ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

PROJECT MANAGEMENT

Factors Affecting Condominium House Price Affordability for Targeted Beneficiaries in Addis Ababa

(Case of Bole- Sub-City, Addis Ababa)

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DECLARATIONS

I **Biruk Asmelash** registration number/I.D number **GSE/0025/08**, do hereby declare that this thesis is my original work and that it has not been submitted partially; or in full, by any other person for an award of degree in any other university/institution.

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APPROVAL

The undersigned certify that they have read and hereby recommend to Addis Ababa University School of Commerce to accept the Thesis submitted by **BirukAsmelash** and entitled **"Factors Affecting Condominium House Price Affordability for targeted beneficiaries in Addis Ababa** "in partial fulfillment of the requirements for the award of a Master's Degree in Project Management.

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ACRONYMS

IHDP	The Integrated Housing Development Program
PRF	Population Regression Function
DF	Degree of Freedom
AU	African Union
UNECA	United Nations Economic Commission for Africa
HCE	Household Consumption and Expenditure
VIF	Variance Inflation Factor

ABSTRACT

This study has been conducted in Addis Ababa, the capital city of Ethiopia with general objective of factors affecting condominium house price affordability. From ten sub cities' in Addis Ababa where condominium houses are built and transferred to the residents, Bole Summit Condominium chosen purposively. In order to carry out the stated objectives of the research, both primary and secondary data were collected from 208 sample house hold heads and analyzed through descriptive statistics such as percentage, tabulation, frequency, bar graphs and in addition STATA were employed to enter the data in to the computer for analysis and finally a multiple regression which is an econometric model was employed to find out the intended result. To select the target population, the researcher used purposive sampling technique to gather the required information from 208 households who are living in studio, one bed, two beds, and three bedrooms. The data generated to meet these objectives were collected and secondary documents which is relevant to this study. The finding shows that, from the variables income, house type and house size are factors that affect the housing price affordability significantly and as a result it leads to less purchasing power of the urban poor society. On the contrary, the higher income dwellers are living in the condominium houses. With regard to the objective of the housing development program, the result reveals that some difficulty to achieve its objectives toward making the urban poor to be a house owner with affordable price. The study primarily recommend that, actions should be taken that can improve the level of difficulty of condominium house price affordability for the low and middle income citizens of the country by revising the housing policies and implementation strategies.

Key Words: Sub city, Bole, Affordability, Condominium, Low Income, Middle Income, High Income, Housing, Living Condition

CHAPTER ONE: - INTRODUCTION

1.1. *Background of the Study*

Housing is one of the basic needs for all human beings. According to Hierarchy of Needs theory housing forms the foremost important needs, in addition to security, food and others, at the lowest among the five levels.

For the last two decades housing has become an important public issue in almost all parts Ethiopia because of urbanization, more and more people are changing residence from rural to urban areas and this results a huge gap between the need and supply of housing. According to (UN-HABITAT, 2011), in Ethiopia it is estimated that there is a housing deficit around between 900,000 and 1,000,000 units in urban areas, and that only 30 percent of the current housing stock is in a fair condition, with the remaining 70 percent in need of total replacement.

In Addis Ababa, there is an ever growing mismatch between the size of the population and its demand for basic services. Housing is one of these services, which has been for long gravely demanded by the public at large. Housing shortage is acute for low-income households which account for over 80 percent of the city's population (Yinebeb, 2015). In Addis Ababa alone, it is estimated about 300,000 units are required to meet the deficit. To solve this big problem Ethiopia has been implementing an ambitious government-led low- and middle-income housing program, the Integrated Housing Development Program (IHDP) since 2005. The initial goal of the program was to construct 400,000 condominium units, create 200,000 jobs, promote the development of 10,000 micro - and small - enterprises, enhance the capacity of the construction sector, regenerate inner-city slum areas, and promote homeownership for low-income households (UN-HABITAT, 2011).Providing house for low and middle income group is one of the components of urban development program in poverty reduction scheme.

The government of Ethiopia initiated the housing development program in order to reduce this shortage of housing and provide a house that meets the minimum standards (kitchen, toilet and bath facilities) to low and middle income people and achieve its target in reducing poverty(Kidist, 2014). Even though the government is on the way to solve the gap between the

need and supply of housing, accesses to housing and affordability to the poor is also the major concern to be solved.

Housing is still one of the major problems in Addis Ababa. To reduce the problem the government has implemented the project, condominium housing which is led by IHDP where houses are constructed by low cost for medium and low income groups. The goal is to reduce the proportion of slum-dwellers, but still there are inadequate housing provisions (UN-HABITAT, 2011).The word "Condominium" has different but same meaning one in the other way as defined by different authors. Condominium refers to a large property complex divided into individual units and sold.

Shortage of affordable and standard housing problems in all towns in Ethiopia in general and particularly in Addis Ababa is now a big problem and needs immediate action. As a result condominium housing projects currently undertaken in Addis Ababa to provide affordable and standard housing for the low and middle income group of the town. But, because of different reasons the targeted beneficiaries are not directly benefited from the program.. However, according to the housing development project document it is stated that, 30percent of the condominium house shall be transferred to females and 60 percent to the low and middle income groups as to the socio-economic objective of the project (AACGBFED, 2013).

1.2. *Statement of the Problem*

Addis Ababa is the capital city of Ethiopia and mostly known by the name "Diplomatic Capital" of Africa, by virtue of the fact that the African Union is located here. And the city has faced very rapid population growth due to immigration, high rate of changes in residence from rural to urban area and natural growth and as a result it creates high pressure on the need for housing. However, the housing development speed is not so fast to cover this huge number of population. Because of this, there is severe housing shortage in the city of Addis Ababa. Most of the residents of Addis Ababa have low and irregular income. So the available houses both from the government and the private real estate developers are not affordable to the low income group of the population (Tsion, 2016).

The existing housing stock, particularly in Addis Ababa, is generally of poor quality, with many settlements congested and unplanned. Using the UN-HABITAT slum definition, 80 percent of Addis Ababa is a slum with 70 percent of this comprising government owned rental housing. Only 30 percent of total housing stock is in fair condition, while the remaining 70 percent is in need of total replacement or significant upgrading. Ethiopia's housing deficit is between 900, 000.00 and one million units in urban areas, and about 300, 000.00 housing units are required in Addis Ababa alone every year in order to meet the projected demand of 1.5 million new homes by 2025.

Demand for affordable housing in Ethiopia, particularly in urban areas like Addis Ababa, has continued rapidly and this need is not manageable with the existing capacity of supply side of the city, especially the government led programs because the other side of the market is by far unaffordable for most of the low level income society. The dominant player in housing is the state, manifested through its various arms such as regional governments, districts, and woredas.

The state controls the majority of the rental accommodation and influences the supply of new housing through active involvement in material production and importation, land supply, and housing finance. Very few private housing developers exist. The private construction industry is very small and it is complicated and time consuming to start a company, register it, and conduct business. Those that do exist operate only for high-income groups as there is little incentive to construct low-income housing to the society (UN-HABITAT, 2011). As investors and the well-to-do are putting up houses in every corner of the country, those who are economically challenged and in this case, the slum dwellers, are constantly threatened not to throw away out of the city.

There are four categories of new residential developments taking place in the housing sector: (a) government-initiated condominium buildings; (b) residential neighborhoods initiated by developers; (c) owner-built housing dwellings; and (d) new home activity driven by housing cooperatives. In addition, there are two other major categories of housing units in Addis Ababa: kebele-rental housing (very old stock), mainly for those on low incomes, and informal settlements.

1. **Government-built Condominiums:** Since 2005 Ethiopia has been implementing the Integrated Housing Development Program, an ambitious government-led low and middle income housing program. This program was implemented in Addis Ababa and 55 other cities. The first phase of the IHDP has been successful in many respects and has built 171,000 housing units. There were, however, a number of unanticipated challenges facing the program that are supposed to be addressed in a new and enhanced second phase of the IHDP which was launched in 2011.

This second phase involves a new condominium housing project in Addis Ababa divided into three different categories to accommodate monthly earnings ranging from US$23 to US138. The payment allows the buyer to make a down payment equaling 10, 20 or 40 percent of the unit cost, and then to pay off the balance through a mortgage.

Currently there are 38, 790 condominium units that are under construction at 13 sites. The new condominium houses that are being built will include 18 story buildings. According to the latest figures available, 154 000 of the 160 000 people registered under the scheme are saving money each month toward acquiring a home. Out of these, 11 800 have paid the full amount and around 29 000 have paid 40 percent of the total cost. The ones who have paid in full will have priority when the condominium units are handed over to the home owners.

2. **Residential neighborhoods initiated by Real Estate Developers:** There are approximately 50 private real estate companies operating in Ethiopia that are almost exclusively focused on high income groups. These higher end units tend to be located within estates approximately 20km from Addis Ababa or in the Kazanchis business district in the heart of the city. It is estimated that Ethiopia now has 2 700 millionaires, reflecting an increase of 108 percent between 2007 and 2013- the fastest growth rate in Africa.
3. **Owner-built housing construction:** Self-built housing was by far the most common type of housing delivery approach before the introduction of the IHDP. Though relatively limited now, this building approach is still active in older residential neighborhoods. Costs for owner-built construction are generally higher and this segment of the market tends to include the full range of housing units from modest homes constructed over

extended periods to large and luxurious homes often built by razing or replacing older properties.

4. **Home construction by Housing Cooperatives**: Cooperative housing developments, organized by groups that share a common employer or membership, have been a long-standing feature of the residential real estate market. The city administration has registered more than 500 housing cooperatives. The minimum membership in a housing cooperative is 14 while the maximum is 24. Many cooperatives members are middle-income, based on employer associations such as Ethiopian Airlines or other state-owned companies.

The condominium housing program is designed to serve the middle and the low income groups who live in slum of inner city for those who are being challenged by housing shortage. However people argue that even if the program was design for the poor and low income earners but what is shown is that majority of the beneficiaries are middle and higher income society. The main issue raised by the society related to this is the current price of the government led housing program is not affordable enough and too expensive comparing with the level of income the people have and the dramatic increase in the price of houses in the city.

