To identify the planning, designing errors & End user Satisfaction level in newly constructed apartment of Qasimabad Taluka

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Abstract- Qasimabad is one of four talukas of Hyderabad District in the province of Sindh, Pakistan. The people from many cities and areas of rural Sindh intend to live and settle in Qasimabad due to its location along national Highway. The continuous migration of people from rural areas of Sindh to Qasimabad has largely affected the population of this area and demand of new housing units rapidly increased; majority of migrated people can't afford the bungalow or independent house unit as compares to an Apartment unit. The Builders and developers take advantage of this demand and started to build new apartments buildings at Qasimabad. Majority of these Apartments have design and construction errors. Such Design and planning errors are the cause of resident's dissatisfaction, they spend a handsome amount on rework and maintenance of Apartments. This study identified the designs errors and peoples (residents) satisfaction through survey case studies and questionnaire.

Index Terms- Affected, Apartments, End user, Maintenance, Migration, Rework

I. INTRODUCTION

There is growing recognition that built environment extremely influence the physical and mental health of inhabitants (srinavasan et., 2003; peduc et al., 2003; sallis et al., 2012;). In the built environment the housing is very much important because people spend the majority of the time at home (Hancock, 2002; klepis et al. 2001).

Housing is one of the traditional areas of concern for public health, though it has been relatively neglected over recent decades. However, housing is important for many aspects of healthy living and well-being. The home is important for psychosocial reasons as well as its protection against the elements, but it can also be the source of a wide range of hazards.

The problems of housing in Pakistan are common in urban and rural areas. The situation is very severe in terms of quality with unsatisfactory environment especially in Qasimabad in case of newly

Constructed apartments. The people from many cities and areas of rural Sindh intend to live and settle in Qasimabad due to its location along national Highway.

This research will however remain to identify the planning, designing and construction errors in Apartment's buildings of Qasimabad.

II. GOALS AND RESEARCH OBJECTIVES

The overall goal of this research is to identify the planning, designing errors & End user Satisfaction level in newly constructed apartment of Qasimabad Taluka.

III. SCOPE AND LIMITATIONS OF RESEARCH

The scope of this research is to determine the errors in newly constructed Apartments at Qasimabad Taluka, district Hyderabad. The focus will not only be given on Apartments errors but the research will also try to find out the satisfaction level of the End-users. As defects are one of the major cause for dissatisfaction of the residents. The area of study is Taluka Qasimabad of Hyderabad District. A total number of six residential areas will be taken into this study to identify the housing defects and the satisfaction level of the occupants due to the occurrence of these defects.

This research is limited to find the Apartments defects and user's satisfaction level in six Residential areas of Qasimabad, Hyderabad i.e. Abdullah town, Goth Missri Khan Rind(Naqash Villass ph II, Bhtai Nagar, Al Mustafa Town Ph II, London Town and Al Rehman Cottages), . The focus will only be given to the ''newly constructed Apartments. The research will only consider the six residential areas while the method of construction used is almost same in all areas, the climate of the areas is also same. It would also be better to take small area at initial level to get more accurate information for the better results.
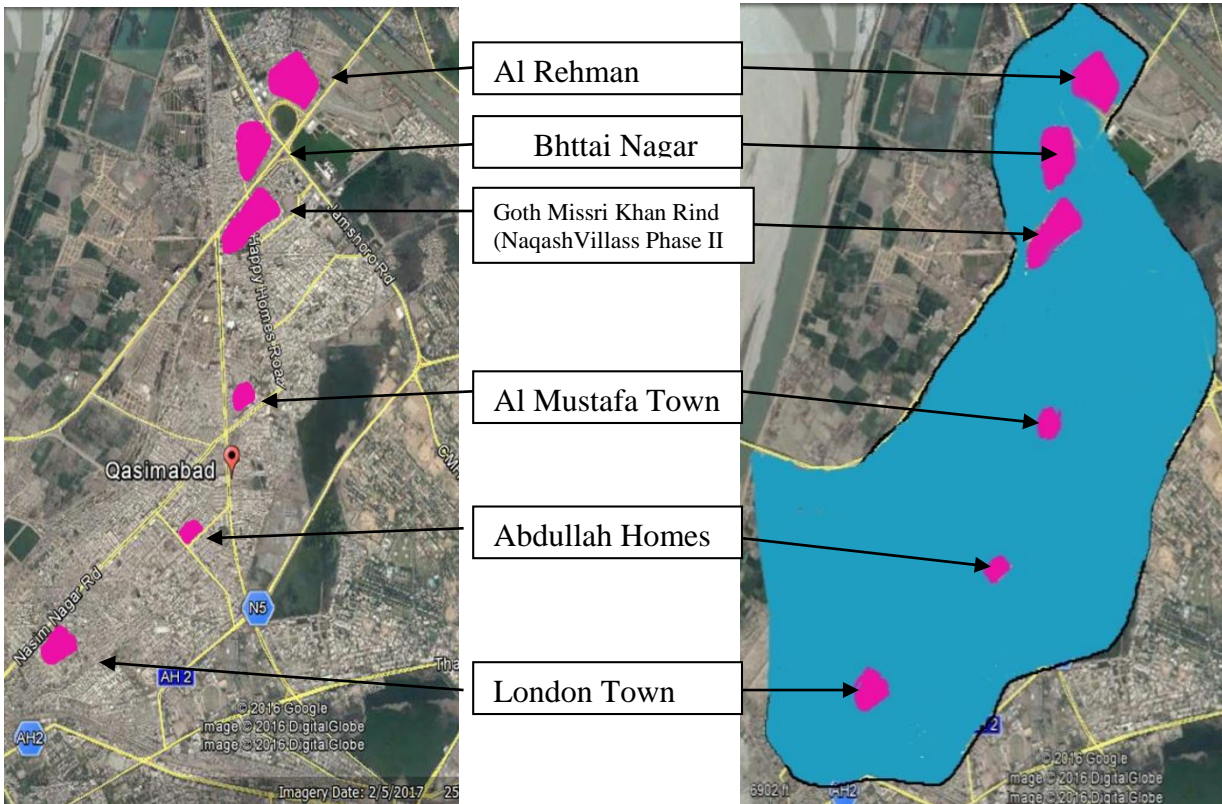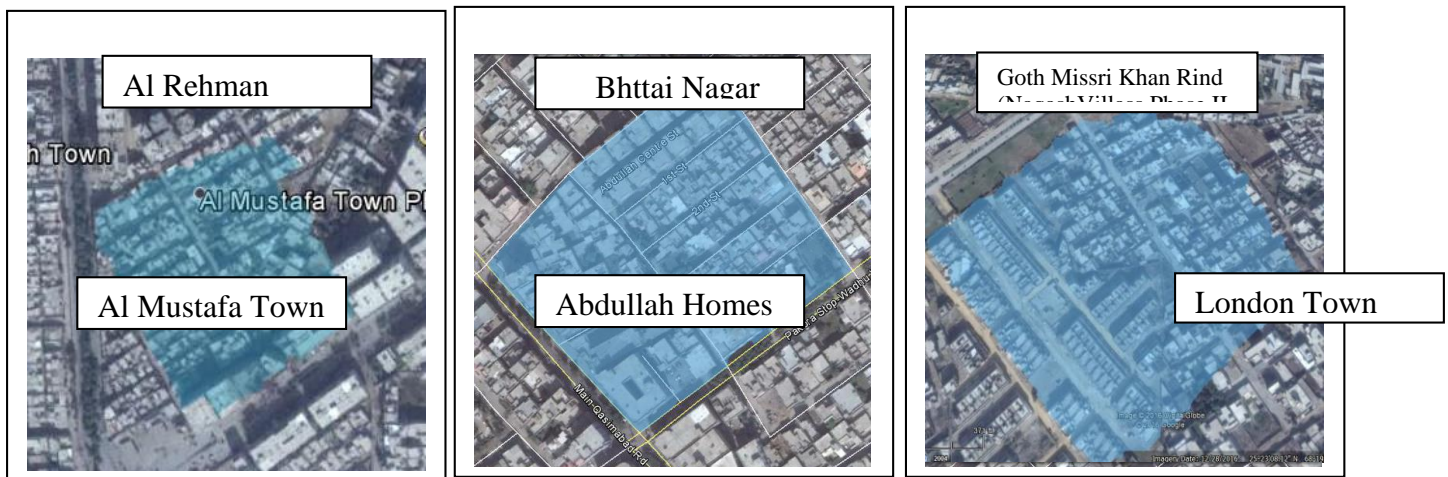
Fig 1 : Location map selected housing areas/schemes For Research at Taluka Qasimabad

