# THE NEED TO BUILD UPWARDS: A STUDY ON PERCEPTION OF VERTICAL/ APARTMENT HOUSING AMONG MIDDLE INCOME GROUP OF LAHORE

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## ABSTRACT

*Due to rapid increase in population, Pakistan is facing an acute shortage of housing units and lack of affordability is adding to this housing crisis. Currently, the residential skyline of Lahore exhibits that Vertical/Apartment housing is not as popular as detached housing.* This study highlights *Vertical/Apartment housing as a possible strategy to tackle increasing shortage of housing for the middle income groups in Lahore. Furthermore, it explores the perceptions of people of Lahore about this type of housing in order to have a qualitative design for Vertical/Apartment housing and thus raising its acceptability. Cross sectional survey design was used and the research subjects chosen were people of Lahore who have experienced Vertical/Apartment housing either visually or practically. Target areas were Vertical/Apartment and Detached Housing Communities. The demographic analysis shows different variables have varying degree of impact on perception of Vertical/Apartment Housing. Privacy, Space Sizes, Safety and Security turned to be the most important attributes that influence the Perception of Vertical/Apartment Housing among middle-income people of Lahore. Public transport facility, Day to day shops and Public parks were the highly ranked community facilities which respondents want to have near their apartment. Study concludes that people are more concerned about practical and quality aspects of personal as well as shared spaces of the dwelling in comparison to the luxury facilities. Cross Tabulation, ML-Chi-square Test, Phi & Cramer Tests were used. Limitations are presented below. Future research avenues are also suggested.*

***Keywords:*** *Vertical Housing; Apartment Housing; Perception; Lahore; Middle Income*

## Introduction

Migration to cities, or 'urbanization' has been a dominant phenomenon across the globe as people are driven to urban centers in the quest of higher living standards, better health facilities, education and employment opportunities. Almost half of human kind now lives in cities with expected increase to 60% within next two decades According to Council, (2013) the urban areas of the world will absorb all the population growth estimated over the next four decades while Asia in particular is expecting half of its the population to be urban by 2020 (Nations, 2011). Pakistan is facing an acute shortage of housing units with increase in backlog of housing from 4.3m (census 1998) to 6.0 million according to the Government of Pakistan 2005 (Haider et al., 2006).

Lahore, a socio-economic, political and cultural center of Punjab's population density has grown from 3565.9 persons per km2 in 1998 to 4881.5 persons per km2 with increase in population at the rate of 3.46% per annum compared to 2.79% increase of housing per annum only. The Master Plan for Greater Lahore (1966) projected the demand of 80,399 dwelling units, Lahore Urban Development and Traffic Studies (1980) as 300,000 units whereas National Engineering Services Pakistan (NESPAK) in 2001 established urban housing backlog of around 154,000 dwelling units. Integrated Master Plan for Lahore-2021 (IMPL-2021) shows maximum supply of 2500 plots per annum by formal housing market. The rise in housing supply versus demand gap is due to the unmatched pace of urban population growth

rate.The continuous expansion of urban centers is exploiting the resources badly and creating an unjust focus of the officials only on these big cities. The urge to possess a separate residence instead of owning an apartment invited public or private developers to develop peripheral low density housing schemes that too lead to major problems like; uncontrolled expansion of city increaseddistances and waste of important suburban agricultural land. This is leading to drastic hike in prices of urban land and construction costs in Punjab that are far above the baseline in thecity of Lahore. Survey of residential land prices and construction cost indicates that a modest dwelling unit of 750 sq.ft. with average construction cost of Rs. 600-950 per sq.ft. is 6times the income for only plot and 14 times for the complete unit. These values compared with other countries having well performing real estate markets are too high (Bank, 2006).

Land mafia in Pakistan is responsible for acquiring state owned land at nominal prices for development of housing schemes that is controlled by the elites of military or civil (Haider et al., 2006).These housing schemes transfer the areas to the next elites after developing the land to be put up for sale in open market where the prices are too high for purchasing power of middle Income households. Such schemes are encouraged by Government policies that do not fulfill housing requirements of low and middle-income families consequently leading to huge housing shortfall (Jacobsen et al., 2002).

One possible solution to housing shortage for middle income, without creating urban sprawl is to build upwards. Urban consolidation and smart growth by concentrating on compact development are the solutions to control urban sprawl of the cities. This probably had been the reason for the introduction of multi-storey residential buildings, called apartments or vertical housing, where people only have to pay for the construction costs and a small portion of the land costs for living in a reasonably social and secure environment. However; it has not been managed in a serious manner by public or private sector in Lahore. Apartments if provided at all are often of poor quality design failing to meet residents' expectations (Habibi&Asadi, 2011). Furthermore the development of vertical/apartment housing in Pakistan is fairly popular in cities such as Karachi and Islamabad where people have accepted this change. Conversely people in Lahore, accustomed to low density and low-rise independent housing, are still resistant to the idea of vertical housing. *This study emphasizes* the problem of lack of housing for middle income group and highlights the need to increase the density by providing vertical/ apartment housing. It will also investigate the issues related to the acceptance of vertical housing for middle income families in Lahore.

## Research Objectives

The research aims;

- ✓ To find the acceptability/perception level of vertical Housing among Middle Income people of Lahore.
- ✓ To highlight various architectural attributes which influence the perception & improve the acceptability

### Terms Used

Merriam Webster dictionary states **Perception** as "*The way in which something is regarded, understood or interpreted*".

**Apartment housing**: A single level separate residential unit normally contained in a multiunit building. The term can be used interchangeably with vertical housing or multifamily unit ([IREM], 2003).

**Housing attributes** are the subset of characteristics possessed by housing/dwelling along with other goods that made buyer's decision of housing. These are same for every buyer but ranking for each attribute may vary from person to person (Morris & Winter, 1978).

**Preferences** are transitory state of human mind about what type of housing is feasible/desired at current time within existing limitations e.g. budget, desired

housing attributes and quality that dwellers wants to have (Morris & Winter, 1978).