The period for the payment of the total price of the condominium houses is 10 and 15 years, which result the low income groups lack access to financial credit for housing because the small and micro enterprises require collateral to give them credit.

Therefore, the very purpose of this study is to find out what factors are there in affecting house price affordability of the society and what measures are taken by the government to handle this problem and to increase the accessibility of housing for the targeted beneficiaries.

(Habte, 2010), in his study found that, supplying of standard low cost housing for low and middle income groups are affected by high cost of local constructional materials, low level of income of the majority of the residents, high housing costs and low capacity of the majority of the residents to afford for condominium housing in the study area. And also beneficiaries of condominium housing were on average, those who were classified as high and middle income categories of the residents. The study also showed that, condominium housing beneficiaries are

better off in terms of both mean monthly income and saving than the non-condominium housing residents. Household with higher income categories are also those with higher monthly saving than the lower income category.

Due to increasing the price of condominium houses, the less purchasing power of the urban poor can't afford it. On the contrary, the middle and higher income dwellers are living in the condominium houses. On the other side, whether they are middle and higher income dwellers but it is difficult to pay the down payment as well as the installment too. With regard to the housing development program, it has some difficulty to achieve its objectives toward making the urban poor to be a house owner with affordable price (Tsion, 2016).

Because of urbanization, more and more people are changing residence from rural to urban areas and this results a huge gap between the need and supply of housing. As I tried to see some scholars who study in this area they found that the problem with affordability because of low income of the dwellers, low level of saving, high cost of the house as a reason but by far it's not addressed the means of finance, house type choice which is related with family size and also as the house type change, the size of the house will also change and possible solutions given by the government side to cope up with this problem. So this paper will try to fill the gaps of previous studies to clearly give some insight to interested party on this agenda, by using purposive sampling method and descriptive analysis.

1.3. *Research Question*

This thesis attempts to investigate the following three research questions:

- Are the dwellers of the study area capable of affording the condominium houses?
- What factors affect the housing price affordability significantly?
- Does the IHDP achieve its goal by delivering the houses for the targeted beneficiaries?

1.4. *Objective of the Study*

1.4.1. *General Objective*

The general objective of this paper is to find out factors affecting condominium house price affordability in Addis Ababa by taking a condominium site in Bole sub-city.

1.4.2. *Specific Objectives*

- To evaluate the household capability to afford the condominium houses price.
- To identify the factors affecting condominium house price affordability.
- To assess who did benefited in the housing program.

1.5. *Significance of the Paper*

This study could have various significances for different stakeholders who concerned with this issue in general and particularly for residents of Addis Ababa town. It contributes a better practical understanding about currently existing housing price increment and its affordability with respect to possible measures taken by the state government office by taking a sample condominium sites' from Bole sub-city. In addition, the result of the study can create awareness about how the dwellers are responding for this price change to get the house. It also gives some guide line information to policy makers, government officials and different stakeholders about the existing housing price increment problems in the town. In addition, it invites individual, communities, and investigator to develop awareness about the currently existing problem associated with housing price increment. Moreover, it could be important in putting base line information to the next scholars who would like to conduct further studies in this subject matter.

1.6. *Scope of the Study*

Studying each and every aspects of price of housing sector in relation to its affordability for low income dwellers is quite complex, which is costly, time taking and tiresome to study. Therefore, the broad problem to be investigated in this thesis is concerned with determining affordability of condominium houses as well as the government efforts to handle this problem in, Addis Ababa by taking Bole Summit Condominium as a case study area.

1.7 Limitation of the Study

The study faced different problems to collect all necessary data's from the respondents due to miss understanding about the research topic, that means they think that the information they give may be used for other purposes (may be politicized) and it was not easy even if the objectives of the questionnaire is clearly defined. Time is also another constraint encountered during information gathering due to incontinency of respondents. The other problem comes from budget issues that are scarcity of money, materials, and that of lack of experience in the research topic. This paper goes through condominium houses found under the control of Bole Sub-City which is one of the ten sub cities in Addis Ababa and did not capture the entire sub cities and this does not show current house price affordability in detail. This study did not also include other related issue with housing in Addis Ababa to see the current demand and housing supply for the residents of Addis Ababa.

CHAPTER TWO: LITERATURE REVIEW

2. Introduction of the chapter

As housing is a fundamental human need the government expected to provide affordable houses for its low income citizens. This study reviewed recent literatures which is relevant to the study, and also tries to show brief definition of housing, condominium housing and housing price affordability in detail by referring national and global experiences.

2.1. Theoretical Literature Review

2.1.1. Housing

There are complex linkages among housing supply and price affordability issues. Throughout the developing countries cities, rapid population growth from high rate of natural increase and rapid rural to urban migration together with low level of their income has resulted in high demand of urban housing which resulting in housing affordability problems. However, housing problems may not be the same in each city because of variations in physical conditions, economic development and cultural preferences of the given society. Therefore, the function of the housing unit and the service it gives varies from country to country and from place to place based on the above mentioned factors.

Owning a house is fulfilling one's basic need and right as well. In addition, good housing condition improves the health and the productivity of the inhabitants and thereby contributes to their wellbeing and also to the broader economic and social development of the society and, the nation at large (Muleta, 2014).

There is no general definition for the concept of housing. Therefore, its meaning also varies among scholars depending up on their culture and socio-economic condition. Housing is one of the basic needs for all human beings next to food and other materials that peoples leave together and have different type according to the economic, cultural, and geographical factors and other reasons of the society.

Housing is a system which represents relationships between physical structure and social structure of human beings at different spatial scales and levels of hierarchy. Housing is a physical structure which includes its design, material qualities, their arrangement in space, and

their interactions with the physical environment (Wondwosen, 2014).Moreover, Housing can be defined as a special type of asset in that it has a dual role as consumption and an investment good.

Different papers define housing in different way but have the same meaning at the end. For instance, in the report of (UK-AID, 2015), housing can then be understood as an asset that may have social, financial and economic value. In the other side of defining housing from its importance, according to Van Weesep, 2000 sited in (Wan Nor, 2010), housing gives the occupants an opportunity to develop a desired way of life. Because of its significance in terms of location, housing can create a good opportunities for work and access to service and facilities.

2.1.2. Condominium Housing History

Condominiums are not a new concept. The form of ownership which is utilized for condominiums was used by the Romans as early as the 6^{th} century B.C. In Europe, the concept has been available for many centuries. The concept has existed in South American countries for at least two centuries.

The concept of condominium housing dates back to the early roman times. The word comes from two Latin words ‘‘con’’ meaning together, and ‘‘dominium’’ meaning property. Hence, in a condominium, there is always property owned in common with others, as well as individual units, which are owned out right (Pollick. 2006 cited in (Habte, 2010).

Housing has become an important public issue in almost all societies of the world. Shelter (housing) is recognized by all as being one of the fundamental needs of human being with food and clothing. However, it is becoming one of the most sever difficult to have and acquire shelter especially for developing countries due to low rate of new housing supply and affordability problems. To overcome those problems, condominium houses constructed in most developing countries by public sector. It is also a social structure which accommodates a residence based activities, their character, social qualities, and their socio-economic interactions in space with the immediate social strata, UNHABITAT, 2012 sited in (Wondwosen, 2014).

In developing countries, the growing condominium housing markets concentrated in the new construction sector rather than resulting from apartment privatization.

2.1.2.1. Housing Policy in Ethiopia

Ethiopia has been experiencing various policy measures that have profoundly influenced the national urban housing development sector, at least as of the first few decades of the 20th century (UN-HABITAT, 2007).

2.1.2.1.1. Housing Policy Before 1974

Housing provision in pre 1974 was predominantly handled by the private sector and it can be said that the government didn't attempt to exert any effort in the provision of housing for low-income people. The housing market during this period can be characterized as operating somehow on a free market principle. Moreover, land lords were leasing urban land and constructing residential houses to tenants, and there was no restriction as regards to the selling and buying of houses. No formal housing policy was adopted during that period and most of the poor people in the city were lived in extremely overcrowded areas (Esayas, n.d) sited in (Tsion, 2016).

There were housing difficulty for the middle and the low income people to build residential houses. Also no strong responsible institutions for the housing sector at all level of the government (Tesfahans, 2001).The current slums and housing problems are the results of accumulated deficits of policies and practices for several years. The pre-revolutionary land tenure systems were excluding substantial proportion of the middle and low income households from accessing urban land and housing (Yewoinshet, 2007)

2.1.2.1.2. *Housing Policy After 1974*

The issue of land was one of the motive forces before the February 1974 revolution in Ethiopia (UN-HABITAT, 2007). According to(Tarekegn, 2004), the measures taken in 1975 had a particular impact on urban areas; all land became state property. Proclamation No.47/1975 in July, 1975 23 had served as an over-riding policy instrument to urban land and housing for 11 years. This had, resulted in a 15-50% reduction of rents on nationalized dwellings and private housing construction discouraged by the prohibition of private renting.

Following the nationalization of urban land and extra houses in 1975, the government was working towards a complete control of the housing sector by pursuing centralized economic policy. Indeed under Derg rule, all cities in Ethiopia, including Addis Ababa, went through acute housing shortages and ever-deteriorating housing conditions. During 1986, the government introduces some corrective policy measures. The most notable move in that regard probably was the housing policy. However, the housing policy failed due to loosed tight of government control on urban housing provision. As a result, rapid proliferation of squatter settlements began to spread to cities like Addis Ababa (UN-HABITAT, 2007).

According to(Ashenafi, 2006), in 1986 the government formulated a housing policy for the first time in Ethiopia. The aim was to standardize building codes, improve effective building materials and housing design, encourage community house building, and uses the existing housing stock by allowing co-dwelling and by regulating the purchase and sale of houses.