IV.   METHODOLOGY

Methodology is all about the system which is utilized in this research. The technique incorporates data about the research structure, population , sampling size , information gathering, survey plan, poll (questionnaire) content, instrument legitimacy, pilot contemplate, and the strategy for information preparing and investigation. The questioner survey will be the primary way to deal with gather the information and viewpoints of the respondents. The main purpose of this research is to identify the planning and designing errors in newly constructed apartment and to determine the satisfaction level of residents of Qasimabad Taluka. The questionnaire comprised of three sections i.e. "socioeconomic profile, household size (to determine the existing situation of apartment), Likert scale questionnaire for End User to determine their satisfaction level.

V.   RESEARCH POPULATION

Two populations were targeted in this research. The first population is the residence of apartments of Taluka Qasimabad and second population is building experts (Architects, Engineers, building designers and contractors). According to population census 2017 the population of taluka Qasimabad is 305,000 with the change of +5.25% per year. So, now in 2019 the population of Qasimabad is 336,000 and approximately 20%-25% of population of taluka Qasimabad lives in apartments that's mean 680, 00 to 850,00 people's lives in apartments of taluka Qasimabad .

VI.   SAMPLE SIZE

Sample is the bit of the people that makes us draw inductions about the population. Get-together examination of the absolute information about the population is ludicrous and it is dreary and exorbitant. Subsequently, we need an appropriate precedent gauge with the objective that we can make acceptances about the population reliant on that model.An appropriate sample size is required for authenticity. In case the precedent measure it unnecessarily little, it won't yield significant results. An appropriate

Sample size can make precision of results. Also, the results from the little precedent size will be defective. A sample that is too immense will achieve wasting money and time. It is in like manner beguiling to pick too gigantic a model measure. There is no certain standard rule to choose the precedent gauge. A couple of experts do, in any case, reinforce a standard rule when using the sample.

VII.   TARO YAMANE METHOD

The Taro Yamane method for calculation of sample size was formulated by Taro Yamane in 1967. Below is mathematical illusions for Taro Yamane formula.