## Literature Review

### Perception of Vertical/Apartment Living

Perception of residents of Vertical/Apartment housing depends on a number of non-building factors which includes resident's personal and social characteristics and context of the neighbourhood (location of building within the urban fabric of city, resident's economic status, housing choices available, population density, and resident's stage of life, gender, design of dwelling and culture of the area) (Sinnett et al., 1972; Gifford, 2007). It means Vertical/Apartment housing can be more appropriate for one gender than the other, one age group more than the other and one culture more than others. The opinion about perception of residential environment by vertical and horizontal residents differs considerably in individual's profile characteristics (gender, age, highest education attained, family size, occupation and monthly household Income etc) (Liu, 1999).While comparing the housing environment perception of residents of high-rise and non-high rise of Kolkata, the housing environment came as one of vital determinant of quality of life (Lawrence, 2000). Residents of high-rise, irrespective of genders perceived their environments to be unclean, warm, uncomfortable, suffocating and an unsuitable place for living (College, 2009). British apartment residents complained more about privacy, segregation, seclusion, noise and showed less satisfaction than the residents of individual dwelling units (Moore, 1975).

### Housing Satisfaction

Satisfaction is no doubt an important result of living in one's dwelling, even though literature proves that it is not the only consideration. Devlin, (1980) considers quality of social relations, fear of going outside, and management of dwelling units as factors for measuring residential satisfaction. The complete residential satisfaction of all high-rise or all low-rise inhabitants is almost impossible. A number of studies showed highest satisfaction level among residents of Vertical living (Gifford, 2007). Almost 90 percent of the multi-storey inhabitants of Glasgow and more than 75 % of Singaporean people residing in high-rise public housing are satisfied with their residential environment (Jephcott, 1971; Yeh& Tan, 1975). Satisfaction level with the residence reduces with the increase in height (Rohe, 1985-86).

### Impact of Profile of Resident on Housing Perception

Literature shows the influence of housing preferences with respect to age, size of household, income, education and current housing (Sirgyet al., 2005). Researches on elderly in Vertical verses horizontal living produced varied outcome. Lawton et al. (1975) reported that elder residents of low-rise like their residences more than high-rise residents in US. Dasgupta et al. (1992) found a great dissatisfaction with apartment living among the elderly in India. Another common trend shown by the literature is the dissatisfaction of high-rise residents with small children about their dwellings. Young bachelors and childless couples in Chicago prefer vertical living on suburban area housing (Wekerle& Hall, 1972).

Socioeconomic attributes (income and education) are significant but have fairly less impact on housing preferences (Niedomysl, 2008). Residents of high–rises having moderate-income are less satisfied than detached housing residents while properly designed middle-income high-rises have a positive impact on household's dynamics and could offer a satisfying housing (Mackintosh, 1982).Tenure of a residence moderates satisfaction amongst those who owned detached residences, while among renters; high-rise residents were more satisfied (Gifford, 2007).

### Preferences for Vertical Residential Living

Louviere (1988); Molin & Timmermans (2002)examine a wide range of housing attributes that people prefers. It includes;

- Housing attributes includes no. of bedrooms, form of housing, Rent, size of open areas and possession period.
- Environment attributes consist of location of parking from residence, privacy, view, green spaces and children's play areas.
- Economic and social ties include relatives, friends, work in municipality and previous residential place.
- Relative location characterizes easy access to school and work place, public transport, day today shops, community centres and leisure facilities.

Commuting time is a significant factor in the location choice for residence (Levine, 1998). A research on commuting time between residence and work place concluded that, except taking into account homework distance, perceived quality and safety of neighbourhood are also important factors (Wachs et al., 1993). Location as attribute is considerably more significant than the residence itself and clients prefer accessibility and "likability" more than quality of residence (Kauko, 2006). In contradiction to this some researchers concluded accessibility as least significant housing attribute. Consideration for dwelling quality is more important for client than environmental considerations while location or accessibility to lowest at buyer's preferences Whitbread, 1978). Besides major attributes such as cost, size, type and location of dwelling, elements such as design of living/dining room, interior decoration, energy use also draw researcher's attention (Lawrence, 1987; Wan &Yik, 2004). Al-Momani (2000) stated space and cost of housing as major housing attributes considered by consumers along with interior/exterior building design, functionality, community facilities and proximity to amenities.

## Positive & Negative Aspects of Vertical Residential Living

Literature shows different types of residences have different pros and cons for different residents.

One of the major issues of urban areas is the Land scarcity. Vertical buildings with smaller footprints can offer more green spaces as well as accommodate more families units by saving precious agricultural and industrial land. It also lowers the cost of facilities like drainage; transport and water supply etc (Broyer, 2002; College, 2009).

Mostly the location of apartment buildings is an urban center that's why many facilities and transportation options are nearby (Churchman, 1999).

In apartment buildings, residents of upper floors experience less noise, much fresher air and great views. By paying a nominal fee, residents are free from maintaining common spaces, gardens and repair works. For some dwellers, these buildings promote better social interaction among neighbors (Gifford, 2007). Controlled entrances reduce the fear and rate of crime also location of the building plays an important role in this regard (Luedtke&Assosiates, 1970). Crime appears to be more normal if buildings having easy escape routes or at corners (Brill, 1972).