2.1.2.1.3. *The Housing Policy of the Current Government (after 1991)*

After 1991 the transitional government of Ethiopia has introduced market based economic policy, which indicated housing policy line. The housing policy has been based on the Decree No.15/1990. However, denationalization of houses renounced and ownership of land remained under government hand (Tarekegn, 2004).

One important step in the urban development sector is enactment of the proclamation on urban development policy by the federal government of Ethiopia (Teshome, 2012). The government adopted a land lease policy (proclamation 80/1993), which regulates the right to residential land

through lease bases for a maximum of 99 years. This policy gave emphasis to the alleviation of the chronic housing problems in urban areas (Teshome, 2012).

Another milestone regarding Addis Ababa housing development is the 2004 five years housing development program developed by the city administration. It had an ambitious target of reducing housing problem of the city by 50% during the plan period. The five year program put the alleviation of housing problem of low income households as its priority. As a strategy of minimizing the cost of building, the program promoted multi story (up to G+4) condominium buildings with a minimum built up area of 22 m2. This was believed to benefit low income families (Azeb, 2006).

2.1.3. Housing Price Affordability with Related with Income and Expenditure

According to (Wan Nor, 2010), Affordability is mainly defined by the relationship between household's housing expenditure and income. The affordability of housing has become a common way of summarizing the nature of the housing problem in many market-based housing systems. Affordability is also perceived as related to incomes, housing costs, housing availability, employment, maintenance of the existing affordable housing stock, and patterns of new construction.

Affordable housing is broadly defined as that which is adequate in quality and location and does not cost so much that it prohibits its occupants meeting other basic living costs or threatens their enjoyment of basic human rights (UN-HABITAT, 2011).

According to kamete (2001), sited in (Habte, 2010), there are external and internal factors that affect housing affordability. The external factors revolve around the cost of the housing. This is the sum of land acquisition, infrastructure, both on and off site, planning, designing, administration and community facilities, interest rates, amortization periods and subsidies. The internal factors that affect affordability have to do mainly with the socio economic circumstances of the target group. The first set of this is the economic character of the community which is defined as employment opportunities, kinds of occupations and income, and expenditure patterns. The other factors has to do with the target group's social characters like household sizes, family structures, needs, customs, aspirations and priorities.

There are several types of condominium such as residential condominium, non-residential condominium, standard condominium and phase condominium. Residential condominium is owned by the individual units which the owner will occupy for living purpose. There is also nonresidential condominium found in the property market such as hotel, services apartment, retail shop and office building. The structure is the same with the residential condominium but the difference is the usage of the building. Standard condominium is just a general type of condominium that can be found in any country. This kind of condominium is subdivided into generally; a condominium is a multiple-unit dwelling in which there is separate and distinct ownership of individual units and joint ownership of common areas. The building is managed by the condominium association, either directly or through a professional manager. The owners of the individual units are jointly responsible for the costs of maintaining the building and common areas, but they are individually responsible for the maintenance expenses of their particular units (Mahider, 2013).

The government of Ethiopia in 2003 adopted a federal condominium proclamation (proclamation no. 370/2003).This proclamation is applicable to Addis Ababa and Dire Dawa. Based on the federal legislation, the Addis Ababa city Government has issued a regulation of no. 12/2004. These two legislative background documents are critically necessary in the condominium development of the city (UN-HABITAT, 2011).

Due to the magnitude and complexity of the housing development program, different concerned institutions under the city government have been involved. Such as, Addis Ababa housing agency, development and transferring of houses and ten sub cities project office (Hadi, 2009) sited in (Tsion, 2016).

The ability of a household to purchase a house is affected by material inputs/house input and this in return affects the purchase cost (which is the sum cost of land, infrastructure, building materials, house size and labor and profit) and the ability to finance the purchase (principally set by the finance down payment requirement and the balance of household savings). The other main factor is that the level of income and expenditure pattern of the households (which are a set of income level, family size and other non-housing expenditures). This all have significant pressure on the capacity to afford on a given house (UN-HABITAT, 2011).

While there is no universally agreed measure of what constitutes 'affordable housing', there are three common measures, which are associated with two components: housing costs and household income.

1. **Price-To-Income Ratio:** The ratio is calculated by dividing the median house price by the median household income. It shows the number of annual median salaries it takes to buy a median priced house. Countries that have particularly high house price-to-income ratios are typically those with high land prices and construction costs.
2. **House Rent-To Income Ratio:** This ratio is calculated by dividing the median annual rent by the median annual renter household income.
3. **Residual Income Assessment:** It is represented as a percentage of household income spent on housing-related expenses and demonstrates a household's ability to financially service housing without compromising on necessary non-housing expenditure.

Although there is no universally agreed percentage, housing is generally deemed affordable when a household spends less than 30 per cent of their income on housing related expenses, such as mortgage repayments (for owner-occupiers), rent payments (for tenants), and direct operational expenses such as taxes, insurance and service payments (UN-HABITAT, 2011).

2.2. *Empirical Literature Review*

2.2.1Housing in Asia

Housing conditions of city residents in China have improved significantly in recent years, housing issues are still critical to the improvement of city residents' lives. Firstly, there are still 3,310,000 families lacking housing, among which the average living area of 750,000 families is less than 4m^2 per person. There is dangerous housing of 27,060,000 m^2 construction area needing prompt reconstruction. 45% of urban housing has no relevant complementary facilities. Secondly, the process of industrialization and urbanization is speeding. According to relevant materials, national town population will increase by 10,750,000 from 1995 to 2000(Jianping)

Although, residential property market in Malaysia has experienced significant price expansion over the past fifteen years with price, at several states expanded at higher rates. The normal perception of household pertaining to housing market, especially during the period of expanding

economy, is of sky-high prices where majority of them are frozen out of the market by low income and high prices thus affordability of housing market are considered unsustainable for two reasons; firstly, prices were too high and ownership was difficult or owners have difficulty in making the monthly mortgage payment; secondly, fluctuations in price were unpredictable and highly speculative which do not synchronize well with income, affordability and availability(Zainal, 2010).

And again as the Taiwanese media, in Taiwan, Taipei housing is so expensive that the average household would have to "neither eat nor drink" for over fifteen years in order to own a place. They use this statistic to explain the high costs of housing and the difficulty of achieving homeownership. Skyrocketing prices have also made housing a political issue. Increasing the supply of social housing, or finding methods to curb rising prices, has become a key issue in each major election since 2010. Possible housing solutions are constantly under debate and, due to resistance from different interest groups, making slow progress (Yi-Ling, 2015).

2.2.1.2 Housing in Africa

Few people disagree that Africa is entering the throes of a housing crisis as demand for decent housing far outstrips supply. This situation is as a result of a growing population which has been exacerbated by a high migration of the population to urban centers.

Estimates suggest that by 2050 Africa's population will have doubled reaching 2.4 billion which will stretch the cities to beyond breaking point due to inadequate housing and associated infrastructure needs such as roads and clean water. One just has to visit any major urban center in Africa to be met by roads that are chocker blocked with traffic, water rationing and the ever present power cuts.

Take the case of Egypt with a population close to 90 million. The government is racing to establish several housing projects set to meet the current housing deficit estimated conservatively at 3.5 million.

In Nigeria, Africa's most populous country the situation is not any better with only 100,000 new houses being built annually compared to an annual demand of 700,000 and an accumulated deficit of some 17 million houses.

In South Africa the government has made inroads into meeting housing needs by building over 3 million housing units on a subsidized basis since 1994 however demand is still on the higher end and current estimates of the deficit stands at about 2 million houses.

In East Africa a look at Kenya suggests the picture is the same. A woefully inadequate housing stock with reports placing annual demand at 200,000 while supply is at only 50,000. The 2013 Housing Survey by the Ministry of Lands and Housing in Kenya estimated the deficit at 2 million houses over the next 10 years.

These statistics paint a grim picture of an ever increasing deficit that will push more of Africa's population to slums and informal settlements especially given the current population boom.

In the next 2 decades UN-Habitat estimates that there will be more people living in towns than those in the rural areas. This is due in no small measure to Africa's booming economy that has resulted in an increasing middle class population with higher aspirations and appetite for modern living. An African Development Bank report places the continents middle class population at 34.3% in 2010 far higher than the figure of 26.2% in 1980. The result is a rapid rise in urbanization, consumer spending and not to be left behind – higher housing expectations. The rate of urbanization is so high that UN-Habitat has estimated that 40,000 people move to cities in Africa every day, some would place this figure much higher.

The result of the combined influences of a ballooning population, housing deficit and urbanization have created what some would call a perfect storm which if not curbed could result in a reversal of economic gains in the decades ahead because quality of life is intrinsic to economic development.

Kenya's housing challenge is extreme. The average price for an apartment in the capital city of Nairobi is currently KES 11.58M (USD 136,000), up from KES 5.2M (USD 61,000) in December 2000.There is no home on the formal market below KES 2M (USD 23,000), a level

that is still completely unaffordable to low-income populations. Property prices in Kenya continue to rise at a rapid rate. According to real estate and property experts Hass Consult, this trend is likely to continue, "With few mortgage owners, and ongoing economic growth, we see no prospect for a collapse in housing prices. Kenya isn't yet oversupplied with housing." As a result, 60 percent of urban residents live in slums (Aden Van).