$n = N/1+Ne^2$
where
n = sample size , N= population under study, e= margin of error
 Population study of Taluka qasimabd is 750,00 and margin of error which is selected is 5% . applying Yamane Method

$n= 75000/1+75000(0.05)^2$
$n=75000 /1+75000(0.0025)$
$n=75000/1+187.5$
$n=75000/188.5$
$n=390$

VIII.   QUESTIONNAIRE RESULTS OF PART I

(EXISTING CONDITIONS OF APARTMENTS)
in part I questionnaire survey is conducting to determine the existing conditions of Apartments, the results are shown below in graphs
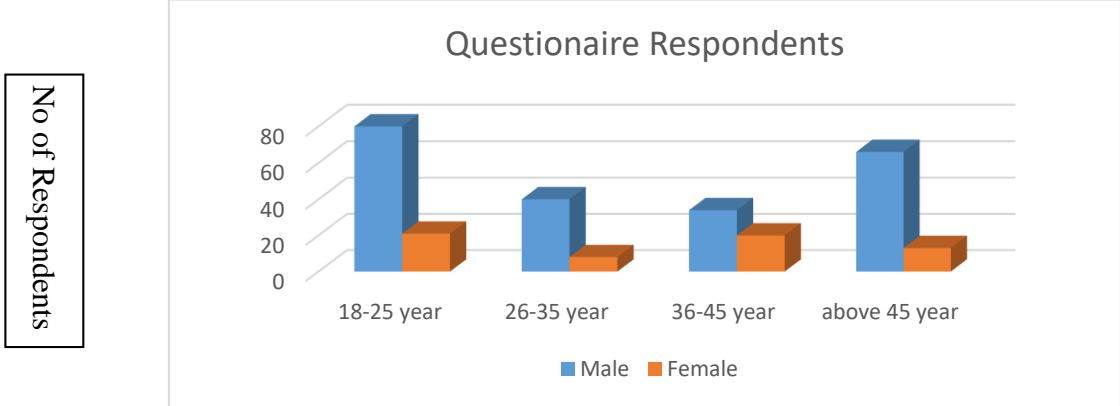

Fig 2: Bar chart showing the frequency of questionnaire respondents

101 respondents are 18 to 25 years old, 89 respondents above 45 years,54 respondents are 26 to 35 years old and 48 respondents are 36 to 45 years old.
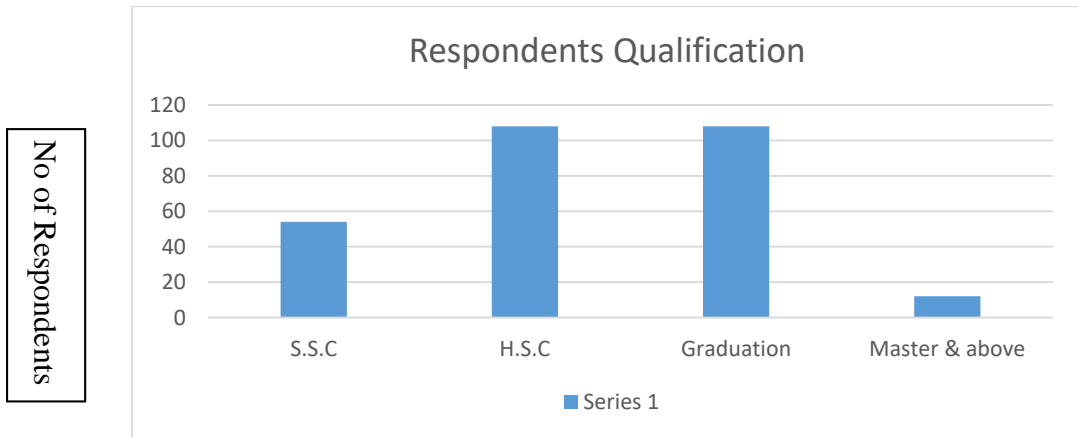

Fig 3: Bar chart showing the qualification respondents.
 Bar showing that 108 respondents are HSC pass, 108 are graduated, 54 are SSC pass
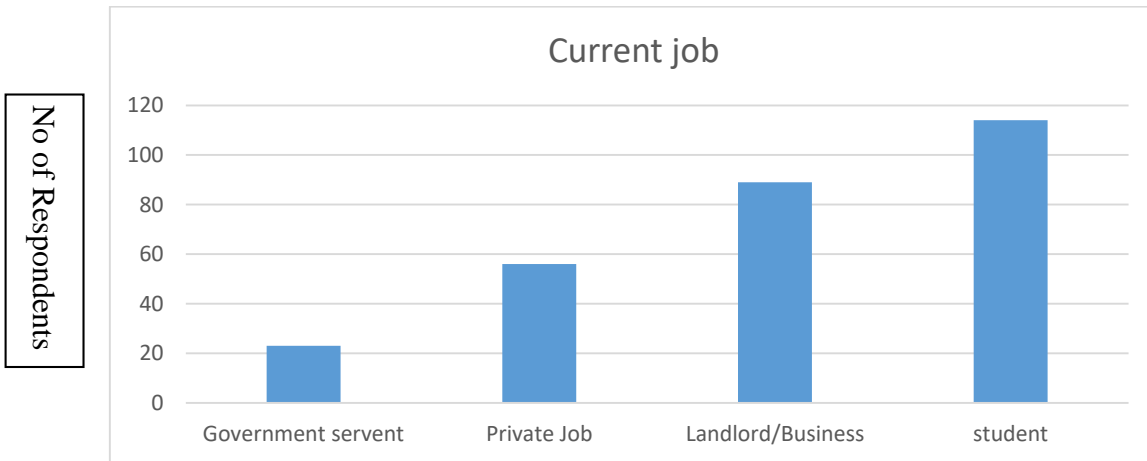and 12 are master and above