Closeness to nature is a major factor for liking horizontal while quality of social life for liking Vertical living (Brantingham, 1975). Residents of high-rise offered more negative remarks for their residence comparing with low-rise residents who have many good reasons for having positive perception about their residence (Devlin, 1980). Vertical Housing causes various unpleasant consequences also i.e. reduced helpfulness, poor social relations, suicide, stress, behaviour problems, fear and poor child development which ultimate cause loneliness and anxiety among the dwellers (Angrist, 1974; Conway & Adams, 1977; Gifford, 2007). It has been noticed that children residing in high-rise have more behaviour problems (loose temper and bedwetting) than in low-rise (Ineichen& Hooper, 1974). Contradicting, there is no difference in behavioural problems among children whether they reside in any type of dwelling (Richman, 1974). Evans et al., (1998) reported greater patients of high blood

pressure, lower physical activity and respiratory issue in vertical living comparing with other residential types. Lack of open spaces and play areas in apartment buildings are unfavourable factors by housewives for the physical and mental health of children and living on height results in the feeling of being depressed, impersonal, uncomfortable & boring (Chatterjeeet al., 2003). Military families of British living in mid-rise apartments (3-4 storeys) suffers neurosis 3 times more than detached housing resident (Fanning, 1967), while Greenberg, (1997)said that it is not always necessary that vertical housing compress one's strength of mind. People living in high-rise usually have poor relationships among neighboursas well as among themselves (Korte&Huismans, 1983). Edwards (1982) concluded that divorce rate is higher in high-rise dwellers in comparison to low-rise. Overall feeling of residential community is found less in multi-family housing except where the neighbourhood has maximum people from same school, work place or having same interests Forrest et al., 2002).Vertical living often discourages social interaction but that can be improved by creating spaces that attracts mixed age group of people to sit and communicate.

### Defining Middle Class

Nayab, (2011) reported a study conducted under the umbrella of Pakistan Institute of Development Economics (PIDE) by using the data of The Household Integrated Economic Survey (HIES), from the section of PSLM (Pakistan Social and Living Standards Measurement), stated that middle income class is a multidimensional entity, Rich and poor people belong to upper and lower class without defining any boundaries.

## Theoretical Framework

Relationship of profile of respondent with the Dependent variable i.e. Perception has been checked by applying the test of association between the two. F*actors related to* physical, social and economic attributes of Vertical/Apartment living were highlighted which force the respondents to like or dislike vertical housing. Further; a list of requirements or preferences for an ideal apartment was identified by those respondents who are in the favor while*Determinants or* "push Factors" were identified by those who are not in the favor of vertical/apartment housing.

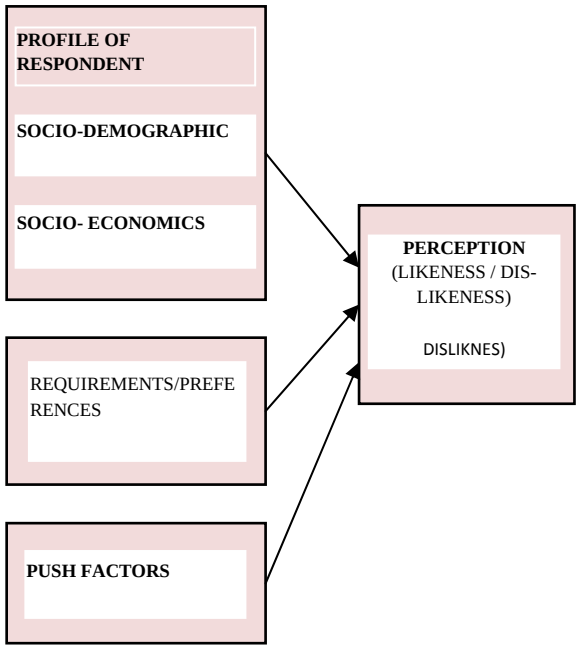



Figure 1 Theoretical Framework

## Methodology

The main purpose of this cross-sectional study was to ascertain which features of the Apartment and its surroundings are most important attributes for selection of an Apartment. A pilot study was also carried on a group of 30 randomly selected subjects. The research subjects chosen were people living in Lahore who have experienced Vertical/Apartment housing visually or practically and they belong to the middle Income Group of Lahore. Target areas were classified into Vertical and Detached Housing Communities. Middle income localities were selected on the basis of NESPAK Integrated Master Plan of Lahore-2021 including Samanabad, Wahdat colony, Allama Iqbal Town, Gulshan-e- Ravi, Mughal pura and the areas in the vicinity of University of Engineering & Technology. A two-step sampling technique was adopted: Selection of target areas and sampling within the target areas by random walk survey.

### Criteria for Selection of Subject

Subject must fall in the age group of 20 to 60 years having Monthly household Income between Rs. 20,000 to Rs.100,000 and must be the resident in the targeted area for at least two years.

Total 400 respondents were contacted, while 302 returned useable questionnaires. Survey questionnaire consists of three sections. Section 1 of the questionnaire was about Socio-economic and socio–demographic profile of the respondent. Section 2 was to see how willing respondents perceive their Apartment. A variety of indicators were identified and respondents were asked to indicate how important different features were in the choice of new Apartment, a five-point likert scale was used. Some close ended questions were formulated to collect information about respondent's preferences regarding Location, Purchase, Tenure, Size, Maintenance and Type of Apartment. Section 3 was filled by those respondents who showed Dis-likeness for Vertical/Apartment housing. Different determinants or 'Push Factors" were identified because of which people dislike this type of housing. Dicohtumus scale was used to measure this section. Analysis of the Data was done by using SPSS 15.0. Cross Tabulation, ML-Chi-square Test, Phi & Cramer Tests were used. Frequency tables and mean values were also calculated.

## Analysis& Discussion

### Reliability

The Reliability statistics of questioner are shown in table 1

Table 1 Reliability Statistics

| | No. of Items | Cronbach's Alpha |
|---|---|---|
| Section 2 | 26 | 0.68 |
| Section 3 | 20 | 0.79 |

### Perception/Choice of Respondent:

Table 2 shows that out of 302 respondents 31.1 % are in the favour of vertical/apartment housing and 69% shows dis-likeness which rationally mean that almost 2/3 of the middle income population group of Lahore don't like apartment as their residential choice and only 1/3 are in the favour.

Table 2 Acceptability of Vertical/Apartment Housing

| Perception | Frequency | Percent |
|---|---|---|
| Dis-likeness | 208 | 68.9 |
| Likeness | 94 | 31.1 |
| Total | 302 | 100.0 |

## Perception/Choice With Respect to the Profile of the Respondent

### Gender & Perception

The Cross tabulation between Gender and Perception (likeness/dis-likeness) in Table 3a shows that among those respondents who showed positive perception towards vertical/apartment living, 34.6% were male while remaining 23.1% were females.

