield the in-depth responses to match the aspiration of qualitative research: to understand how informal rental housing in Port Moresby and Lae is complementing housing needs in the cities. In addition, open questions are inviting landlords and tenants to recount understandings, experiences and opinions freely.

The primary data collected from the questionnaires and interview schedules were coded using scores and weights on spreadsheets. Themes and content analysis guided the deconstruction of the interview data with the themes driving the collation of information. All responses to interviews and questionnaires were coded using the same coding scheme depending on whether they were a landlord or tenant. The researchers independently coded the data and categorised them into themes to compare and analyse. The themes identified by the coding were used to unpack the operations of informal rental housing as a submarket of housing stock in Port Moresby and Lae city.

The questionnaires for the research were written in English and administered to the landlords and tenants in Tok Pisin (Lingua franca). *Tok Pisin* is an official language used widely in Papua New Guinea for business and as a medium of communication amongst people with different mother tongues. There are more than 800 languages in Papua New Guinea, and these are represented in Port Moresby and Lae. The feedback from the respondents is then translated and written in English for data analysis and reporting. Correlation analysis, Chi-Square (χ^2)and descriptive statistics are themes,while content analysis guided the deconstruction of the interview data with the themes driving the collation of information.

6. Findings and Discussion

The findings in this section are presented in three categories to reflect two research questions anda tested hypothesis, as follows:

6.1 A reminder of our first research question: What are the types and prices of informal rental housing available in Port Moresby and Lae compared with those in the formal market?

An average cost of K35, 900 was used by the landlords to construct their rental houses in the informal areas of Port Moresby and Lae (Table 3). The main building materials used for construction are corrugated iron sheets, timber and plywood, bricks, concrete and iron rods. These materials are mainly bought from hardware dealers. By comparison, standard housing units in the formal areas of Port Moresby and Lae may cost anything from K2500,000 to several millions of Kina (or dollars) depending on location and type of construction material. It is worth noting that many of the housing units in the formal areas, particularly in eye-brow locations, are more expensive than many houses in the cities of Australia, UK or USA, to name a few.

Table 3: The cost of building rental housing in the informal areas of Port Moresby and Lae

Total number of houses	Mean cost of construction(K)	Standard deviation	Minimum Cost (K)	Maximum cost (K)
75	35,900	26482.54	8,700	120,000

(Source: Fieldwork, 2019)

However, recycled materials from old buildings and other available local materials are also used in constructing the buildings for rental housing in the informal areas. As indicated by Chand and Yala (2006), landlords select the life span of their investment in housing and the types of building materials to use depend on the landlords' perceptions about the degree of tenure security of the land on which the building is built. The materials used to build and the manners in which the houses are built are so flexible that they can easily be removed if there is a threat of eviction or trouble in the area. Most building materials were bought gradually and accumulated by the landlords through other informal businesses as well as using their wages over the years.

Formal average rental fees are summarised from a publication by NRI on tracking of property pricing in Port Moresby (2012). The informal rental fees are taken from the survey respondents interviewed in this study (Table 4).