Fig 4: Bar chart showing the current job status of respondents
Bar showing that 114 respondents are students, 89 are Landlord/Business men 56 doing private job and 23 are government servant
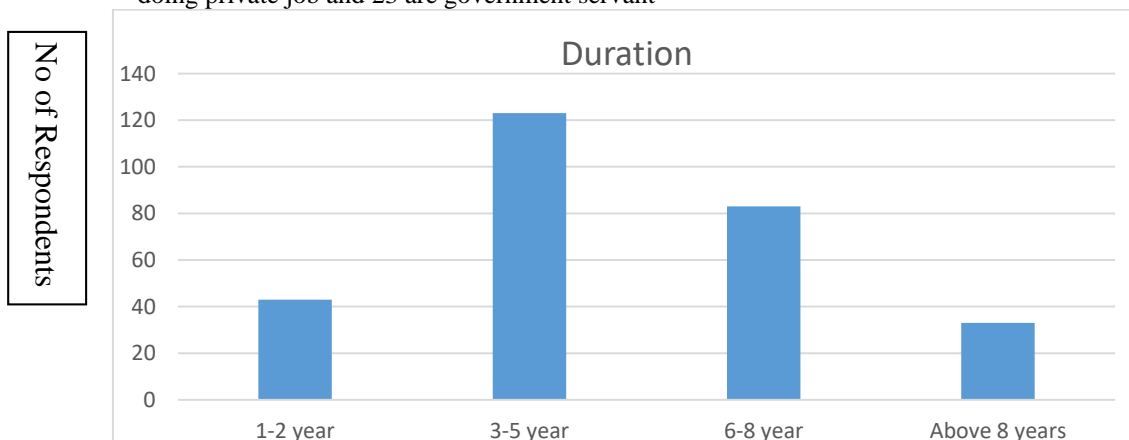

Fig 5: Bar chart showing the year/s spends by respondents at apartment
Bar showing that 123 respondents spend 3 to 5 years in Apartments, 83 respondents Spend 6 to 8, year's 43 respondents spend 1 to 2 years and 33 of respondents spend Above 8 years
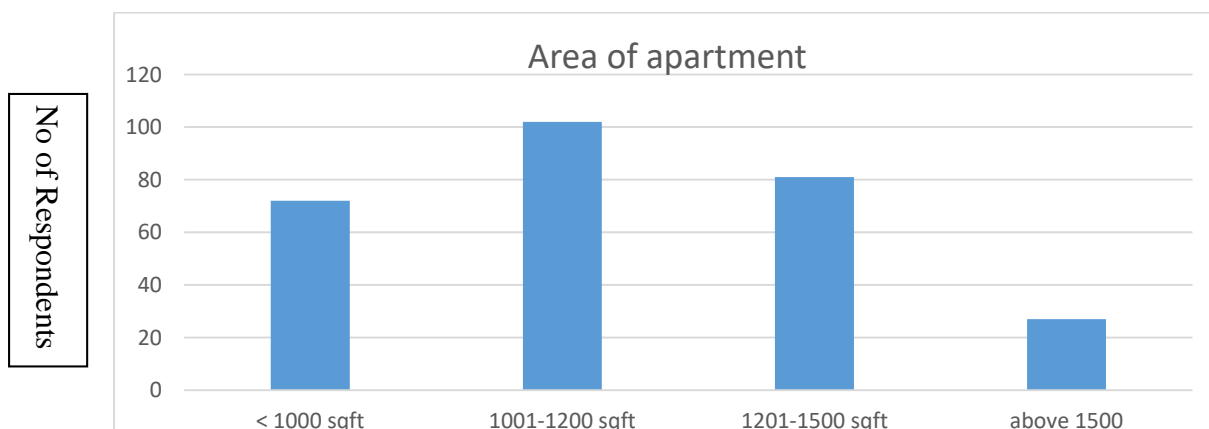

Fig 1.6: Bar chart showing the total covered area of respondent's apartments.
Bar showing that 102 respondents have apartments of 1001 to 1200 sq ft,81 have Apartments of 1201 to 1500 sq ft, 72 respondents have apartment of less than 1000 sq ft and 27 have apartment of 1bove 1500 sq ft area.
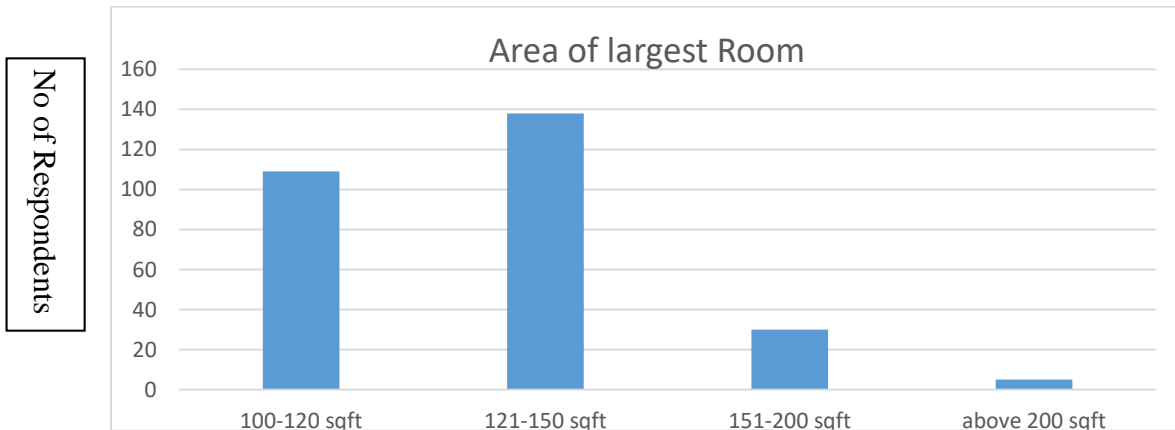
Fig 1.7: Bar chart showing the area of largest Room in respondent's Apartment
Bar showing that 138 Apartments have largest room area 121 to 150 sq ft, 109
Have largest room area 100 to 120 sq ft, 30 have largest room area 151 to 200 sq
ft and only 5 have above 200 sq ft area