### Age & Perception

The age bracket in Table 3a shows that between 20-30 years the percentage of likeness is 40.8%, between 30-40 years is 31.1%, between 40-50 years is 36.2% and between 50-60 years is 12.8% which means that percentage of acceptability of apartment housing is maximum in younger age group that is 20-30 years and dis-likeness is maximum in highest age bracket (50-60 years) that is 87.2%.

### Education & Perception

A clear change in percentage of Likeness and Dis-likeness can be observed in the result of cross tabulation with the change in the level of education. Table 3b depicts that almost half (41.9%) of those who expressed a dislike for Vertical/Apartment housing were those who

have Inter as their highest qualification and percentage reduces with the raise in education level.

### Income & Perception

The results of monthly household income and Perception of respondent are almost same for every income group except the highest income (80,000–100,000) group within the sample showing little interest i.e. 19.2% towards Apartment living. The variation is maximum +- 4% ranging from 66.1-70% for dis-likeness and 30-33.9% for likeness that is not much considerable and It seems there is no or least relationship between monthly household income and Perception of Vertical/Apartment housing for target population of Lahore.

### Current housing type and Perception

Table 3c indicates that residents of detached housing (owned or rented) ranked apartemt housing more negative campared with apartemnts residents.

### Tenure of Residence & Perception

Table 3c also shows that almost ½ of the total respondents of apartment housing have positive perception about residence &least variation can be seen in the positive/negative perception amongst the apartment residents whether the tenure of the apartment is owned or rented i.e. 47.5% & 52.6% respectively. On the other hand detached housing residents like their residences at a much higher percentage and shows strong dis-likeness for Vertical/ apartment housing.

### Chi-Square Test and Phi & Cramer's V Test

Table 4 shows the results of strength of association with all the above discussed variables from Statistical Chi Square Test of Association and Phi & Cramer test.

The Chi-Square value "r" for the association between gender and housing perception was obtained as 3.936 at 1 degrees of freedom and 5% level of significance, indicating clearly that gender is a significant factor for having positive/ negative perception of apartment living for people of Lahore and results of Phi and Cramer's V test i.e .114 also shows a week positive relationship between the two variables. See Table 4

Similarly P-value and Phi coefficient and Cramer's V values for age also indicates a moderately strong relationship with choice of housing type for the People of Lahore in Table 4.

The chi square Value=18.912 further affirms the presence of a moderate positive relationship between Highest Education attained and Likeness/dis-likeness for Apartment living. Similarly a week relation can be seen for monthly household income, also.

A moderately strong relationship can be observed with Chi-Square value=38.267 & Phi and Cramer's value= 0.356>0.25 between Current residence of the respondent & likeness/dis-likeness for Vertical/ Apartment housing.

If respondent's current residence is house then table affirms a significant relationship between perception and choice of residential type (Chi value=45.945 & P<0.05) While the (chi square Value=1.580) for Apartment as a current residence shows no association between the two variables as the P-value is 0.454 >0.05.

Figure 2 shows that among the 94 willing respondents, maximum percentage like vertical/ apartment housing for economic reasons followed by security and then social reasons

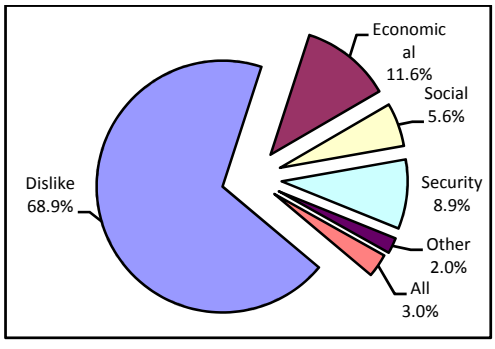



Figure 2 Pie Chart for Reasons of liking Vertical/Apartment Living

Table 4 Strength of relationships between various variables and Perception of choice of housing type

| Perception w.r.t. | Chi-Square Test | | | Symmetric Measure | |
|---|---|---|---|---|---|
| | Pearson Chi-Square | | | Phi & Cramer's V | |
| | Value "r" | df | Asymp. Sig.(2-sided) | Value | Approx. Sig. |
| Gender | 3.936 | 1 | .047 | .114 | .047 |
| Age | 13.347 | 3 | .004 | .310 | .004 |
| Education | 18.912 | 4 | .001 | .350 | .001 |
| Income | 2.039 | 4 | .729 | .082 | .729 |
| Current Residence Type | 38.267 | 1 | .000 | .356 | .000 |
| Tenure of Current Residence | 45.945 | 2 | .000 | .541 | .000 |
| Tenure of Current Residence-Apartment | 1.580 | 2 | .454 | .105 | .454 |

Table 3a Cross Tabulation Perception/Choice with respect to the Profile of the Respondent

| | | | Gender | | | Age | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Female | Male | Total | >19<30 | >29<40 | >39<50 | >49<61 | Total |
| **Perception (Likeness / Dis-Likeness)** | N | Count | 70 | 138 | 208 | 71 | 51 | 45 | 41 | 208 |
| | | %within | 76.9% | 65.4% | 68.9% | 59.2% | 68.9% | 73.8% | 87.2% | 68.9% |
| | | % of Total | 23.2% | 45.7% | 68.9% | 23.5% | 16.9% | 14.9% | 13.6% | 68.9% |
| | Y | Count | 21 | 73 | 94 | 49 | 23 | 16 | 6 | 94 |
| | | %within | 23.1% | 34.6% | 31.1% | 40.8% | 31.1% | 26.2% | 12.8% | 31.1% |
| | | % of Total | 7.0% | 24.2% | 31.1% | 16.2% | 7.6% | 5.3% | 2.0% | 31.1% |
| Total | | Count | 91 | 211 | 302 | 120 | 74 | 61 | 47 | 302 |
| | | %within | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | % of Total | 30.1% | 69.9% | 100.0% | 39.7% | 24.5% | 20.2% | 15.6% | 100.0% |