Table 4: Summarised schedule of rental fees in the informal areas and formal areas of Lae and Port Moresby
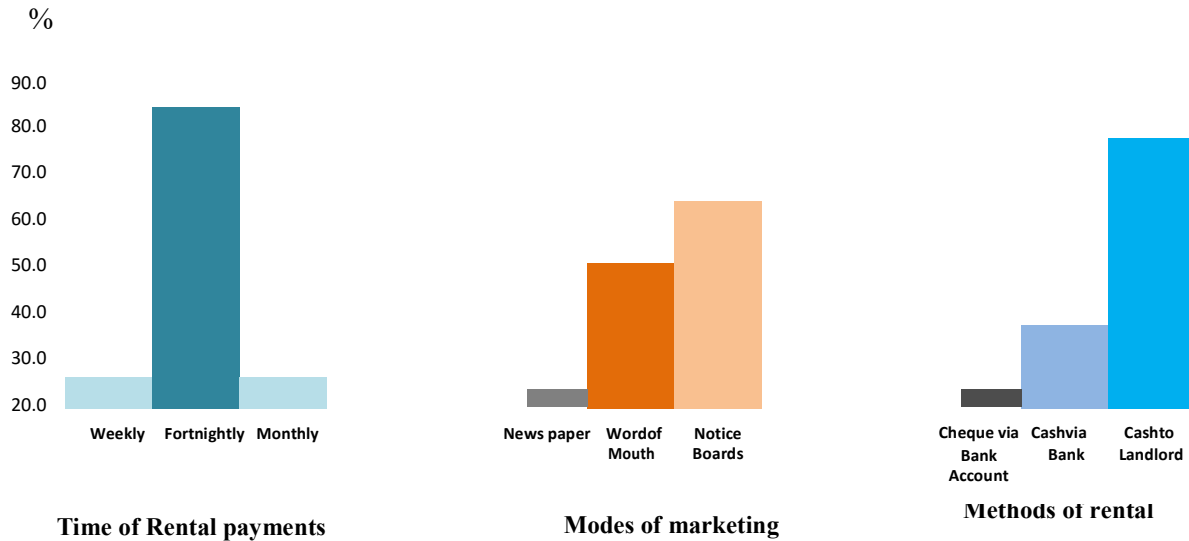
	Informal Housing	Formal Housing
Statistics	Rental Fees/month	Rental Fees/month
Minimum	K200	2,154
Maximum	K3000	22,100
Mean	K900	K8,900
Standard Deviation	K1290	K4880

*(**Source**: Fieldwork, 2019)*

As indicated in Table 4, the rental fees for formal housing are about 10 times higher compared to those for the informal areas. The minimum rental in the informal area is K200 per month and the maximum is K3000 per month, while for formal housing, the minimum is K2, 154 per month and the maximum is K22, 100 per month. The average rental for the informal is K900 per month while for the formal rental housing is K8, 900 per month with the standard deviations of K1, 290 and K4 880 respectively (Table 4). The great differences are due to the fact most houses in the settlements are mostly single rooms and of low quality compared to the formal areas with mostly apartments and housing units with 2 to 3bedrooms.

6.2 A reminder of our second research question: *How are the rental housing units in the informal settlements in Port Moresby and Lae Cities managed and operated for purposes of sustainability?*

According to Figure 2, there are three major property management activities performed by the landlords and tenants in the informal rental housing market. However, Figure 2 only represents the highest, middle and lowest of each of the three major property management activities.

Figure 2: The three main activities in the informal rental housingmarket in Port Moresby and Lae (n=75 Tenants and Landlords) *(Source: Fieldwork, 2019)*

The three major property management activities in the informal rental housing market are: monitoring time of rental payments, modes of marketing and methods of rental payment (Figure 2). Almost 80% of the tenants interviewed pay their rentals on a fortnightly basis, while only less than 10% pay their rentals on a weekly or monthly basis (Figure 2). Most landlords interviewed stated that collecting rentals during the pay day of the tenants is more convenient than on any other days. Through informal discussions, the landlords claimed that the longer the time delays experienced in collecting rentals the more the tenants tend to ignore payments and spend money on other pressing needs resulting in rental defaults.

According to Figure 2, about 60% of the tenants interviewed indicated that they found their rental accommodation through notice boards and close to 40 % stated that they found it by word of mouth through relatives or same ethnic groups. In many informal rental markets, rental units are rarely advertised, and potential renters will find accommodation through social networks like friends and relatives. This means that the rental amounts are difficult to standardise, and rental amounts will vary across a city or even across a settlement. As in the formal rental market, rents will rise with location, size of dwelling and quality of the structure (Gilbert, 2003).Less than 3 % claimed that they found their rental housing in the informal market through local newspapers. Through field inspections, many landlords in the informal rental houses have illegally connected power and acquired land; therefore, they feel safer in marketing their rental houses by words of mouth rather than through other formal means, which could expose their shady deals.

According to Figure 2, 74% of tenants interviewed pay cash directly to the landlords and 23% make cash deposits into the landlords' account. Only 3% of the tenants interviewed paycheque to the landlord's bank account. Most of the landlords are unemployed and are of similar socio-economic characteristics with most tenants. Hence, most landlords tend to depend much on their rentals to support their family for their daily needs.

