

Housing Affordability and Prototype Solutions for Middle-Income Group of Savar, Bangladesh

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Abstract

Addressing the housing needs of the middle class has been a key focus of national initiatives in emerging nations like Bangladesh. With a substantial portion of the population being middle-income individuals, this issue is particularly pressing, especially in various parts of the capital city of Dhaka. However, the area of Savar is notable for its high population of factory workers within the middle-income bracket, where housing affordability is a major concern. Surprisingly, this issue has remained largely unnoticed. To address this, an on-field investigation and survey were conducted to assess the affordability scenario. The application of the Price to Income Ratio (PIR) tool facilitated a numerical assessment of the situation. The findings reveal a significant gap between housing demand and supply, with most available options being unaffordable for the target group. Therefore, this research aims to identify potential solutions within the affordability range of the middle-income group, including exploring modular housing options as a cost-effective and flexible approach to meet their needs and offer a viable path toward improved living conditions for the target demographic, and to spark further investigations into the topic.

Keywords: Housing affordability; Prototype; Middle income group; Price to Income Ratio; Savar.

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1. Introduction

Housing is one of the most pressing urban issues around the world. It bears an identity and contributes significantly to the socioeconomic well-being of the family because it is more than just a place to live. The global trend of urbanization is a major driver of this crisis, leading to urban sprawl and significant migration into cities. This influx often exacerbates the problem by stretching the limits of urban areas and overburdening existing resources [1]. In countries like Bangladesh, the situation is particularly severe due to rapid population growth and inadequate resources to support the expanding urban population, making housing more pronounced issue than in many other regions.

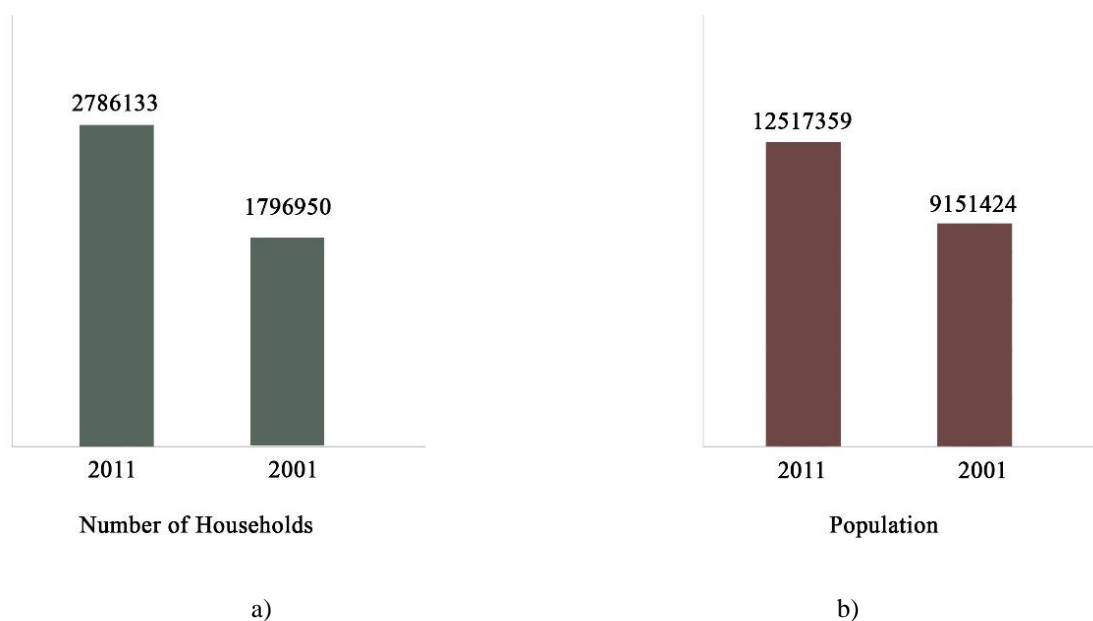


Figure 1: a) Household variation of Dhaka, b) Population Variation of Dhaka [2]

Also, the rate of urbanization is accelerating. Between 1960 and 2011, the rate of urbanization in Bangladesh grew by up to five times. Over the decade, the population increased to 3365935, and the number of households increased up to 989183 [2]. As a result of rising urbanization and the desire for a better quality of life, people are flocking to cities and metropolitan areas. According to the fifth population census of 2011, 76.7% of the total population lives in rural areas and 23.3% in urban areas [3].