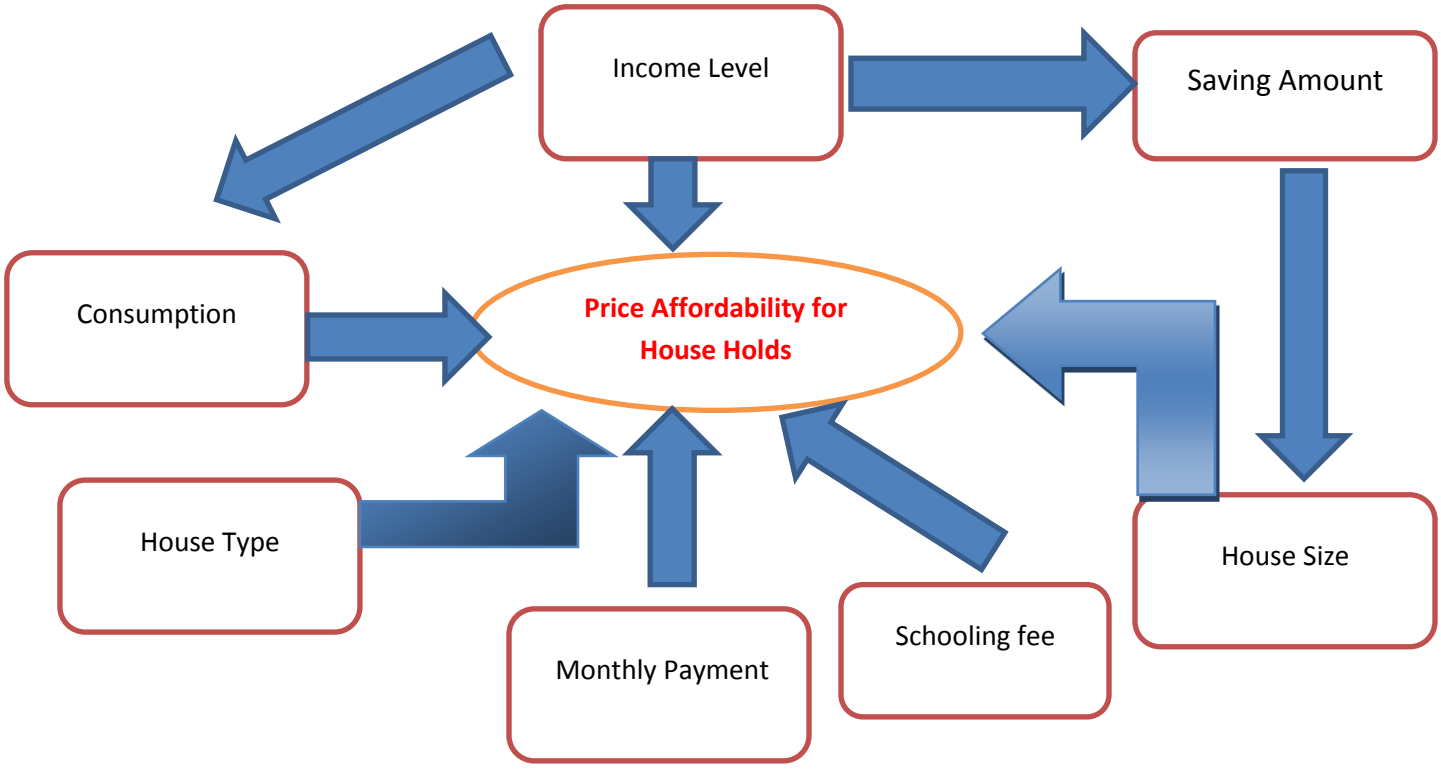
The rapid process of urbanization in developing countries accompanied with lack of adequate and affordable housing is one of the 21st century's main development challenges. Like most African cities, the spatial, physical and socio-economic condition of Ethiopian cities is by far behind the requirements fundamental to sustain the livelihood of the city. To address the problems, the Ethiopian government is implementing low – cost housing program. Revenue from land lease is main source of financing. The saving requirement is relatively high, and the required down-payment is very high, it could be the case that poor households self-select out of the program (Alebel, 2016).

The study in Addis Ababa Ethiopia (Case study on Lideta Sub City), has viewed, the low income housing provision program provide affordable houses to the residents of middle income earners of Addis Ababa but it shows there is small number of low income dwellers benefited from the housing program(Tsion, 2016). This is because of majority of residents are middle and higher income earners. It implies that, the condominium housing program has positive and quite important effect on middle and higher income of households. From this result, the condominium house is more affordable for the better income earner than the lowers. In addition, the finding show that source of finance to pay the down payment and installment were with the help of families and relatives. The low income populations are excluded due to lack of access to financial credit to pay the down payment and the installment too.

2.3 Conceptual Framework

The relationship among the independent variables with the dependent one is shown in figurative way of expression and this will help to easily understand which factor affects the price affordability of housing both in positive and negative way.

Figure 2.1 Relationship among the variables



Source: Derived from the Theoretical and Empirical literature.

CHAPTER THREE: METHODS OF THE RESEARCH

This chapter tries to describe briefly about the research methodology that were used in the study. It describes the data sources, methods of data collection and sample technique, research design, methods of data analysis and presentation.

3.1 Approach

In order to achieve the objective of the study, both quantitative and qualitative data were used; data collected mainly from primary data source and relevant documents were used as secondary sources. The primary data was obtained from Households who currently are living in the condominium house. This helps to get first-hand information from the residents. In addition, secondary data's were collected and deployed in the paper from housing development agency of the city, specifically Bole sub-city, as well as statistical reports from the IHDP, magazines, and related journals.

3.2 ***Research Design***

From different types of research this study used explanatory research design to show and clearly describe factors that determine the condominium house price affordability.290 sample respondents were selected by using simple random sampling after the sample population is determined.

The main reason behind this sampling technique is that it is known to be representative of the total population, or it is known that it will be free from biasness.

Method of Data Collection

Data was collected by using primary data, both qualitative and quantitative through questionnaires. Both open and close ended format questions were designed to obtain information on price affordability of condominium housing in the study area. In addition, the secondary data was obtained through review of official journals, reports and relevant papers on this issue.

3.3 ***Target population***

In order to gather the required information from the residents of the town, purposive sampling is selected because it is known to be representative of the total population, or it is known that it will produce well matched groups. The idea is to pick out the sample in relation to some criterion, which is considered important for the particular study. This method is appropriate when the study places special emphasis upon the control of certain specific variables (Yogesh, 2006). This selection is purposive; because from 10 sub-cites in which condominium housing project found in the town, Bole sub-city is purposively selected.

According to (AAIHDPO), in Addis Ababa 176,065 condominium houses are built and transferred to the dweller's starting from 1996 up to 2005 E.C throughout all the ten sub cities. From this, Bole sub-city takes around 9.3 percent which is 16,404 of the total.

In Bole sub-city the condominium houses are distributed in ten sites and for sampling purpose the researcher selects bole summit condominium site which is built and transferred to the residents in 2003 has 658 houses in total and from these 28 houses is built for commercial purpose. A total of 290 sample respondents were taken as a representative population of the study area.

3.4 ***Method of Data Analysis***

The data collected from different sources processed, analyzed and interpret by using relevant statistical tool called Statistical Package for Social Science (SPSS version 20) and Microsoft Office Excel 2010, to determine whether there is statistically significance correlation between households monthly income, non-housing expenditure, material input/house input and savings of condominium housing residents with that of the current price affordability issues of the city. In addition, descriptive statistical method of analysis, such as frequencies and percentages were employed to describe the findings and to present in a tabular, graphs and charts format.

CHAPTER FOUR: RESULT & DISCUSSION

4.1.Introduction

The purpose of this chapter is to present, discuss and to give appropriate analysis of data's that were collected through primary and secondary data sources. To gather data through questionnaire, 290 questionnaires were distributed to respondents who live in Bole Summit Condominium. From the total of 290 respondents, only 208 of them filled the questionnaire completely & returned back, which shows 71.7% of the respondents are fully participated to answer the necessary questions raised through questionnaire. In addition to this necessary data's were collected through different sources as a secondary data source.

In the first part of this section the characteristics of the respondents like gender, age, marital status and the likes are discussed using descriptive statistics. The second and the main part of this section present the findings of the study by using both descriptive and econometric model.

4.2.Demographic Features of the Respondents (Descriptive Analysis)

4.2.1. Respondents Characteristics

This part of the study shows the demographic characteristics of the study population of the selected area. The demographic feature of the respondents includes gender composition, age structure, educational level, marital status and household size.

Table 4.1Frequency analysis of respondent's Demographic profile

Gender	**Frequency**	**Percent**		**Cumulative**	
Male	121	58.17		58.17	
Female	87	41.83		100	
Total	208	100			
Age	Observations	Mean	Std. Dev.	Min	Max
	208	35.51923	6.770183	25	55
Level of Education	**Freq.**	**Percent**	**Cum.**		
Illiterate	10	4.81	4.81		
Read & Write	19	9.13	13.94		
Primary Level	33	15.87	29.81		
Secondary Level	28	13.46	43.27		
Diploma	37	17.79	61.06		
Degree	75	36.06	97.12		
Above Degree	6	2.88	100		
Total	**208**	**100**			
Marital Status	**Freq.**	**Percent**	**Cum.**		
Single	62	29.81	29.81		
Married	131	62.98	92.79		
Widowed	6	2.88	95.67		
Divorced	9	4.33	100		
Total	208	100			

(Source: compiled from questioner's survey, 2018)

From the table above, the data shows that, among the total sample of the respondents, 58.17% of the respondents were male-headed households, and the remaining 41.83% were female headed households.

One of the Integrated Housing Development Program aim gives special attention (30%) advances to women headed households (Yewoinshet, 2007). The finding shows that, female headed households of the study area were 41.83%. This implies that, it is above 30% and meets the targeted objective of the program on the study area. As the table indicates, the household's age falls between 25 and 55 and this implies almost all households are on adult stage.

When we see the educational level of the respondents about 4.81% of the respondents are illiterate, 9.13% of them can read & write, and 15.87% of them were attended primary education, 13.46% of the respondents attended secondary level education. Respondents who attend diploma, degree and above degree were 17.39%, 36.06% and2.88%respectively. From the findings it can

be explained that, those who attend diploma level and above were 56.73%. It implies that, a large number of the respondents were educated. Increase the educational status of the people it also increase their income capacity. So that, one can say that, the majority of respondents of the study area can earn better amount of money than the respondents that have less educational status.

With regard to marital status of the respondents, about 29.81% of the respondents were single, 62.98% were married, 2.88% were widowed and 4.33 % were divorced.