Table 3b Cross Tabulation Perception/Choice with respect to the Profile of the Respondent

| | | | Higher education attained | | | | | | Monthly Income | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Masters** | **Grad.** | **Inter** | **Matric** | **Middle** | **Total** | **<20K** | **>20K< 40 K** | **>40K< 60K** | **>60K< 80K** | **>80K< 100K** | **Total** |
| **Perception {Likeness / Dis-Likeness)** | N | Count | 45 | 76 | 43 | 39 | 5 | 208 | 21 | 71 | 56 | 39 | 21 | 208 |
| | | %within | 51.7% | 71.7% | 76.8% | 83.0% | 83.3% | 68.9% | 70.0% | 68.3% | 67.5% | 66.1% | 80.8% | 68.9% |
| | | % of Total | 14.9% | 25.2% | 14.2% | 12.9% | 1.7% | 68.9% | 7.0% | 23.5% | 18.5% | 12.9% | 7.0% | 68.9% |
| | Y | Count | 42 | 30 | 13 | 8 | 1 | 94 | 9 | 33 | 27 | 20 | 5 | 94 |
| | | %within | 48.3% | 28.3% | 23.2% | 17.0% | 16.7% | 31.1% | 30.0% | 31.7% | 32.5% | 33.9% | 19.2% | 31.1% |
| | | % of Total | 13.9% | 9.9% | 4.3% | 2.6% | .3% | 31.1% | 3.0% | 10.9% | 8.9% | 6.6% | 1.7% | 31.1% |
| Total | | Count | 87 | 106 | 56 | 47 | 6 | 302 | 30 | 104 | 83 | 59 | 26 | 302 |
| | | %within | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | % of Total | 28.8% | 35.1% | 18.5% | 15.6% | 2.0% | 100.0% | 9.9% | 34.4% | 27.5% | 19.5% | 8.6% | 100.0% |

Table 3c Cross Tabulation Perception/Choice with respect to the Profile of the Respondent

| | | | Current residential type | | | Tenure of Current Residence | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | House | | | | Apartment | | | |
| | | | **House** | **Apartment** | **Total** | **Owned** | **Rented** | **Employer** | **Total** | **Owned** | **Rented** | **Employer** | **Total** |
| **Perception {Likeness / Dis-Likeness)** | N | Count | 133 | 75 | 208 | 104 | 26 | 3 | 133 | 21 | 37 | 16 | 74 |
| | | %within | 84.7% | 51.7% | 68.9% | 93.7% | 78.8% | 23.1% | 84.7% | 52.5% | 47.4% | 61.5% | 51.4% |
| | | % of Total | 44.0% | 24.8% | 68.9% | 66.2% | 16.6% | 1.9% | 84.7% | 14.6% | 25.7% | 11.1% | 51.4% |
| | Y | Count | 24 | 70 | 94 | 7 | 7 | 10 | 24 | 19 | 41 | 10 | 70 |
| | | %within | 15.3% | 48.3% | 31.1% | 6.3% | 21.2% | 76.9% | 15.3% | 47.5% | 52.6% | 38.5% | 48.6% |
| | | % of Total | 7.9% | 23.2% | 31.1% | 4.5% | 4.5% | 6.4% | 15.3% | 13.2% | 28.5% | 6.9% | 48.6% |
| Total | | Count | 157 | 145 | 302 | 111 | 33 | 13 | 157 | 40 | 78 | 26 | 144 |
| | | %within | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | % of Total | 52.0% | 48.0% | 100.0% | 70.7% | 21.0% | 8.3% | 100.0% | 27.8% | 54.2% | 18.1% | 100.0% |

## Preference

Various preferences of the respondents were determined by asking them to indicate how important different features are in the choice a new Apartment. Mixed scale was used to collect information about respondent's preferences regarding Location, Tenure, Size, Maintenance and various apartment facilities. The Descriptive Statistics is shown in Table 5.

Table 5 Descriptive Statistics

| | N | Mean | Std. Deviation |
|---|---|---|---|
| Preferable Location of Apartment building within the urban fabric | 94 | 1.30 | .460 |
| Preferable Floor level within the building | 94 | 2.21 | .774 |
| Ownership Preference | 94 | 1.73 | .444 |
| Purchasing Preference | 94 | 1.50 | .503 |
| Preferable Type of Apartment | 94 | 2.04 | .789 |
| Preferable Size for the apartment | 94 | 3.44 | 1.001 |
| Preferable Planning style | 94 | 1.53 | .502 |
| Maintenance Preference | 94 | 1.32 | .469 |

## Preferable Location

Location Preference for the desired location of the apartment was analysed in two parts

### Location within the Urban Fabric of City:

Figure 3 shows that 2/3 (70.2%) of respondents who like apartment housing want to have their apartment in the centre of the city so that they can have an easy access to all the facilities, while1/3 (29.8%) prefers to live at periphery of the city which shows long distances doesnot matter them.

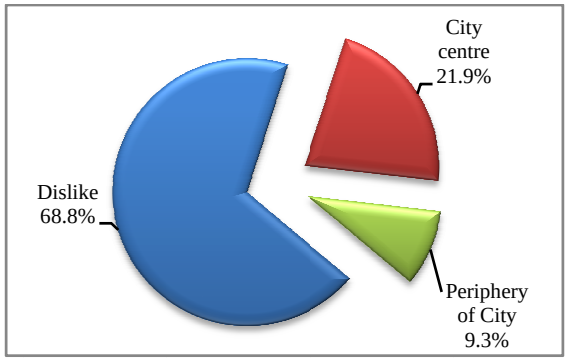



Figure 3 Pie Chart for Preferable Location within Urban Fabric of City

### Location within the building

Preference for the Floor Level within a building is another important decision for those who are planning to buy or rent a new apartment. As this research is for medium rise (6-8storey high keeping in view the skyline of Lahore) Apartments building, three groups were created to label them as Top, Middle and Lower level. Figure 4 shows that percentage of preference decreases with the increased floor level.