However, as the capital and only megacity, Dhaka has absorbed the increasing population and migration loads. Between 2001 and 2011, the total number of households in Dhaka increased by approximately 1522957, while the number of urban homes increased by approximately 484722 [2]. Dhaka has the highest rate of migration from rural to urban areas of any Bangladeshi city. In 2011, Dhaka accounted for 38.7% of all urban migration from rural areas[4]. The increasing rate of urban population growth raises several significant issues. As The majority of migrant workers are middle and lower middle-income people who are frequently excluded from services and opportunities. Among other things, they are struggling to realize their long-held dream of affordable housing and community amenities. The projection reveals that the population of Dhaka will keep raising and thus the affordability problem will be a persistent one. With their socioeconomic situation in mind, it

can be stated that allocating this migrated middle class has become a top priority for Dhaka.

Table 1: Population projection of Dhaka[5]

Year	projected total population of Dhaka (in thousands)
2021	13798
2026	14366
2031	14777
2036	15081
2041	15291
2046	15372
2051	15323
2056	15193
2061	14936

If we look closer, we can see that within Dhaka, this problem is more severe in Savar due to its economic and industrial activity. In terms of households and population, Savar ranks first among the zila's five upazilas and 41 metropolitan thanas, followed by Keraniganj upazila. Between 2001 and 2011, Savar upazila experienced the greatest variation, with a 136.08% increase[2]. The majority of individuals migrate to Savar in search of employment. They primarily work in various industries and have insufficient household income. As a result, these migrants are classified as middle and lower-middle-income and, it is difficult for them to spend more money on home ownership or rent. But the housing demand is there. There is a gap created because there is a lack of supply in contrast to the rising demand. Moreover, the government measures alone will not adequately close the gap, and since the majority of individuals belong to the middle-income category, the private sector is barely prepared to devote any attention because of their very low-profit margin. Owning a home under these conditions becomes extremely challenging and a key concern for them. This study concentrates on the middle-income Savar group and also assesses the affordability of the target group. A probable housing module is also proposed within their affordability range to mitigate this problem.

2. Methodology

The affordability scenario of Savar's middle and lower-middle-income groups is the focus of this paper. Before that, the existing housing scenario was thoroughly investigated using existing literature and a field survey. This investigation provided a broad picture of the target group's economic situation and housing affordability level. But there are several methods to precisely measure affordability including Price To Income Ratio (PIR), Rent To Income Ratio (RIR), Housing Expenditure To Income Ratio, Market Basket Measure, Quality Based Measure, and Residual Income Measure.[6]. An income-based approach PIR (price to income ratio) was used among these methods to determine the affordable residential unit size for the target group. Finally, a prototype housing module is proposed within this calculated area to meet the affordability level of the middle-income groups of Savar.

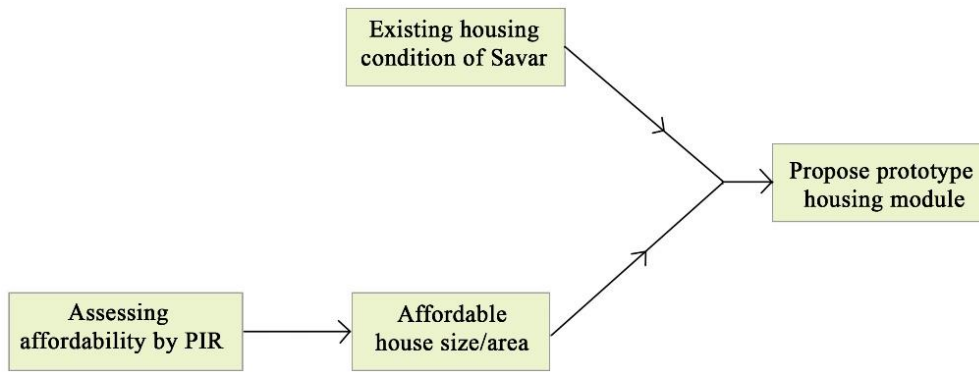


Figure 2: Methodology flowchart (source: by author)

3. Existing condition of Savar

Savar is located at a distance of about 24 kilometers to the northwest of Dhaka city. In terms of economic and industrial activity, Savar might be the most important zone of Bangladesh. It provides abundant employment opportunities and to avail it a good number of populations migrate here. In this situation, housing and affordability become a concern. Existing housing scenarios and economic analyses, followed by the use of PIR, can provide a broad picture of affordability in this situation.