As pointed out by Gunter (2014), residential tenancy in this market is equally informal, with payments often taking place in cash and oral agreements being the norm. Landlords do not function as in formal market and they do not issue rent receipts or tenancy agreements (Hooper &Cadstedt, 2014). These awkward practices put tenants in a vulnerable situation where rents can be increased without notice and safety regulations and basic maintenance ignored with little

recourse. However, because of the lack of formal housing in this segment of the market, tenants have little choice but to accept the conditions, move out or be forcibly removed. In similar informal rental markets in Tanzania, it has been indicated that tenants are at high risk of being evicted as no policy exists to protect them (Cadstedt, 2010).

In many informal rental markets, rental units are rarely advertised, and potential renters will find accommodation through social networks like friends and relatives (Gunter, 2014). This means that the rental charges are difficult to standardise, and rental amounts will vary across a city or even across a settlement. As in the formal rental market, rents will rise with location, size of dwelling and quality of the structure (Gilbert, 2003).According to Endekra et al. (2015), houses informally developed in unplanned areas are often advertised mainly for rent.

Plate 1: General notice board in Boroko (Port Moresby) and Lae top town for informal rental housing advertisements *(Source: Motoro, 2019)*

6.3 Test of Hypothesis
H_1**:** Our hypothesis states that there is apositive relationship between the rental charges and types or standards of housing needs in informal settlements in Port Moresby and Lae

Table 5: Chi-Square between types or standards of housing and rental charges

Rentalcharges (p.c.m)	Types of Housing constructed		Total	$\chi^2(3)$	P
	Permanent	Semi-Permanent			
K0 – K600	21 (24.0)	15 (12.0)	36	2.471[a]	0.481
K601 – K2000	25 (22.7)	9 (11.3)	34		
K2001 – K3000	3 (2.7)	1 (1.3)	4		
Above K300	1 (.7)	0 (0.3)	1		
Total Population Tenants(n)	40	15	**75**		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .33, therefore is good toproceed. Number in brackets represent the expected values of cell and outside the bracket is thecount

(Source: Fieldwork 2016)

With 3 degrees of freedom, the chi-square value is 2.471, which gives a P value of 0.481 which is not significant at 0.05 (2-tailed). Therefore, the hypothesis is not accepted by available evidence, while the null hypothesis is accepted. In other words, there is no significant relationship between the rental charges and types or standards of housing needs in informal settlements in Port Moresby and Lae. This finding is consistent with the situation in both Port Moresby and Lae Cities where housing rents are considered too high and unaffordable, even in the informal housing areas.

The tenants interviewed took into consideration other factors like location of the housing unit in proximity to their work places, availability of social services and utilities as well as security reasons in the city. Furthermore, location is a very important factor for choosing where to live in the informal settlements in Port Moresby and Lae that are very vulnerable to frequent ethnic clashes and criminal activities. Most people rent their houses in the informal areas that are predominantly inhabited by their own ethnic groups for fear of being attacked by their enemies or other rivalry ethnic groups in the city. The cost of commuting to their work location is also of paramount importance in choosing the location as well. Therefore, the standards of buildings and amounts of rents charged do not matter because most of the rents are less than K600 per month (p.c.m) across most informal settlements. A study by Endrekaet al. (2015) also indicates that location is the main factor in choosing rental housing in Port Moresby and Lae. Furthermore, both formal and informal housing markets regard location as one of the main factors behind selection of rental accommodation in Port Moresby and Lae city.

7. Concussion and Recommendations

In this paper, an attempt has been made to investigate the functions and characteristics of rental housing in the informal areas of Port Moresby and Lae cities. Furthermore, this paper also points out the positivity that is brought about by the informal housing market segment to ease housing problems in Port Moresby and Lae. A hypothesis was tested, and two research questions were answered. The hypothesis tested the relationship between the types of rental housing and the rental fees charged. The result indicates that there is evidence of no significant relationship between the rental fees and the type of rental housing and standards (Table 5). The tenants interviewed took into consideration other factors like location of their housing unit in relation to their workplaces, availability of social services and utilities as well as security reasons in the city. The first research question was mainly an attempt to investigate the types and prices of informal rental houses in Port Moresby and Lae.