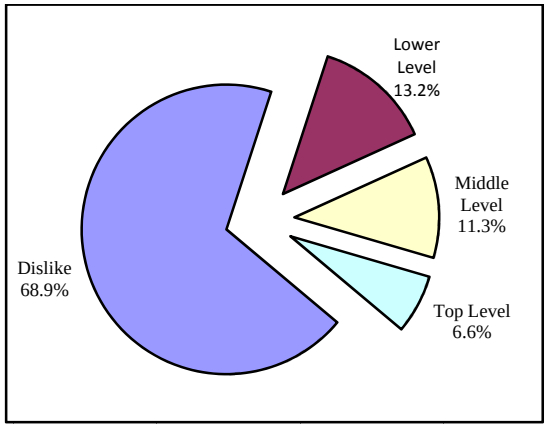
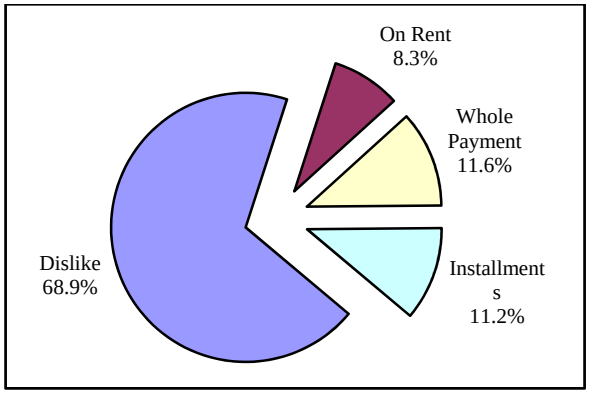



Figure 4 Pie Chart for Preferable Location within Building

### Ownership and Purchasing Preference

Among 94 willing respondents almost 73.4% want to have Personal Ownership while remaining 26.6% prefer to have on rent. Purchasing Preferences among those who want to own the apartment shows that percentage of respondents who want to

purchase on whole payment is same to those who prefer purchase on Instalments. Figure 5 is self-explanatory diagram for comparison of all.




**Preferable Apartment Type**

Figure 6 shows that 28.7% of the respondents are in the favor to have walkup(stairs) apartments, 38.3% want to have lifts and remaining 33% of respondents indicated a prefrence for having both stairs and lifts in their Apartment building .

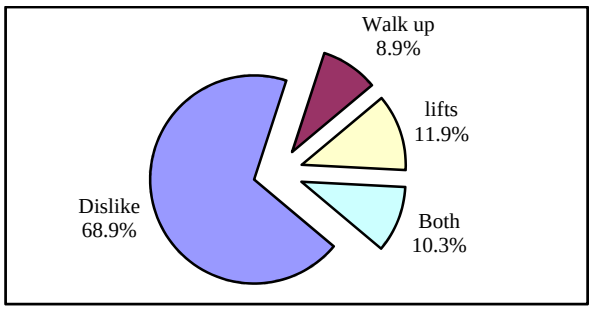



Figure 6 Pie Chart for Preferable Apartment Type

**Preferable Apartment Size**

To determine what size of apartment you require is another important decision when looking for a new apartment. To see the respondent's perception about their apartment they were asked to select preferable size by giving them options like Studio Apartment, One Bed, 2 Bed, 3 Bed and more than 3 Bed apartment. Figure 7 indicates the results of data collected after the survey.

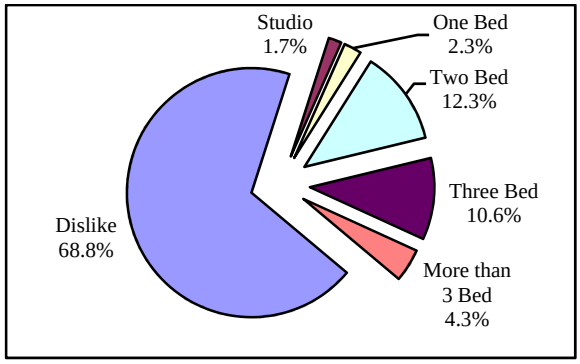



Figure 7 Pie Chart for Preferable Apartment Size

**Preferable Planning Style:**

Figure 8 illustrates responses of the Population group regarding Preferable planning style for their Apartment. Results shows that there is not much variation in the percentages of duplex planning style and single storey planning style (46.8% & 53.2% respectively).

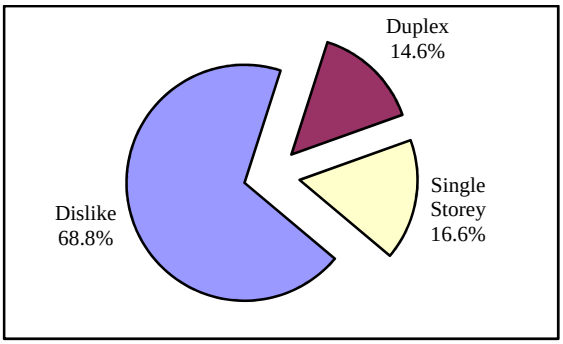



Figure 8 Pie Chart for Preferable Planning style of Apartment

**Preferable Maintenance System**

Figure 9 shows that people are more willing to have a central system for the manangement of apartment which indicates that people are willing to pay a little extra rather than doing by themselves.

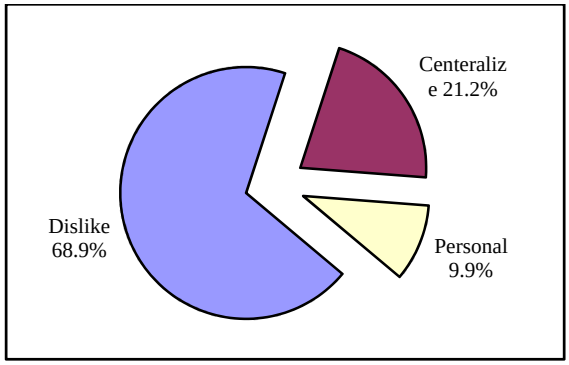


Figure 9 Pie Chart for Preferable Maintenance system for Apartment

### Preferable Facilities

The preferences were indicated on a scale of five (1=unimportant to 5=v important). It has always been accepted that the results derived from scale rating can be used to determine the perceived importance the respondent place on (Chau, et al., 2005). The mean Preference ratings of identified Facilities reveals that the larger the mean value, the more important that Apartment Facility is perceived.