3.1 Housing scenario

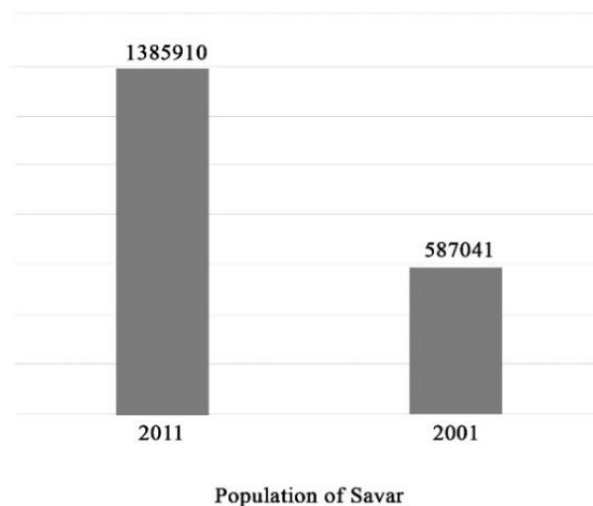


Figure 3: Population variation of Savar [2])

In terms of land area, Savar is Dhaka's second-largest upazila. According to the 2011 population and housing census, the total population of Savar is 1385910, with 21.41 percent of them living in urban areas [2]. Furthermore, the Savar Upazila metropolitan region expanded significantly between 2001 and 2011.

According to the 2011 population and housing census, there are 349427 households in Savar. Thus, growth is happening in such a fast rate that it does not give the necessary time to build permanent dwelling units for the

migrated people. And 19.14 percent of them are pucca (permanent), 62.84 percent are semi-pucca (semi-permanent), 17.20 percent are kutchra (temporary), and 0.8 percent are jhupri (shelters) [2]. The majority of homes, as per statistics, are semi-pucca. It implies that the majority of Savar's population is middle-class and in need of a pucca house to meet their basic needs. So there is a booming demand for housing in Savar but not enough supply to complement it. The target people are compelled to live in congestion without proper living facilities. Thus, the majority of the residences in Savar are rented homes, as can be shown by looking at their ownership patterns. Nearly 71 percent of homes are rented, 27.27 percent are owned, and 1.7% are rent-free [2]. Therefore, the long-cherished ambition to purchase their own homes remains a dream.

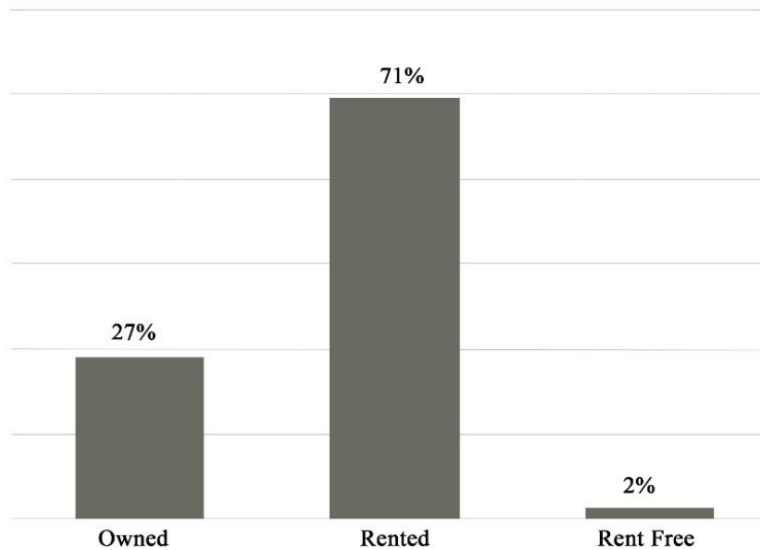


Figure 4: Home ownership and tenancy scenario [2]

So, there is a huge population compared to the amount of land that is accessible, and designing appropriate homes and towns is extremely difficult. As a result, homes are disorganized and haphazard, with the most basic aspects of habitation completely ignored. Thus, the development of a socially cohesive community in such places remains a fantasy. the current situation of households in Savar causes grave concern, and resolving the situation should be a top priority.