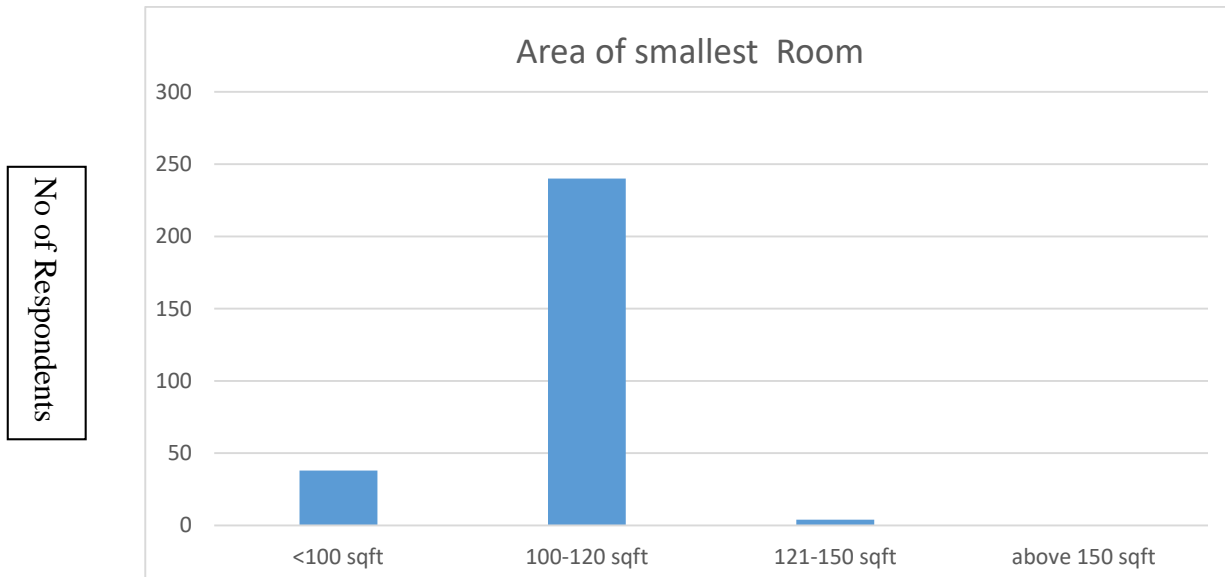**Fig 8**:Bar chart showing the area of smallest Room

Bar showing that 240 Apartments have smallest room area 120 to 120 sq ft, 38 have smallest
room area below 100 sq ft, 4 have smallest room area 121 to 150sq
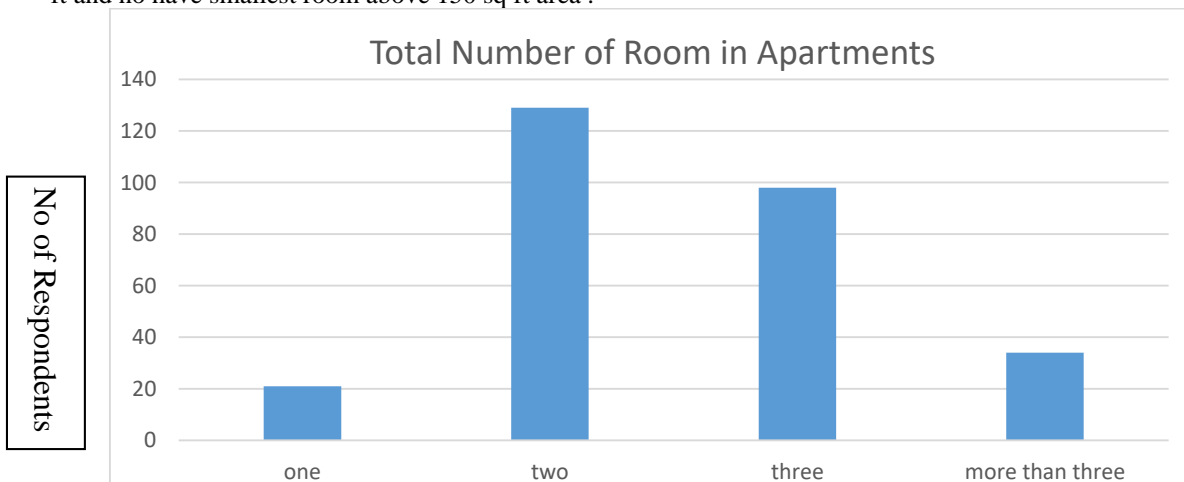ft and no have smallest room above 150 sq ft area .

Fig 1.9: Bar chart showing the total numbers of Rooms in each Apartment.

Bar showing that 129 respondents have 2 room at their Apartment, 98 respondents have three room apartment, 34 respondents have more than three room Apartment, 21 respondents have one room in their Apartments.
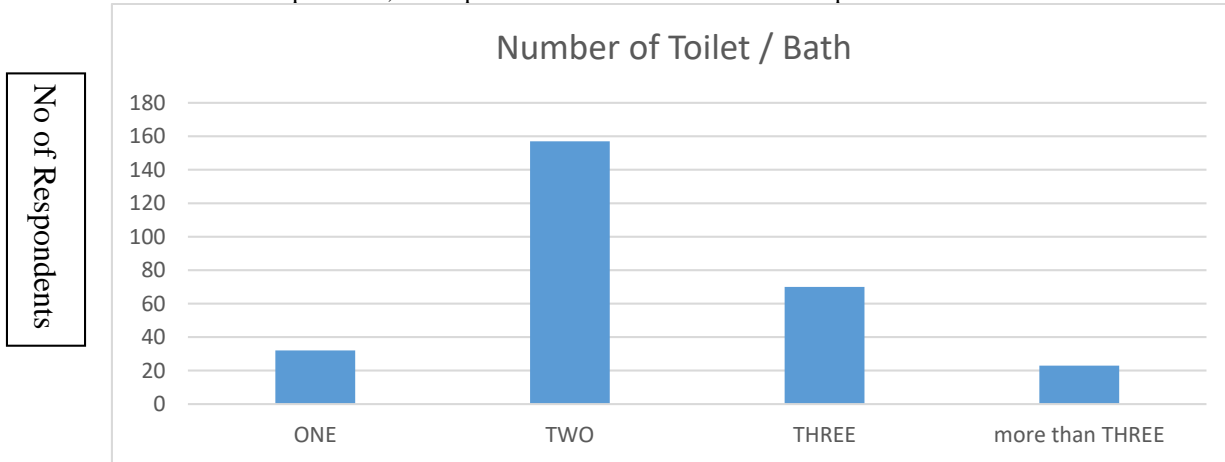
Fig 9: Bar chart showing the total numbers of bath/toilet in each Apartment