4.2.1.1.Household Size of Respondents

With regard to house hold size, from the total samples of the respondents, 18.75% leaves alone, 11.54% with one of their family members, 27.4% of them had 2 family members, 16.35% of the respondents are leaves with 3 family members and around 11.54% of the total population had 4 family members while the remaining 14.12% of them had between 6-11 family members. Among the respondent households, only 42.31% of them reported that they have more than 3 family members. The average house hold size of Addis Ababa in the year 2011 was 3.6 which were equal to the average household size of the country (AACGBFED, 2013).This result shows, more than half of the respondents of the study area satisfied the national average.

Table 4.2 House Hold Size of the Respondents

Household Size	Freq.	Percent	Cum.
1	39	18.75	18.75
2	24	11.54	30.29
3	57	27.4	57.69
4	34	16.35	74.04
5	24	11.54	85.58
6	6	2.88	88.46
7	10	4.81	93.27
8	8	3.85	97.12
9	1	0.48	97.6
10	1	0.48	98.08
11	4	1.92	100
Total	**208**	**100**	

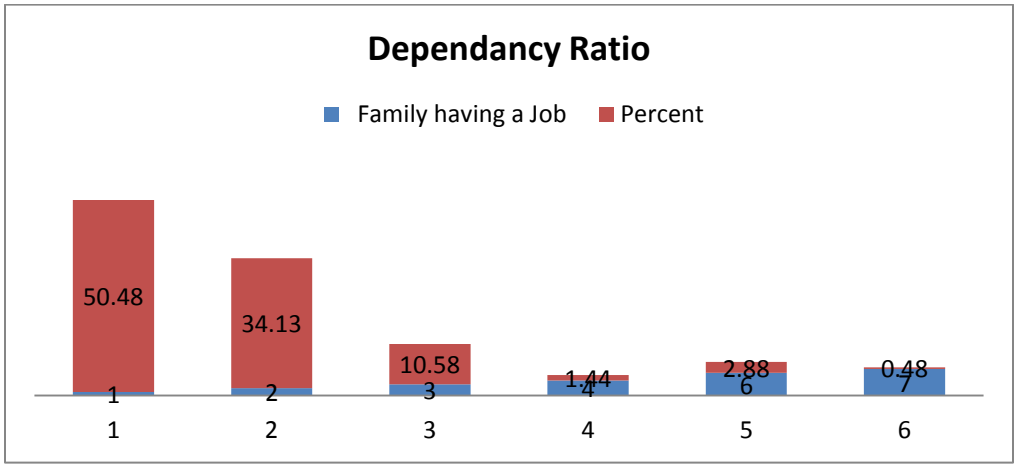
(Source: compiled from questioner's survey, 2018)

4.3.Socio- Economic Characteristics of Respondents (Descriptive Statistics)

4.3.1. Dependency Ratio of Households

As we see below in the figure around 105 respondents get their total income from one source, or in other words the total income of the family is generated by only one family member. This takes around 50.48% of the total respondents. From the total respondents 34.13 %(71) of the total income is generated by two family members, 10.58 %(22) by three and the remaining 10 households which is 4.81 % of income is generated by the contribution of 4 up to 7 family members.

Figure 4.1 Dependency Ratios of Households

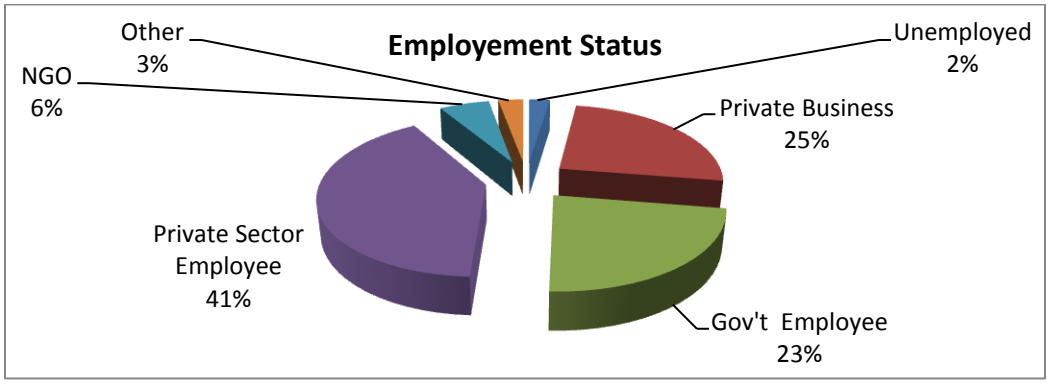


(Source: compiled from questioner's survey, 2018)

4.3.2. Employment Status of Households

The employment situation of the households in the study area indicates that 41 % of them were private sector employee, 23% of them were engaged in government employee and 25% were private business. In contrary, 2%, 6% and 3% of the respondents were unemployed, NGO and other type of workers respectively.

Figure 4.2 Employment Status of Respondents



(Source: compiled from questioner's survey, 2018)

There is temporal variation in unemployment condition in Addis Ababa city from 2009-2011. Even though, unemployment existed in the city, number of unemployed persons increased every year. With regard to sex, females were more vulnerable than males (AACGBFED, 2013). From 2009 to 2011, Addis Ababa unemployment rate decline from 31.4% to 25.1%.

The finding shows that, here are only 2% of the residents of the study area are unemployed. In the contrary 98% of the households can earn their own income. When we compare the study area with the city of Addis Ababa it can be said that, there were a small number of households which were unemployed. These indicate that, almost all of the residents of the study area can earn their own income.

4.3.3. Assessing the Affordability of Condominium Houses

This section focuses on price affordability of condominium houses in relation to the income, occupation, payment capacity of the respondents of the study area. Housing price affordability is the major and most important perspective which is given attention in this study.

4.3.3.1.Monthly Income of the Respondents

Table 4.6 shows that, in the survey area only 0.48% of the respondents earn a monthly income of < 2,000 Birr, 10.1% of the respondents have a monthly income ranging from 2,000-4,000 Birr, 20.2% get a monthly income of 4,001-6,000 Birr, and similarly 26.44% of the respondents have a monthly income of Birr 6,001-8,000. The remaining 42.78% of them were earning Above 8,000 Birr per month.

Table 4.3 Monthly Incomes of Respondents

Monthly Income	Freq.	Percent
<2000	1	0.48
2000-4000	21	10.1
4001-6000	42	20.2
6001-8000	55	26.44
Above 8000	89	42.78
Total	**208**	**100**

(Source: compiled from questioner's survey, 2018)

The assessment result of the housing study ORAAMP (2002) cited in (Sisay, 2007)shows that, 80% of the population earns monthly income of less than 670 birr. These households are grouped as low income people. The other 16% the population earn monthly income of 670-2000 birr which was as middle income. These classes further classified as low middle income, medium middle income and high middle income groups for those who earn 600-1000 birr, 1000-1500 birr and 1501-2000 birr respectively. 4% of the population earns monthly income of more than 2001 birr which is categorized as high income.

According to CSA, 2013, the previous similar survey on the income component was not captured in the current survey, making the 2010/11 HCE (Household Consumption and Expenditure) survey.

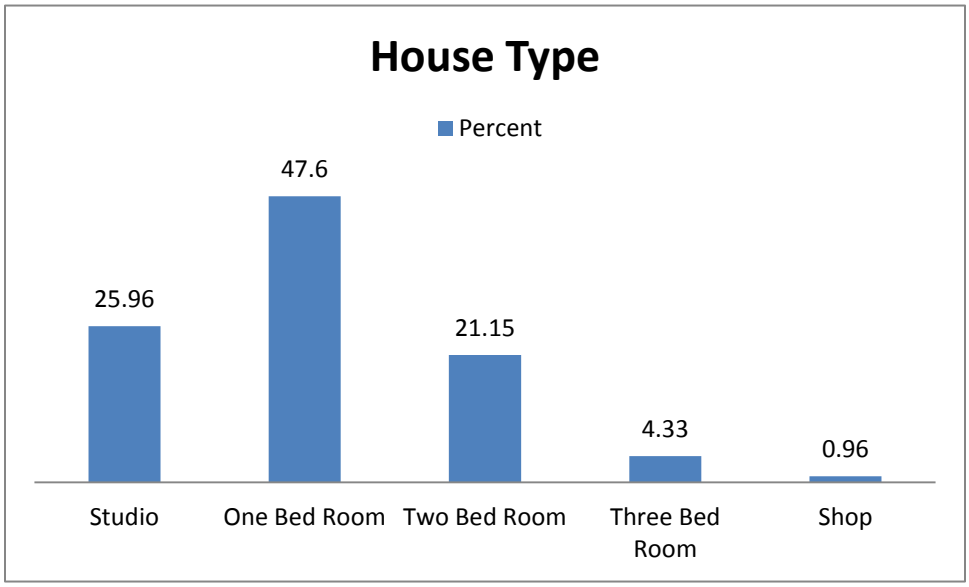
The value of importance of income data, particularly in developing economies, is typically very low and thus little was lost by the exclusion of income module of the survey. Generally Income data is quite difficult to collect, especially when large portion of the population is engaged in subsistence agriculture and/or informal sectors.

Due to this, the researcher tries to get the recent data of the income level of Addis Ababa residents', but the data is not available. However, by comparing the income of the respondents with the above ORRAMP (2002) data, all respondents were categorized as high income group. This explains that no one in this study area was benefited from the government subsidy made for all types of condominium houses excluding 40/60. However, providing house for low and

income group is one of the components of urban development program in poverty reduction scheme.

4.3.3.2 House Type of Respondents

Figure 4.3 House Type



(Source: compiled from questioner's survey, 2018)

As we see in the figure above, about 25.96% of the respondents leave in Studios, 47.6% in one bed room, 21.15% and 4.33% are leave in two and three bed rooms respectively. Only small portion of respondents were found in a shop which is 0.96%. This implies that much of the respondents are leaved in one bed room which is preferable due to various reasons.