Findings indicate that houses in informal areas were built using scraps from wastes, locally sourced materials andhardware materials. The mean rental fee in the informal settlements was K900 (USD $231) as of 2015 (Table 4), while according to Table 3, the median cost of constructing a house for rent in the informal settlements was close to K36,000 (USD $9,000) as of 2015. The three types of markets supplying the informal rental housing are: Invasion Housing Market, Squatter Housing Market and Slum Housing Market (Table 1).Moreover, houses on customary land are mostly high covenant while those on state land are semi-permanent that can be easily moved when evicted. This is due to the level of certainty and tenure security. The second research question explores how rental housing in the informal settlements are managed and operated.Findings show that rental houses in the informal settlements were advertised through word of mouth and local notice boards. It is safer to use word of mouth and local notice boards to hide their shady deals. Most tenants pay their rents every fortnight via cash to the landlords (Figure 2).

The findings in this paper have shown that the rental houses in informal settlements are nonetheless functioning and operating in a way that looks acceptable to the stakeholders butis unacceptable by legal and urban planning standards. The findings further show that the activities

of rental housing actors in the informal settlements seek to mirror the operations of the formal market. The landlords in the informal settlements of Port Moresby and Lae see rental housing as an investment for economic gain that may help them penetrate the formal housing market over time. Their rental fees and costs of construction are like those of most houses at the lower market segment of formal housing. The landlords and tenants in the informal settlements in Port Moresby and Lae are operating in an extra-legal arrangement. That is, they can resolve their differences at arbitration for whoever defaults in the terms and conditions inserted in the tenancy agreement. Most landlords often realise the economic incentives that are brought by rental housing in informal settlements rather than just the accommodation. The rental market in the informal settlements in Port Moresby and Lae hasprovided alternative housing for low to medium-income earners. Hence, the housing market in the informal settlements is seen asdead capital.

Furthermore, the informal rental housing is now home to manyworking-classresidents of Papua New Guinea who cannot afford a decent accommodation in the formal housing market. As argued by the eminent economist, de Soto (2000),in his highly regarded work on capitalism and the urban poor, the value of most informal squatter settlements around the world is trillions of dollars but remain dead capital. By government introducing appropriate laws, formalisingof the informal rental housing sector can inject life to this dead capital and transform thecountry's economy. By extension, the informal settlements that accommodate informal rental housing in Port Moresby and Lae must be turned into suburbs with house owners holding their own titles and connected with proper development of trunk infrastructures. In addition, the formalisation of settlements and legal titles issued to landlords can be used to access funds in financial institutions to take leverage on their investment in housing development.

Therefore, it is hoped that the following recommendations if thoughtfully implemented can turn things around and alleviate or obliterate the present misery associated with squatter settlements in Port Moresby and Lae:

7.1 Landlords in informal rental housingsector
The landlords take high risk in constructing costly rental housing in the illegal and informal areas of the city. They build rental housing to earn income as well as accommodating the city's labour force. They pay tax to the state when they buy their building materials from the hardware stores. They sometimes pay for their utilities if located near the supplier. Therefore, the landlords must be rewarded for the risks suffered. They can form landlords' associations and register their interests to protect their big investments in the informal areas that are vulnerable to ethnic clashes, eviction and natural disasters. The associations will bring their concern to the responsible organisations and the government as well as the non- governmental organisations and external donors.

7.2 Tenants in the informal rental housing sector
The tenants are the most vulnerable stakeholders in the rental housing market. Most of these tenants are working in the formal areas, yet they pay high tax to the state and could not be accommodated in the formal housing sector having been thrown out by the high rentals that are reacting to the market forces in the economy. Therefore, their employers must provide them staff housing to reduce the number of people who work in the formal areas but live in the informal settlements. It is not good for the employers turning a blind eye on their workers regarding where and how their workers live in the city.

7.3 Formal housing market
The formal housing market is mostly controlled by private companies and shylocks in the housing market, which provide houses that are targeting only the rich or middle-class minority in

the country. Therefore, the formal housing market must produce houses for all market segments in the city targeting all spectrums of incomes. They must avoid using expensive building materials and use locally available building materials that could reduce cost. The architects and the builders must start designing cost-effective buildings that are affordable, energy efficient, green, and that cost less to build and are sustainable.