Bar chart showing that 157 respondents have two toilets/bath at their apartments, 70 respondents have three toilets/bath, 32 respondents have one toilet/bath and 23 respondents have more than three toilets/bath at their Apartments
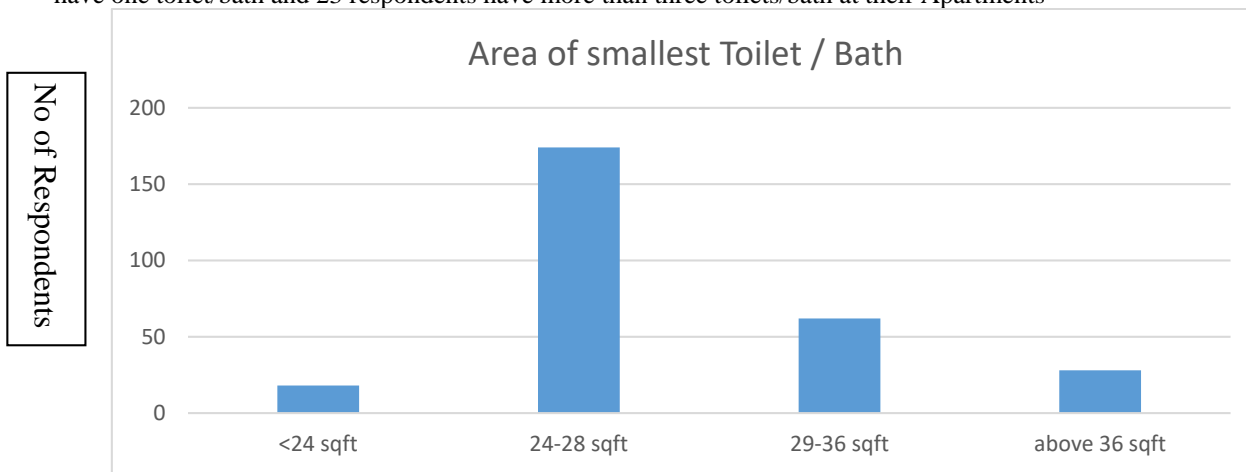
Fig 10: Bar chart showing the area of smallest toilets/ bath.
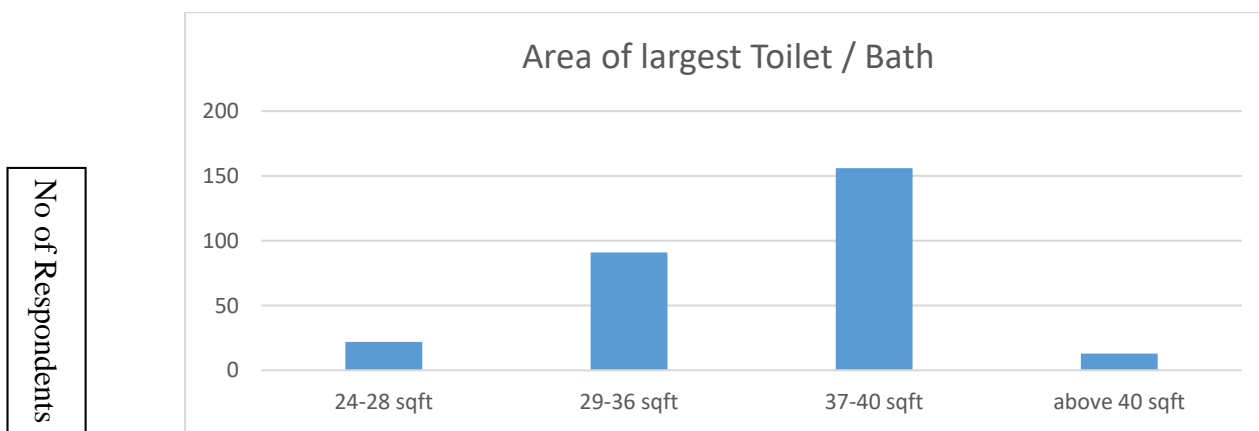
Fig 11: Bar chart showing the area of largest toilets/ bath

Bar showing that 156 Apartments have largest toilet/bath area 37 to 40 sq ft, 91 have largest toilet/bath area 29 to 36 sq ft, 22 have largest toilet/bath area 24 to 28 sq ft and 13 have largest toilet/bath area above 40 sq ft area .

PART TWO (LIKERT SCALE)

After getting information about current situation of respondent's apartment, a Likert scale questionnaire was also filled by the respondents to determine the satisfaction level of resident of apartment.

Part one provided the information about current situation of apartment and part two told either residents satisfy or not from current situation.