4.3.3.2.Sources of Finance of the Households to Pay the Monthly and Down Payment

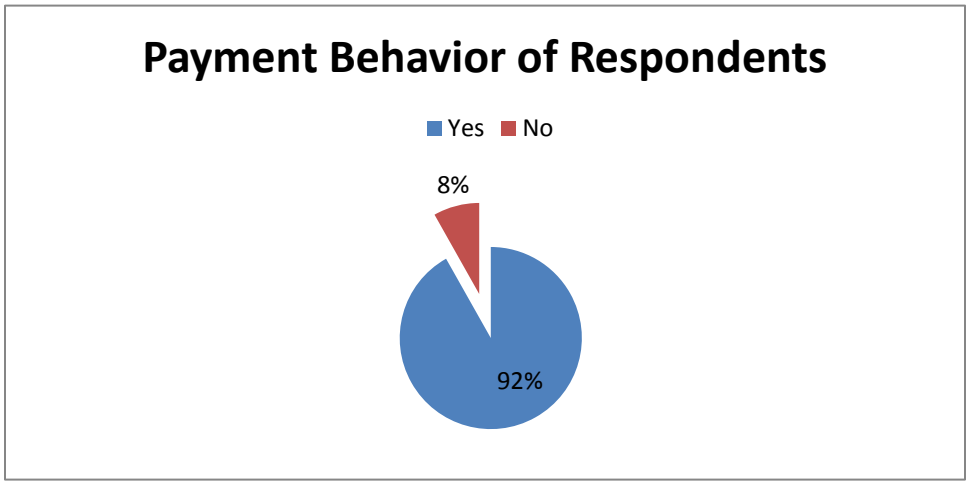
According to the respondents, 27.88% of the respondents reported that the source of finance to pay the monthly and down payment of the house were from personal saving. 5.77% of them got from informal credit and also about 42.79% got from family and relatives and 6.25% from bank loan. In the contrary, about 17.31% of the respondents accessed sources of finance from other sources. This implies that, the majority of the respondents used as their source of finance were from family and relatives. However, there were a very small number of respondents who got loan from bank.

Table 4.4 Source of Income of Households for Monthly and Down Payment

Source of payment	Freq.	Percent	Cum.
From Personal Saving	58	27.88	27.88
Informal Credit	12	5.77	33.65
Family & Relative	89	42.79	76.44
Bank Loan	13	6.25	82.69
Other	36	17.31	100
Total	**208**	**100**	

(Source: compiled from questioner's survey, 2018)

Figure 4.4Payment Behaviors of Respondents



(Source: compiled from questioner's survey, 2018)

According to the respondents, 92% of them reported that they pay monthly payments regularly and the remaining part which is only 8% of them did not pay regularly as they give different reasons which will see in the next table.

4.3.3.3.Reasons Raised by Respondents for not Paying Regularly

Table 4.5 Reasons for not paying regularly

Reasons for not paying Regularly	Freq.	Percent	Cum.
Lack of Income	13	76.47	76.47
Lack of Capacity Due to Double Loan Pay	4	23.53	100
Total	**17**	**100**	

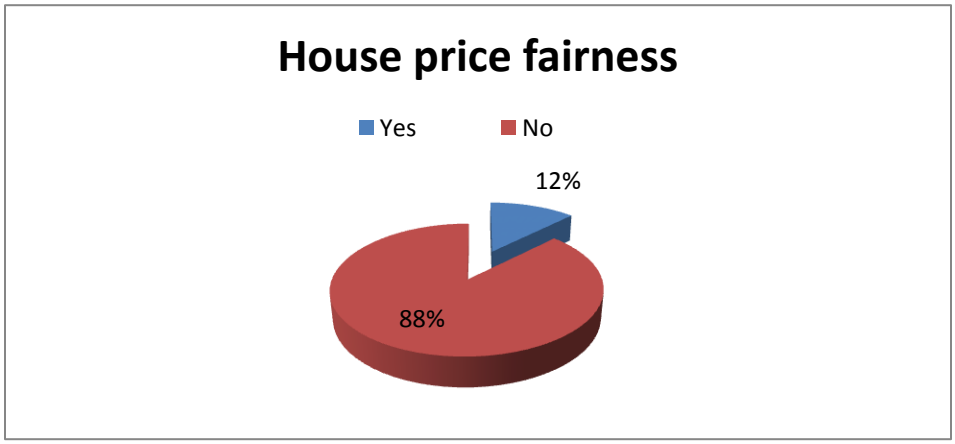
(Source: compiled from questioner's survey, 2018)

As we see in the above table,13 respondents which is 76.47% of the total gives a reason for not paying the monthly installment payment that they supposed to pay is due to lack of income and the rest said that lack of capacity which is the result of double loan payment.

According to the data collected from the residents of the study area, the monthly installments of the houses are differing with regard to their size and number of rooms. The size and number of room increase the price also increase. The monthly installments also increase. Due to this it compares to our monthly income and our other expenses like food, clothes and social activities, it is difficult to pay the monthly installment regularly.

4.3.3.4.Assessment of House Price Fairness of Respondents

Figure 4.5 House Price Fairness



(Source: compiled from questioner's survey, 2018)

Figure 4.5 shows that, majority of the respondents about 88% reported that, the total cost of the condominium houses is not fair for low income earners and for this they raise high down

payment (13.19%), short installment period (2.2%), high interest rate (24.73%) and other factors (59.89%) as a reason. However, about 12% of them said that, condominium houses have a reasonable price for lower income groups also.

According to Yeweynshet (2007) sited in(Tsion, 2016), the condominium housing program has arranged different affordable payment modalities and tried to enable inhabitants to become house owners. Targeted subsidy that consist infrastructure and administration covering costs, lowering the interest ratio to the poorest, long term payment period and smaller first installments are among the modalities placed to make sure that all groups of the society are considered in the program. However, due to high construction costs and living expenses, financing the houses is difficult not only the poor, but also for middle and high-income groups.

4.3.3.6 Saving Behavior of Respondents

Table 4.6 Saving Behavior of Respondents

Saving behavior	**Freq.**	**Percent**	Saving amount
Yes	138	66.35	up to 4000 Birr
No	70	33.65	0
Total	**208**	**100**	

(Source: compiled from questioner's survey, 2018)

According to the respondent, 66.35% of them save some portion of their income which varies with the monthly income expense ratio. As a result the maximum amount is 4000 Birr per month. The remaining part of respondents which is about 33.65% did not save from their income.

4.3.3.5.Way to own the house

As the table below indicates out of the total respondents, only 25 % of them get the chance to own the house by registration and lottery system, 17.79% of them through government decision without lottery system, 45.19% and the rest 12.02% were own the house by buying from the first owner and in other mechanisms respectively.

Table 4.7 Showing way to own the house

How Do You Own the House?	Freq.	Percent	Cum.
Registration & Lottery System	52	25	25
Through City Administration decision Without lottery system	37	17.79	42.79
Buying from the First Owner	94	45.19	87.98
Other	25	12.02	99.04
Total	**208**	**100**	

(Source: compiled from questioner's survey, 2018)

4.4.Analysis of House Price Affordability using correlation and regression

This part of the study presents the data using correlation analysis.

4.4.1. *Key Assumptions of Multiple Regression*

1. Linearity Test

There must be a Linear Relationship between the outcome variable and the independent variables. So this time we want the outcome variable to have a roughly linear relationship with each of the explanatory variables, taking into account the other explanatory variables in the model, otherwise the biasedness of the estimation is unquestionable.

3. Hetroskedasticity Test

This assumption requires that the variances of error terms are similar across the independent variables. This means that the variance of the residuals should be the same at each level of the explanatory variables.

4. Autocorrelation test

This assumption states that autocorrelation occurs when variables are more highly correlated with dependent variable. In other word multiple linear regression analysis requires that there is little or no autocorrelation in the data.

5. Multi-co linearity Test

The multiple linear regression analysis requires that the error between observed and predicted values (i.e., the residuals of the regression) should be normally distributed. This assumption assumes that the independent variables are not highly correlated with each other. The assumption is tested by the Variance Inflation Factor (VIF) statistic.

4.4.2. Correlation between the Dependent and Independent Variables

In this part of the study the discussion about the relationship of dependent and independent variables are done using correlation analysis which shows the strength of the linear relationship between housing price affordability and those independent variables which will see below in the STATA output.

According to Duncan and Dennis (2004) sited in (Anteneh, 2016), the correlation coefficient, r, measures the strength of the linear relationship. Value of r is between +1 and -1. A value of r close to +1 or -1 represents a strong linear relation. A value of r close to 0 indicates that the linear association is very low.

Table 4.8 Correlation of Variables

	House price affordabiliy	income	Saving amount	School fee	consum	House type	House size	Monthly pmt
House price	1							
income	0.2312	1						
Saving amount	-0.0118	0.5753	1					
School fee	0.1024	0.2912	0.283	1				
consumption	0.0801	0.5375	0.3137	0.2194	1			
House type	0.2497	0.1203	-0.0698	-0.124	0.3589	1		
House size	0.0276	0.1056	-0.0077	-0.115	0.3857	0.8383	1	
Monthly pmt	0.0802	0.0307	-0.079	-0.167	-0.1309	0.0355	0.0517	1

Significant level: 0.05

(Source: Stata regression result, 2018)

According to the STATA output, the result shows us the variables that explain better than other variables are income and house type of households but all. They had a strong correlation with the dependent variable than other variables of around 0.23 and 0.25 respectively and as the figures have positive sign they are positively related with housing price affordability. This means a unit change in income will cause increase in house price affordability by 23%. In other word a 23% variation in house price affordability is because of a unit change in household income. The second largest value is house type again with a positive relationship of almost 25%. This means that as there is a change in house type from studio to one bed room, from one bed to two bed rooms and from two bed to three bed rooms, it will cause 25% variation in house price affordability.

On the other hand, monthly payment, consumption, house size and school fee shows a positive relationship with house price affordability with a value of 0.0802, 0.0801, 0.0276 and 0.1024 respectively. The last and relatively a variable having a small and negative relationship with housing price affordability is saving amount of households showing a negative sign of (-0.0118). The negative sign showed that as there is a one unit change in saving amount, housing price affordability will decrease by around 1%.