3.2 Economic condition

Economic condition analysis is a prime task here as this research focuses on an income-based affordability analysis approach. Most of these families decide how much money to spend on housing based on their income. However, the average monthly income varies by city and region. Thus, based on the ground scenario and available data a monthly income category has been established.

Table 2 : Income scenario [7]

<i>Average monthly household income (BDT)</i>			
<i>Income deciles</i>	<i>Dhaka city</i>	<i>Other Urban</i>	<i>Rural</i>
Decile 1 (lowest)	9781	5570	5851
Decile 2	14277	8485	8368
Decile 3	16384	9976	9948
Decile 4	19220	11900	11826
Decile 5	21940	14415	14357
Decile 6	25380	16357	16293
Decile 7	35410	19287	19287
Decile 8	47381	23900	23353
Decile 9	64083	30770	31314
Decile 10	311190	75040	68391
All	55086	24031	18349

Dhaka City has a higher average income than both 'Other Urban' and Rural. However, there is a significant disparity within each survey segment and, as a result, across the country. As a result, the 'bottom 40%, middle 50%, and top 10%' are classified as low, middle, and upper-income groups, respectively

Table 3: Income Shares and Average Income of Income Groups [8]

Income group	Variables	Dhaka city	Other urban	Rural	All Bangladesh
Bottom 40%	Average monthly income (Taka)	14,421	9,615	8,342	10,657
Middle 50%	Average monthly income (Taka)	37,323	23,047	18,404	25,763
Top 10%	Average monthly income (Taka)	306,567	86,612	58,106	147,388

3.3 Affordability analysis

Meeting the affordability range is critical, especially when considering the middle-income group. where 'household income' has been the most commonly used determinant factor. And the majority of Savar residents regard their monthly income as the most important indicator of their affordability. This study focuses on assessing and measuring housing affordability based on household income, and it employs the Price to Income Ratio (PIR) approach to do so. PIR is a method for indicating the ratio between the current market value of the housing unit that a household intends to buy and the total annual income of the household, which can be summarized as the Current Market Value of the Housing Unit and Total Annual Income of Household.[6].

$$\text{PIR} = \frac{\text{price of apartment}}{\text{annual income}}$$

There are no universal standard numbers for implementing the PIR approach[9]. However, the standards listed in the table are only used as a guide to determining homeownership affordability.

Table 4: PIR value for different income group [11]

Level of affordability	Accepted value of PIR
Affordable	3.0 or less
Moderately unaffordable	3.1 - 5.0
Severely unaffordable	5.1 and above

According to the chart, if the housing price is within three years of income, it is within the range of affordability. As a result, any proposed modular house solution must be buildable within three years of equivalent income. so, we must determine the target group's annual income. According to the table 02, Savar can be considered as the “other urban” area and thus the average monthly household income is 23047taka for the middle-income group of Savar. According to that yearly income will be 276564 BDT and three years income will be 829692 BDT. Furthermore, construction costs have been calculated to determine the likely size of the dwelling units within their affordability. survey and on-the-ground investigation, the cost of construction per square foot is nearly 1700 BDT[10]. With the money equivalent to three years income the target group can afford household unit of $(829692/1700) = 488$ sqft.

4. Probable solution

Affordable housing has always been a problem for Savar's middle-income population, and this situation must be improved. Coming up with a general solution to improve the current situation, can arouse a significant amount of discussion. Because, rather than being comprehensive, housing strategies should be tailored to individuals or families. A comprehensive solution that is ideal for a specific target group, in this case, the middle-income group of Savar, can be suggested by taking that group into account. Based on the affordability and income data presented above, a housing modular prototype for the Savar middle-income group has been proposed.



Figure 5: Module plan; a) ground floor plan, b) 1st floor plan (source: by author)

4.1 Module detail

the affordability analysis reveals that the module size should be 488 sqft to meet their affordability range. Within this area a two storied solution has been proposed here as there are a huge population struggling with affordability. Rather separate and individual dwelling units two modules are merged together to maximize the beneficiaries. More to that the wall sharing between two families will also reduce construction cost. Thus, a pocket space of almost 50 sqft can be created which also reduces the built area and meets the affordability range.