Table shows the LIKERT SCALE questions to investigate the satisfaction level

Factors from survey and literature review	Question for end user after pilot study
Parking issues	Are you satisfied by parking area
Narrow stairs &	Are you satisfied by the width of stairs of Your Apartment Building
Narrow corridors	Are you satisfied by the width of Corridors of Your Apartment Building
	Do you face difficulties while shifting furniture
Width of doors	Do you satisfied by the sizes of doors provided in your apartment
Ramp ratios	Do you face difficulties due to Ramp design (ramp ratio) of your apartment building, while parking your vehicles
Mechanical transportation	Are you satisfied by the number of lift/s provided in your apartment
	Are you satisfied by the size of lift/s provided in your apartment
	Is there any provision of cargo lift/s
Security	Do you felt secure in apartment
Numbers of rooms	Are you satisfied by the Number of rooms of your apartment
Numbers of bath	Are you satisfied by the Number of Bath rooms of your apartment
Area of rooms	Are you satisfied by the Area of rooms of your Apartment
Area of baths	Are you satisfied by the Area of bath rooms of your Apartment
Cocking area	Are you satisfied by the Area of kitchen
Heights	Are you satisfied by the ceiling height of your Apartment
Ventilation & lighting	Is there proper ventilation of rooms?
	Is there proper ventilation of baths/Toilets
	Is there proper ventilation of lounge
	Is there sufficient natural lighting in living areas
	Is there is natural lighting in corridors
Open spaces	There is any balcony or gallery
	No proper open spaces
	There is any duct system if rectification required in drainage and water supply
Drain blockage	Do you faced any blockage in drain pipes

IX. DATA PROCESSING AND ANALYSIS

The collected raw data was first sorted, edited, coded and then entered into computer software. Two methods were used, first one is EXCEL sheet and second SPSS software. Appropriate graphical representations and tables were obtained to to understand and analyze the questions. The ordinal scale was used in the analyses process. The ordinal scale is a ranking or rating data which normally uses integers in ascending or descending orders. The relative importance index (RII) was used in analysis process in addition to other approaches such as the one way ANOVA and frequencies and percentiles.

The relative index technique has been widely used in construction research for measuring attitudes with respect to surveyed variables. Many researchers used the relative importance index in their analysis.

Likert Scale was used for ranking questions that have an agreement level. The respondents were asked to give their perception in group of questions on five point scale
(1 for strongly disagree and 5 for strongly agree), which reflect their assessment regarding the factors affecting construction and design process. Then the relative importance index was computed using the bellow equation.

Relative importance Index $= \sum w / AN = 5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n \; / \; 5N$

Where "W" is the weighting given to each factor by respondent ranging from 1to 5 ($1n$ number of respondents strongly disagree, $2n$ number of respondents disagree, $3n$ number of respondents be neutral, $n4$ number of respondents agree $n5$ number of respondents strongly number of respondents strongly disagree agree). A is the highest weight (i.e strongly agree in the study), "N" total number of sample. The relative importance index range from 0 to 1. SPSS program was used to analyze all data, while MS –Excel was supportive for presentation and layout. The analyzed data was finally presented using descriptive methods for easy interpretation and enable comparisons.

RESULTS

Table shows Rank and RII of factors related to un satisfaction of Apartment's residents of taluka Qasimabad Hyderabad

S.NO	FACTORS	RII	RANK
01	Un Availability of cargo lifts	0.949	**1**
02	No emergency exits	0.885	**2**
03	Parking problems	0.797	**3**
04	Ventilation of bed rooms	0.764	**4**
05	Area of kitchen	0.76	**5**
06	Numbers of passenger lifts	0.758	**6**
07	Duct system if rectification required in drainage and water supply	0.756	**7**
08	Size of passenger lifts	0.752	**8**
09	Lack of natural light in corridors	0.749	**9**
10	Area of Toilet/ Bath	0.741	**10**
11	Ventilation of lounge	0.719	**11**
12	Parking Ramp	0.695	**12**
13	Numbers of toilet/ bath	0.673	**13**
14	Area of bed rooms	0.662	**14**
15	Numbers of bed rooms	0.640	**15**
16	Balcony/ terrace (open spaces)	0.604	**16**
17	Width of corridors	0.604	**17**
18	Width of stairs	0.602	**18**
19	Ventilation of Toilets / Bath	0.544	**19**
20	Sizes of doors	0.537	**20**
21	Felt un secure in apartment	0.455	**21**
22	Ceiling height of apartment	0.326	**22**

From table 4.3, I t is shown that, "un availability of Cargo Lifts in apartments of Taluka Qasimabad" was ranked at the first position by all respondents with RII of (0.949). there is no separate cargo (service) lifts along with passenger lifts for goods and furniture transportation.

Installing a cargo lift at apartment is a practical solution for movement of furniture and other goods from one floor to another floor without carrying them and without making many trips.

It is shown from above table that no provision of emergency exit was ranked in the second position by all respondents of apartments of taluka Qasimabad.

An emergency exit is an exit that is used to provide a safe means of escape from a apartment in the case of emergency, such as fire and etc. first responders may also use it as a way into the building so it is very important to make sure they are ready to use at all times. It is responsibility of every building designer and building owner to make sure that exits are clear and visible in case of an emergency. This mean both inside and outside. But unfortunately there is no proper emergency exit in any apartment of taluka Qasimabad, Hyderabad. Basic reason of this error is that there is no properly well define building bylaws regarding emergency exit in SBCA by laws.