Figure 10 shows that Safety and security (M=4.81, STD=0.554), Privacy (M=4.61, STD=0.821) and Day Light (M=4.39, STD=0.779) are the three most important features ranked by the respondents. Followed by them are the Green Areas, Children Play Areas, Store and Balcony or Terrace, while Public Spaces and Courtyards are moderately rated and are placed in almost centre of the order. Car parking space, Laundry, and Lifts are the three least desirable features amongst the identified ones.

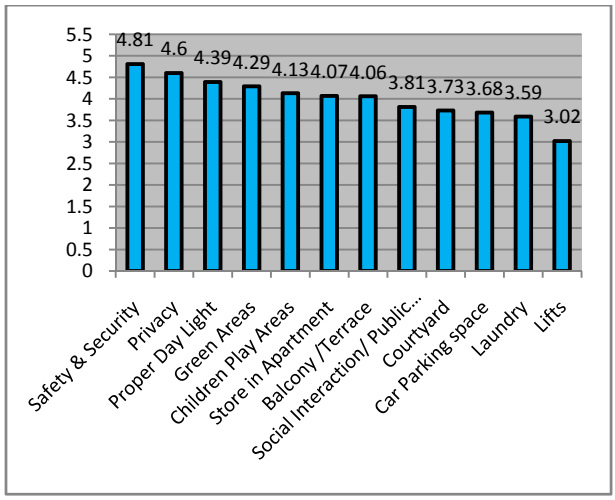



Figure 10 Relative Mean Preferences Rating of Apartment Housing Features

### Preferable Amenities at Walking Distance

Respondents are inquired about their preferences for those amenities which they want to have near their apartment on 1-5 likert scale.

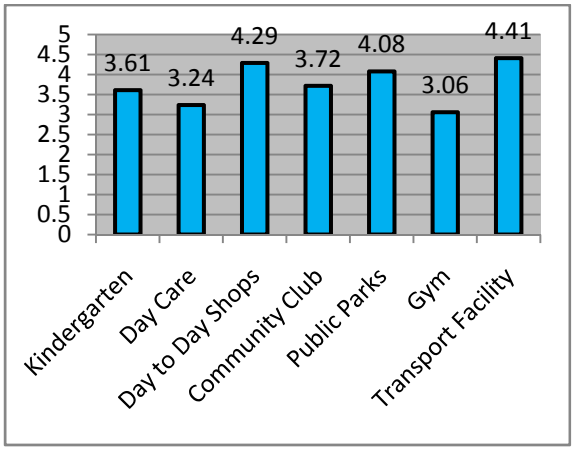



Figure 11 Relative Mean Preference Rating of Amenities at walking distance

The larger the mean value, the more agreeable the respondent is to have that facility at a walking distance from their apartment. Figure 11 shows that public transport facility, day-to-day shops and public parks are the three highly ranked community facilities that respondents want to have at a walking distance from their apartment. Community clubs follow them with moderately rated mean values of 3.72. Amongst all, the lowest rated amenities are kindergarten (3.61), day care (3.24) and gym (3.06). This indicates that people have less interest in the luxury facilities.

### Determinants/Push Factors by Respondents for Unwillingness

Dicotmus scale was used to measure the determinants and puch factors where "1" stands for "Yes" which mean that determinant is one of the reason to dislike apartment housing and "0"stands for "No" means that determinant or fact is not a reason for disliking for respondents. The larger the mean value, the more agreeable the respondents is to the rate that determinant as a reason for disliking vertical/apartment housing.

Figure 12 shows respondents ranked Lack of Privacy (M.93=, STD=0.251), Noisy Environment (M=0.91, STD=0.282) and Lack of Open Spaces (M=0.88, STD=0.302)

as the highly important determinants which make respondents reluctant to live in Vertical Housing.

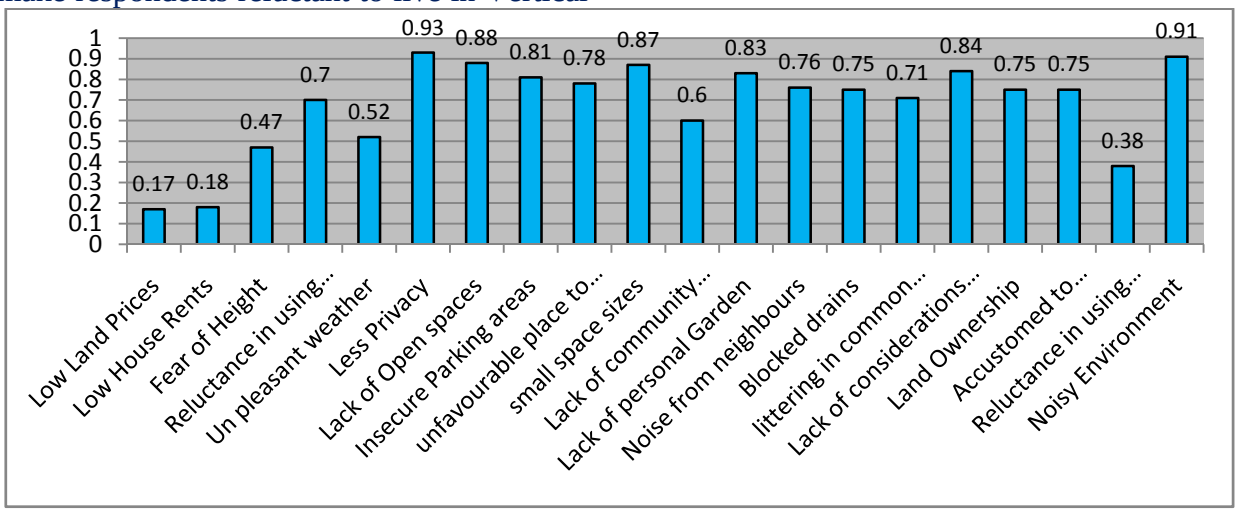



Figure 12 Relative Mean Rating of Determinants for disliking Vertical/Apartment housing

The reason for higher ranking of Lack of consideration for senior citizens is the unavailability of lifts in the current situation of electricity in Pakistan. Results of the Survey also indicate that 'Land ownership' and 'being accustomed to courtyard living' are the determinants which moderately deter respondents from choosing apartments as their residential Choice. Almost 70 percent of the respondents believe that Apartment housing is an unfavourable place to raise their kids.