7.4 The government

a) The government is a strong key player in any social, economic and political setting. The government must play its predominate role as a regulator and facilitator in the housing development process and housing market in thecountry.

b) The government should upgrade and formalise the squatter settlements that are evidently providing rental housing for its city labour market, through Public Private Partnership (PPPs).

c) From observation, eviction from informal areas that accommodated the city's labour force was done years ago without any resettlement plan or compensation payment. Therefore, the government must put in place sustainable mechanisms to administer the eviction exercise without punishing the landlords and tenants of informalhousing.

d) Informal rental housing is providing shelter for many people who could have been homeless. Therefore, the state should begin to issue Certificates of Occupancy accompanied by a licence to operate so that landlord's tenure security is protected as compensation for investing in housing in the illegalenvironment.

e) The rental houses in the formal market are very expensive and unaffordable to many working-class citizens and residents. Therefore, the government should tactically reduce building standards in the informal areas, cut down tariffs on imported building materials and encourage use of more locally available building materials for building developments in towns and cities.

7.5 Further Research

i. Millions of dollars (Kina) are being invested and circulated in informal rental housing business. Therefore, further research must be conducted to capture the socio-economic components of this invisible realestate; and

ii. There must be proper survey done by the PNG Statistics Office on housing in the informal rental housing areas (squatter settlements) located in the urban areas of PNG.

Acknowledgement

References

1. Adebayo, P. W. (2011). Post-apartheid Housing Policy and a Somewhat Altered State Role: Does Incremental Housing Still Have a Place in South Africa? *The Built and Human Environment Review*, 4(2), pp. 3-16.

2. Anand, N., &Rademacher, A. (2011). Housing in the urban age: inequality and aspiration in Mumbai. *Antipode*, 43(5), pp. 1748-1772.

3. Bargain, O. &Kwenda, P. (2010). Is Informality Bad? Evidence from Brazil, Mexico and South Africa(No. 4711) Bonn, IZA Discussion Papers:

4. de Soto, H. (2000). *The mystery of capital: Why capitalism triumphs in the West and fails everywhere else*. London: Bantam Press. [Google Scholar]
5. Fekade, W. (2000). Deficits of formal urban land management and informal responses under rapid urban growth, an international perspective.*Habitat International*, *24*(2), pp. 127-150.
6. Gilbert, A. (2003). Rental housing: An essential option for the urban poor in developing countries. Ney York, United Nations Human Settlements Programme.
7. Hooper, M. & Cadstedt, J. (2014). Moving Beyond 'Community's Participation: Perceptions of Renting and the Dynamics of Participation around Urban Development in Dares Salaam, Tanzania. *International Planning Studies*, 19(1), pp. 25-44.
8. Huchzermeyer, M. (2009). The struggle for in-situ upgrading of informal settlements: a reflection on cases in Gauteng. *Development Southern Africa*, 26(1), pp. 59-73.
9. Kaitilla, S. (1999). Invisible real estate agents and urban housing development on customary land in Papua New Guinea. *Environment and Urbanisation*, Vol. 11, Issue 1, pp. 267-276.
10. Landman, K. & Napier, M. (2010). Waiting for a house or building your own? Reconsidering state provision aided and unaided self-help in South Africa. *Habitat International*, 34(3), pp. 299-305.
11. Maass, S. M. (2011). Rental housing as adequate housing. *Stellenbosch Law Review, Stellenbosch Regstydskrif*, 22(3), pp. 759-774.
12. Moolla, R., Kotze, N. & Block, L. (2011) Housing satisfaction and quality of life in RDP houses in Braamfischerville, Soweto: A South African case study. *Urbaniizziv*, 22 (1), pp. 138-143
13. Napier, M. (2009). Making urban land markets work better in South African cities and towns: arguing the basis for access by the poor. In Lall, S., Freire, M., Yuen, B. &Rajack, R., (eds) *Urban Land Markets,* pp. 71-97, New York, Springer.
14. Poulsen, L. (2010). A room in the city: Strategies for accessing affordable accommodation. Urban Forum 21(1).
15. Van Gelder, J. L. (2009) Legal tenure security, perceived tenure security and housing improvement in Buenos Aires: an attempt towards integration. *International Journal of Urban and Regional Research*, 33(1), pp. 126-146.
16. Warren, G.; Heywood, C. (2016). Investigating demand side stake holders' ability to mainstream sustainability in residential property. Pacific Rim Property Research Journal, 22 (1), 59–75.