Table 4.9 Parameter Estimation of Variables

House price affordability	Coefficient	Std. Err.	t	P>t	[95% Conf.	Interval]
Income	**15.3185**	**4.476073**	**3.42**	**0.001**	**6.492154**	**24.14486**
Saving amount	28.0161	16.42348	-1.71	0.090	-60.40151	4.369299
School fee	21.39281	13.01374	1.64	0.102	-4.26894	47.05456
consumption	-13.8688	11.27539	-1.23	0.220	-36.10267	8.365134
House type	**-157989.9**	**25208.93**	**6.27**	**0.000**	**108280.6**	**207699.3**
House size	**-6645.39**	**1382.209**	**-4.81**	**0.000**	**-9370.967**	**-3919.819**
Monthly payment	-8.543021	8.674624	0.98	0.326	-8.562436	25.64848
Constant	240781.6	48871.05	4.93	0.000	144412.9	337150.2

(Source: Stata regression result, 2018)

Regression coefficients represent the mean change in the response variable for one unit of change in the predictor variable while holding other predictors in the model constant. As a result the regression equation is presented as follow;

Hpa=240,781.60+15.32(inc)+28.02(savammt)+21.39(scfe)-13.87(cons)-157,989.9(ht)-6,645.39(hs)-8.54(monthpmt).

Based on the parameters stated above, the mean value of income is 15.32 and this indicates a positive effect on the dependent variable and a unit change in income can cause 15.32 increase in house price affordability and we can say that this variable is statistically significant by looking the P-value which is less than significance level of 0.05(0.001). The result also matches with a theory in a way that affordability is expressed in a capacity to cover the requested price and this are done by the amount of income that an individual can access (Keynesian Theory).Besides according to (Wan Nor, 2010), Affordability is mainly defined by the relationship between household's housing expenditure and income and it has a positive relationship with income.

The second variable, saving amount indicated 28.02 which is also positive relationship with the dependent variable. These means for every single unit increase in saving amount there will be increase in house price affordability by 28.02, holding other things remain constant. But, statistically it is not significant because the p-value for saving amount (0.090) is greater than alpha (0.05).

Thirdly, the coefficient of school fee showed us 21.39 which had a direct link with that of the dependent variable, house price affordability. These indicate a unit change in school fee will come with increase in house price affordability by 21.39. And here, again the relationship between school fee and house price affordability is not statistically significant at the significance level of 0.05.

On the other hand, when we look in to the coefficient of consumption, it showed around -13.87 and this figure tell us the relationship between the criterion variable and the predictor variable is negative and it is not statistically significant. Which means that for a single unit change in consumption, house price affordability will goes down by 13.87 and again it is not significant at the level of 0.05.

According to Solow, as the consumption increases the level of saving will be decreased because saving is the portion of income that is not spent on consumption so that the capability to purchase a house depends on the remaining income that is not consumed. By this consumption has a negative relationship with saving (power to afford) assuming income remains constant.

The fifth variable, house type scores a negative relationship (-157,989.9) and it is statistically significant in explaining the value of house price affordability for every single change. In other word it means that as house type change from studio to one bed room and the like, it will affect the house price affordability by 157,989.9 negatively. According to Kamete (2001), the price of a goods or service depends on the cost of producing the item or serving the customer. As the production increases the total cost of the item will also rise and by this as one change the choice of a house from one bedroom to two or three bedrooms the cost of construction of the house also rise, keeping other things remain constant capacity to afford the price of the house will be shrank.

The same is true for house size being significant in explaining the dependent variable, house price affordability by (-6,645.69) and again the relationship among them is negative. This means, as house size increases by one, house price affordability will decrease by 6,645.69.

The last variable in the regression output table is monthly payment, and it shows approximately (-8.54). As the figure showed us, there is a negative and inverse relationship between the dependent and the independent variables. And it indicates that, for every single change in monthly payment there will be decrease in house price affordability by 8.54. However, it doesn't explain the criterion variable significantly because the p-value for monthly payment is 0.326 which is above the 0.05 level of significance.

Post Estimation Test

4.4.2.1.Multi- Co linearity Test

Table 4.10VIF

Variable	VIF	1/VIF
hs	3.54	0.282276
ht	3.52	0.284255
inc	2.02	0.495625
cons	1.74	0.57379
savammt	1.6	0.624744
scfe	1.2	0.832705
monthpmt	1.08	0.929873
Mean VIF	**2.1**	

(Source: Stata result, 2018)

The output from the STATA showed all variables are less than 10 and the mean VIF is 2.1 and this indicates that, the model is free from the problem of multi- co linearity.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

The main reason of this study was to identify factors affecting condominium house affordability for targeted beneficiaries taking Bole Sub-City as a case study area. In this chapter the following major findings, conclusions and recommendations are made

5.1.Summary of major findings

Demand for affordable housing in Ethiopia, particularly in urban areas like Addis Ababa, has continued surprisingly and this need is not manageable with the existing capacity of supply side of the city, especially the government led programs because the other side of the market is by far unaffordable for most of the low level income society. To overcome the situation, the city government of Addis Ababa started building low cost housing program in the year 2004. It is a large-scale approach to address the current housing deficit, the poor quality of the existing housing stock, and the future housing needs due to continued urbanization. The program allows the low and middle income households to access improved housing. However, due to population growth with increase urbanization, high cost of construction materials, and shortage of housing finance of the urban poor's are in challenges to condominium house owners.

This thesis assesses the determining factors affecting condominium house price affordability. It contributes to show the capability of households to afford the house price in the study area, which part of the society did benefit from the condominium houses as well as actions taken by the government to handle those problems. And tried to measure Affordability of the houses in relation to income, employment status, saving, house type, house size and schooling fee of each respondents.

In the descriptive part of the study, the finding showed that about 58.17% the households are male headed and 41.83% of them are female headed. But with regard to the intension of the housing program above 30% of the households are headed by women's and the age distribution tells us almost all households are in adult stage. With regard to the educational background, marital status and family size, large numbers of respondents are educated, married and are living with more than three family members respectively.

According to the analysis, the socio- economic characteristics of the study area showed that, source of 105 households to get their income is from one family member and this takes almost half of the total respondents which are 50.48%. When we see the employment status, large parts of the households are working in private sector and on the other hand only 2% of the households are unemployed. Monthly family incomes were expected to explain the residents of the study area are the low income earners. But, the finding shows that the majority of respondents

(42.78%) were higher income earners by generating income of more than 8,000 birr per month and from all respondents about 66.35% of them said that they save some part of their monthly income up to 4,000 as per the level of income. It implies that, the condominium housing program has positive and quite important effect on higher income group of households. From this result, the condominium houses are more affordable for the better income earner than the lowers. In addition, the finding show that large part of the households get the source of finance to pay the monthly and down payment with the help of families and relatives and only 5.77% of them were get the access of informal credit. The low income populations are excluded due to lack access to financial credit to pay the down payment and the monthly too.

When we see the behavior of respondents according to the data, 92 % of them pays the monthly payment regularly, the remaining 8% did not pay due to lack of income and again from all households 88% of them believes that the house price is not fair even if they are categorized under high income groups as per their income level. The other major result shows out of the total households about 45.19% of them are owners of the house by buying from the first owners of the house and this takes large portion of the study area.

According to the multiple regression output, F-calculated showed 9.23. This implies the model overall (F-test) is statistically significant in explaining house price affordability and about 24% variation on price affordability is because of the listed independent variables, but the individual test of variables t-test, showed that, from the seven independent variables taken as factors affecting the condominium house price affordability, only three of them namely income, house type and house size has significant impact on the price affordability of condominium houses. When we see the relationship among the independent variables with the dependent one, income, saving amount and school fee has a positive relationship with house price affordability with a coefficient value of 15.32, 28.02 and 21.39 respectively. However, consumption, house type house size and monthly payment were found in a negative or an inverse relation with the affordability of condominium house by showing a coefficient value of (-13.87), (-157,989.90), (-6,645.39) and (-8.54) respectively.

5.2. Conclusion

The findings of the study and the documents reviewed revealed that Absence of adequate housing in Addis Ababa is related to the increasing number of population, rural urban migration from all over the country, low house construction capacity and poor maintenance of the housing stock of most residents. As a result there is a huge gap between housing demand and supply in the city. But above all things the availability of affordable houses for the low income urban population is the main point to which the government and every stake holders has to give due attention in order to alleviate housing problem and the government has to keep its promise made during elections about its readiness to provide housing for its poor citizens.

5.3 Recommendations

Accordingly, based on the above findings and conclusion the following should be done at least to minimize the extent of the problem of housing affordability.

- In order to address the need of the low and middle income society of the city, the concerned party should give special attention to facilitate the low income housing provision and provide affordable houses to the targeted beneficiaries by improving the current housing policies and implementation strategies.
- Since income was found significant factor to affect the affordability of condominium house, the government body should consider the income of the society with related to price of the house and other financial organizations including banks should facilitate means of finance specially the down payment to deliver the houses to the targeted beneficiaries and to make easy of the housing transfer process by giving low interest rate.
- As the finding showed, house type has a significant effect on the housing price affordability of condominium houses. Therefore, the IHDP should work on these to make the house comfortable to the households in a way that the households can choose from many alternatives so as anyone can choose the house easily.
- The other significant factor in this agenda is the size of houses. And again the concerned body should revise the price setting strategy regarding with size by taking necessary cost minimization techniques as a result it will help to minimize the total house price at the end.

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APPENDICES

Questionnaire

Addis Ababa University School of Commerce

Department Project Management

Dear Respondents

The purpose of this questionnaire is to fulfill the partial fulfillment of the academic requirements of Master's Degree in Project Management. The research focus is on "Factors Affecting Condominium Housing Price Affordability in Bole sub city"

Hence, to gather information, I humbly request to answer the following questions & I would like to express in advance my sincere appreciation & deepest gratitude for spending your generous time to fill this questioner. I would also want to assure you that this research is only for academic purposes. Thus, your ideas & comments are highly honored & kept confidential for the sake of creating conductive environment for your genuine response.