The lack of community interaction with mean value of 0.6 shows that it not a very significant factor because many of respondents have a feeling that social interaction is more possible in Vertical residential Development comparing with Horizontal Living. Figure 12 shows that respondents' ranked Lower Land prices, lower house rents as negligible determinants for disliking vertical housing with mean values of 0.17 and 0.18 respectively. Because 37% percent of the respondents have the opinion that it is easy to buy an apartment rather than a house in the city like Lahore while 42.4% feel that it is equally hard to buy Apartment and House.

Other "push" factors that are not regarded by respondents as crucial concerns are the fear of height and unpleasant weather of Lahore. Also reluctance in using shared spaces does not appear to be a major worry to the respondents because they are aware of the fact that amenities within the apartment complex are inexpensive as compared to having all those in an independent house.

Concluding the above analysis, the respondents seems more concerned about practical and quality aspects of personal as well as shared spaces and feeling of safety and security. Some aspects are part of the hazards of multi-family living such as Noise from neighbours and littering in shared spaces, and such residents would probably have to be educated on these issues.

| | | Frequency | Percent |
|---|---|---|---|
| Valid | Acceptability | 81 | 27.4 |
| | Affordability | 97 | 32.1 |
| | Achievable | 34 | 11.3 |
| | Adoptable | 52 | 17.2 |
| | Unacceptable | 32 | 10.6 |
| | Total | 296 | 98.0 |
| Missing | System | 6 | 2.0 |
| Total | | 302 | 100.0 |

Table 6 Acceptability of Vertical/Apartment housing

## Conclusion

The results of survey show that 2/3 of the middle income population of Lahore don't like apartment as their residential choice and only 1/3 are in the favour.

Gender is a significant factor for perception of Apartment housing although the strength of relationship is week. Study revealed an increasingly negative trend in Perception of Vertical/Apartment housing with the increase in age. Statistics also proves "age" as a highly significant factor for perception of Apartment housing. Educated People tend to prefer Apartment housing and there is a moderate positive relationship present between Education level and acceptability of Vertical/Apartment housing. Monthly Household Income has no relationship with likeness/dislikness (Perception) Vertical/Apartment housing among the middle income Group of Lahore. Tenure of current residence is a significant factor for likeness/dislikness (Perception) of Vertical/Apartment housing.

### How Willing Respondents perceive their apartment

Almost 70% of respondents have an opinion that Vertical/Apartment housing is a better place to live because of the economic and security reasons. The Preference for Floor level decreases with the increase in the floor level. Younger People are more willing to live at upper floors. Percentage of respondents prefering studio and one bed apartment are too less. Target population is much in the favour of bigger apartment sizes. Among the examined attributes, Safety and Security, Privacy and Proper Day Light are the three most important features, followed by Green Areas, Children Play Areas, Store and Balcony or Terrace. Public Spaces and Courtyards are moderately rated by the respondents while Car parking space, Laundry, and Lifts are the three least desirable features amongst the identified ones, indicating that people have less interest in the luxury facilities.

### Determinants/Push Factors by Respondents for unwillingness

Among the examined determinants/"push factors", "Lack of Privacy", "Noisy Environment" and "Lack of Open Spaces" are highly rated determinants. "Lack of consideration for senior citizens", "Lack of Personal garden" and "Insecure Parking areas" makes them reluctant to live in vertical/apartment housing. Contrary to the expectations, "Land ownership" issue, "unpleasant weather" and being "accustomed to courtyard living" are the moderately rated determinants which deter respondents from choosing Apartments as their residential Choice. Also "Fear of height" and "reluctance in using shared spaces" does not appear as vital concerns by the respondents.

Conclusively respondents are concerned about practical and quality aspects of personal as well as shared spaces and feeling of safety and security. Features like Noise from neighbours and littering in shared spaces are sometimes assumed to be a part of the hazards of such multifamily housing and for that; probably the inhabitants would have to be educated on these issues.

## Recommendations

1. Planners, Developers and Policy makers should consider and ensure the incorporation of buyers' preferences such as Privacy, Safety and security, Open and Green spaces, Proper Day Light, Secure Parking areas; design and layout that are spacious and practical for families with young children, etc. in designs of their dwellings to attract more households toward Vertical/Apartment housing along with complementary Facilities and Services such as green space in the neighbourhood, children Play areas, day to day shops and accessibility to public transport.

2. Admittedly, vertical expansion of the city is one of the possible solutions to provide affordable housing to the growing population of Lahore by keeping control on suburban sprawl of the city. Further, it's the responsibility of the developer and designer to ensure the provision of proper environmental facilities to the dwellers in order to have qualitative designs and thus increasing its acceptability.

## Future Research Directions

This study is an initiative for highlighting those spheres of Vertical housing which need further investigation and more in-depth analysis on a broader perspective. For further research more variables can be included to better understand Positive and Negative attribute of Vertical housing and incorporate those at relevant stages of design Process.

1. Post-occupancy evaluation (POE) study is needed to be carried out to acquire feedback from the occupants of existing vertical housing who are, arguably, in the best position to give information for a future design database.

## Limitations

This study was limited to explore the Perception of vertical/apartment housing among the middle income people of Lahore.

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