Every two residential units share a common entry area, which is also used as a combined semi-outdoor living area "courtyard" by both units. The residence is divided into two layers: the first is a common space with utility spaces, and the second is a bed zone. This vertical zoning allows the bed area to have proper uninterrupted lighting and ventilation as well as the freedom to subdivide the space as needed.

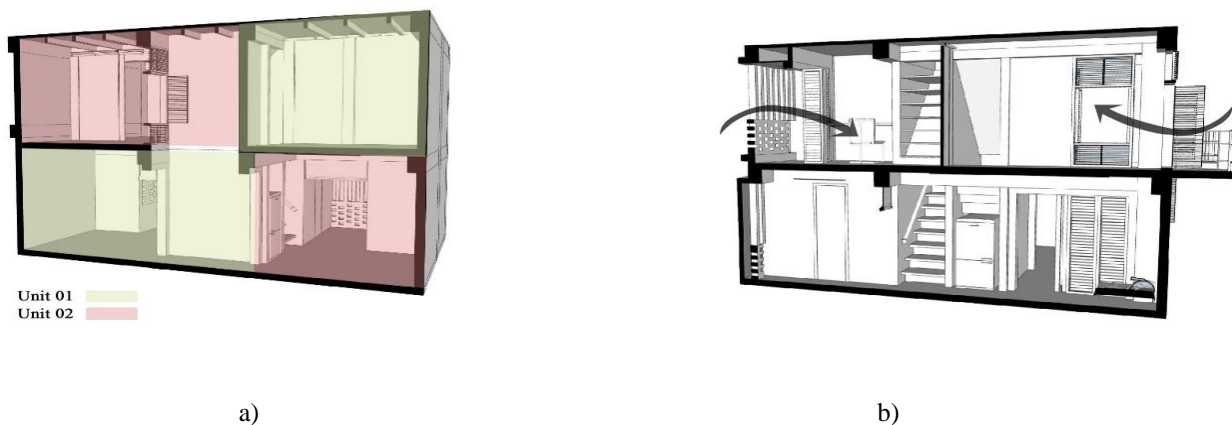


Figure 6: a) unit distribution, b) Air flow details (source: by author)

5. Result discussion

PIR, among many other tools, can be very useful in gaining a clear understanding of affordability. As the ground scenario indicates, the available residential units sold by the private sector are unaffordable for Savar's middle-income residents. Thus, the price to income ratio (PIR) is applied to Savar's middle-income group to determine their affordability range which is 488 sqft. But the housing affordability of Savar is a generic problem and continues to grow. Thus, we have considered the solution as a modular one. So a single residential unit within this affordable area has been presented here which can be repeated to serve the maximum user group and improve the current scenario.

There is some debate about whether or not modular housing can be used. Because housing scenarios differ based on family size, needs, and other socioeconomic factors. As a result, a generic solution may be appropriate for one but not for another. On the other hand, providing different housing solutions for each user group is time-consuming and labor-intensive. This might also fail to contribute to the overall improvement of the situation. That is why a modular prototype solution is being promoted here. And this study is still in its early stages, and

there are still avenues to explore. Materials and techniques, in particular, can be thoroughly investigated in order to reduce construction costs and provide better houses within the affordability level of the Savar target group.

6. Conclusions

Bangladesh's explosive and uncontrolled urban population growth creates an increase in housing demand. However, in contrast to rising demand, a lack of supply is causing housing affordability issues. The affordability issue becomes more pressing, particularly for the migrated middle- and lower-middle-income groups. Furthermore, housing for middle-income people in metropolitan areas has always been a challenge because housing consumes a large portion of their monthly income and they experience housing-induced poverty. That is why the PIR is used to determine the affordability level so that this middle-income group can rise above the housing cost burden. However, to improve housing affordability, the government and private organizations must take major initiatives. Because private sectors such as real estate and developers play an important role in housing provision, they must be encouraged to meet the housing demand of the middle income group within their means. Rather than seeking profit. Only collaboration and coordination among various sectors can ensure progress toward affordable housing for middle-income people. and it is hoped that this research will broaden the scope of future research in this field.

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