Parking problems stand at rank 3 with RII (0.797). Almost all the newly constructed apartments of taluka Qasimabad have parking space at basement but the designed parking is not enough as compare to total numbers of apartments present in building there is no proper by laws of SBCA regarding apartments parking with reference to numbers of apartments. SBCA by laws regarding apartments parking as under

Minimum one motor vehicle parking space shall be provided for Apartment building or residential-cum-commercial or commercial building for 2000 Sqft (186 Sq.m). (Regional interim building & town planning regulations S.B.C.A ,2018)

Bad Ventilation of bed rooms stand at rank 4 with RII (0.764). ventilation moves outdoor air into a building or a room, and distributes the air within the building or room. General purpose of ventilation in a building or room is to provide healthy air for breathing by both diluting the pollutants originating in the building or room and removing the pollutants from it. (Etheridge & Sandberg, 1996; Awbi, 2003).

According to environment protection agency, indoor air quality can be more polluted than outdoor air. This may come as a surprise but make sense. In Qasimabad Apartments generally do not have as many windows as houses, free flowing air in bed rooms is an important component of healthy air because it helps to regulate temperature and prevents buildup of mold and dust .

Area and design of kitchen in apartments of Qasimabad is stand at rank 5 with RII (0.760) . not enough storage one of the most common kitchen design problems resulting from poor planning is insufficient storage. For centuries, the kitchen was considered as an unimportant workplace and was often isolated from the home, typically at the corner of building. People usually considered it as a room for bare essentials. However, over the past decade, the kitchen has become one of the most important places in the home. People these days have started considering kitchen as active part of a family home. According to SBCA by laws the minimum floor area for a kitchen is 50 sqft, surprisingly 90 % of apartments of Qasimabad have 50 sqft or more than 50 sqft, but even they are not happy with provided floor area of kitchen.

Shortage or unavailability of passenger lifts ranked at 6 with RII (0.758) by the residents of apartments of taluka Qasimabad. A passenger lift has a fully surrounded with lift car that travels vertically within a particularly equipped lift shaft. Passengers are transported between floors at reasonably quick speeds and control systems are often designed to give the safest distribution of passengers throughout the building. Only 60% apartments of Qasimabad have passenger lifts. And those who have lifts they are facing problems of maintenance and traffic congestion, as number of lifts not according to population of apartment. According to SBCA by laws one lift will be provided from 46 ft to 59ft climbing height and two lifts for 59ft to above, the bylaws provided height but not area of plot and number of apartments.

No Duct system if rectification required in drainage and water supply is ranked at number 7 with RII (0.756). Only very few apartments have proper duct system for rectification of drainage and water supply lines. Most of apartments have no proper duct system due to which residents faced many problem in case of blockage of drain lines and this also caused of building decay.

Small Size of passenger lifts is ranked at number 8 with RII (0.752) by the residents of apartments of taluka Qasimabad. As only 60% apartments has lift. And out of that 60% almost all the apartments have only one passenger lift. That is why people feel congestion. So, by increasing the number of lift this issue may be solved.

Lack of natural light in corridors was ranked at number 9 with RII (0.749) by the residents of Taluka Qasimabad. Day light or natural light is the controlled admission of sun light. The components of daylighting system are designed to bring sun light into building in such a way that electric lights can be turned off for a portion of the day. Many apartments of taluka Qasimabad have lack of natural light in corridors which creates problem specially in case of load shedding.

Area of Toilet/ Bath was ranked at number 10 with RII of (0.741). According to SBCA by laws minimum area of WC is 15 sqft, for bath 15sqft and in case of combine WC and Bath the area should be 35 sqft. In case of apartments of Qasimabad the combined WC and Bath is most common trend.

Ventilation of lounge ranked at 11 with RII (0.719). People spend most of day time at lounge. So, it is very important to have well ventilated lounge at apartment, proper ventilation prevents air pollutants from affecting the health of residents. Not only can that, having airflow in lounge get rid of any unwanted smells such as from cooking.

Functional Errors in parking ramp ranked at 12 with RII (0.695). it is common practice at apartments of Qasimabad that the proposed ratio and width of ramp in submission drawings are according to by laws, which cannot create problems during parking but at the time of construction owner cannot follow the submission drawings and reduced the ratio and width of ramp to save the space

Numbers of bath/toilets ranked at 13 with RII (0.673) by the apartment's residents of Qasimabad. There is no any bylaws present in SBCA regarding number of bath and toilets as compare to area of apartment and as compare to numbers of rooms. During study it is found that 70% apartments have attached bath, toilet with all bed rooms. 16% apartments have one bed room without attached bath, toilet. While 14% of apartment have only common toilet, bath.

Area of Bedrooms ranked at 14 with RII (0.662) by the apartment's residents of taluka Qasimabad. It is very interesting that minimum room area according to SBCA bylaws is 100 sqft and no room bed room found during study which has area less than 100 sqft. But residents still think that area of rooms is insufficient to fulfill their requirements.

Numbers of bed rooms ranked at 15 with RII (0.640) by the apartment's residents of Qasimabad.

Open spaces (Balcony/Terraces) ranked at 16 with RII (0.604) by the apartment's residents of Taluka Qasimabad, Hyderabad. Open spaces (balcony/terrace) are not only beautiful but also provide the residents with a safe and secure environment for spending their time. Therefore, open spaces improve the general health and well-being of residents.

Width of corridors as ranked 17 with RII (0.604), width of corridors ranked 18 with RII (0.602), ventilation of toilets/ bath ranked 19 with RII (0.544), sizes of doors ranked at 20 with RII (0.537), and felt unsecure in apartments ranked at 21 with RII (0.455) and at last ceiling height was ranked at 22 with RII (0.326) .

LIST OF ABBREVIATIONS

S.B.C.A   Sindh Building Control Authority
H.D.A   Hyderabad Development Authority
S.P.S.S   Statistical Package for Social Sciences

R.I.I   Relative Importance Index

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