GUIDELINES

1. You are not required to write your name.
2. Tick your selected choice.
3. Please try to answer all the questions.

   Thank you!!

.

Background Information

1. Gender

   A. Male ☐ B. Female ☐
2. Age_____
3. Level of Education _____
4. Marital Status

   A. Single ☐ C. Widowed ☐

   B. Married ☐ D. Divorced ☐
5. Household Size_____

I. Socio-economic characteristics

1. How many of your family have a job? (Dependency ratio) _____
2. What is your employment status?

   A. Unemployed ☐ D. Private sector employee ☐

   B. Private business ☐ E. NGO ☐

   C. Government employee ☐ F. Other (specify)_____

3. How much is your monthly income? _____
4. Did you save from your monthly income?

   A. Yes ☐ B. No ☐

5. If your answer is "Yes" how much did you save? _____
6. Where did you take your medication in case of illness?

   A. Public health center ☐ B. Private Hospital's ☐

7. How much did you pay for schooling? _____
8. How much did you budget for food consumption monthly from your income? _____
9. Do you take some days for enjoyment within or out of the city with your family or alone?

   A. Yes ☐ B. No ☐

10. If your answer is "Yes" how frequent? _____
11. Which one is your house?

    A. Studio ☐ C. Two Bed Room ☐

    B. One Bed Room ☐ D. Three Bed Room ☐

12. Size of the house (in Meter Square)? _____
13. Total price of the house? _____
14. How do you own the house?

    A. Registration and lottery system ☐

    B. Through cities administration decision without lottery ☐

    C. Buying from the first owner ☐

    D. Other ?(specify) _____

15. When did you receive the condominium house?

A. Before 2 year ☐ C. 4 – 5 years ☐

B. 2 – 4 years ☐ D. More than 5 years ☐

16. What type of payment mode did you use to pay the purchase price?

A. 100% cash payment ☐ C. Other(specify)_____

B. Down payment and monthly installment ☐

17. Where did you get the money to pay the first payment?

A. From personal saving ☐

B. Informal Credit ☐

C. Family & relative ☐

D. Bank Loan ☐

E. Other? specify_____

18. If you bought the house by installment or full payment basis, how much did you pay monthly service payment to settle your bank debt? (In birr)_____

19. Are you paying the monthly service payment regularly?

A. Yes ☐ B. No ☐

20. If you are not paying regularly why?

A. Lack of income ☐

B. Lack of capacity due to double loan payment ☐

C. The weakness of the bank to collect the installment ☐

D. Other (Specify)_____

21. Do you think the total costs of the condominium houses are fair for low income group?

A. Yes ☐ B. No ☐

22. If your answer is "No" why?

A. High down payment ☐

B. Shortage of the installment period ☐

C. High interest rate ☐ D .Other _____

Questionnaire (Amharic Version)

ውድ መላሾች

□□ህ ቃለ መ□□ቅ □ላማ ለሁለተኛ □ፅሪ □መመረቂ□ ጽሁፍ ሲሆን የሚያተኩረውም በቦሌ ክ/ከተማ በሚኖሩ የኮንዶሚኒየም ቤቶች የዋጋ ተመን አመጣጥ ላይ አስተዋፅኦ የሚያደርጉግብዓቶችን □እንዲሁም የዋጋው አዋጭነት ላይ ነው፡፡

ስለዚህ ለዚህ ፅሁፍ የሚጠቅምመረጃ ለመሰብሰብ ከዚህ በታች የሚገኙትን ጥያቄዎች እንዲመልሱልኝ ስጠይቅበቅድሚያ ለሚሰጡኝ ጊዜ ያለኝን ትልቅ አክብሮትና ምስጋና ላቀርብ እወዳለሁ፡፡ በተጨማሪም ይህ ጥናት ለድህረ ምረቃ ማሚያ ብቻ የሚውል ስለሆነ □እርሶምላሽለእርሶደህንነት ሲባል በጥንቃቄ□እንደሚያዝ □እርፅ□ኛ ይሁኑ፡፡

መመሪያዎች

1. **ስም□እንዲጽፉ አይጠየቁም**
2. **□እባክዎ የመረጡትን ፊደል ያክብቡበት□እንዲሁም ክፍት ቦታውን በራስ- ምላሽ ይሙሉት**
3. **□እባክዎ ሁሉንም ጥያቄ ለመመለስ □ሞ□ሩ**

አመሠግናለሁ፡፡

ምዕራፍ አንድ

1. **□ታ□ ሀ. ወንድ ለ. ሴት**
2. **ክትሚ ----------**
3. **የትምህርት ደረጃ ሀ. ሰርተፊኬት ለ. □□ሎማ ሐ. □ፅሪ መ. ማስተርስ**
4. **የትዳር ሁኔታ□ ሀ. □ዋ ለ. □ላዋ ሐ. ባል/ሚስትበሞት የተለየ መ. የተፋታ□**
5. **የቤተሰብ ብዛት ----------**

ምዕራፍ ሁለት

ከቤተሰብዎ መካከል ምን ያህል ሠራተኛ አለ? ----------

1. **የሥራ ሁኔታ□ ሀ. ስራ □ሌለ□ ለ. የግል ንግድ**
   ሐ. የመንግስት ሰራተኛ መ. የግል ድርጅት ተቀጣሪ
2. **የወር ገቢዎ ምን ያህል ነው? ----------**
3. **ከወር ገቢዎ ላይ ይቆጥባሉ? ሀ. □አቆጣ ባለሁ ለ. አልቆጥብም**
4. **መልስ- «□አቆጥባለሁ» ከሆነ ምን ያህል ይቆጥባሉ? ----------**
5. **በህመም ጊዜ ህክምና የሚወስዱት የት ነው?**
   ሀ. የህዝብ ጤና ተቋም ለ. □ፅል ሆስ□ታል
6. **ለትምህርት ወጪ ምን ያህል ይከፍላሉ? ----------**
7. **ለምፅብአ□ታ በወር ምን □ህል □□□ሉ? ----------**
8. **በከተማ ውስጥም ሆነ ከከተማ ውጪ የመዝናኛ ጊዜ አለዎት?**
   ሀ. አዎ ለ. የለኝም
9. **መልስዎ «አዎ» ከሆነ ምን ያህል ጊዜ ይዝናናሉ? ----------**
10. **ቤትዎ ምን ዓይነት ነው?**
    ሀ. ስቱ□□ ለ. ባለ አንድ መኝታ□ ሐ. ባለ ሁለትመኝታ□ መ. ባለሦስትመኝታ□

11. የቤትዎ ስፋት ምን ያህል ነው? ----------

12. የቤቱ አጠቃላይ ዋጋ ምን ያህል ነው? ----------

13. የቤት ባለቤት□እንዴት ሊሆኑ ቻሉ?

ሀ. በምዝገባና የዕጣ ባለዕድልበመሆን ለ. ካለ ዕጣ በመንግስት ውሳኔ

ሐ. ከቤቱባለቤት በመግዛት መ. ሌላ ካለ □ቸል□ ----------

14. ቤቱን መቼ ተረከቡ?

ሀ. ከሁለት ዓመትበፊት ለ. ከ2 □ስከ 4 □መት

ሐ. ከ4 □ስከ 5 ዓመትመ. ከ5 ዓመትበላይ

15. የቤቱን ዋጋ ለመክፈል ምን ዓይነት የክፍያ መንገድ ተጠቀሙ?

ሀ. ሙለ ብሙሉ ጥሬ ገንዘብ ክፍያ ለ. ቅድመ ክፍያና ቀሪውን በወር ክፍያ

ሐ. ሌላ ካለ □ቸል□----------

16. የመጀመሪያውን ክፍያለመክፈል ገንዘቡን ከየት አገኙ?

ሀ. ከግል ቁጠባ ለ.ከግለሰብ አበዳሪዎች ሐ. ከቤተሰብናከጓደኛ መ. ከባንክ ብትርሠ. ሌላ ካለ □ቸል□ ----------

17. ቤቱን ሙሉ በሙሉም ሆነ ቅድሚያ ክፍያከፍለው በወር በወር የሚከፍሉ ከሆነ ብድሩን ለመክፈል በወር ምን ያህል ይከፍላሉ? ----------

18. የወር ክፍያን ሳያቋርጡይከፍላሉ? ሀ. □እከፍላለሁ ለ. አልከፍልም

19. መልስዎ «አልከፍልም» ከሆነ ምክንያትዎ ምንድን ነው?

ሀ. የገቢ ማነስ ለ. ከፍያውን አንዳንዱ በመዝለል ምክንያት የሚመጣ የአቅም ማነስ ሐ. የባንኩብድሩን በአግባቡ አለመሰብሰብ መ. ሌላ ካለ □ቸል□ ----------

20. የቤቱ አጠቃላይ ክፍያ አቅምን ያገናዘበ ነው ይላሉ?

ሀ. አዎ ለ. አይደለም

21. መልስዎ «አይደለም» ከሆነ ለምን?

ሀ. ከፍተኛ የሆነ ቅድመ ክፍያ ለ. አጭር የብድር መክፈያ ጊዜ ሐ. የወለዱ ከፍተኛ መሆን መ. ሌላ ካለ □ቸል□ ----------

3 **SPSS Result**

1. Sex Distribution of Respondents

```
. tab gen
```

What is Your Sex?	Freq.	Percent	Cum.
Male	121	58.17	58.17
Female	87	41.83	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018)

Age Distribution of Respondents

1

```
. sum age
```

Variable	Obs	Mean	Std. Dev.	Min	Max
age	208	35.51923	6.770183	25	55

.

(Source: compiled from questioner's survey, 2018)

2. House Hold Size of the Respondents

```
. tab hhs
```

House Hold Size	Freq.	Percent	Cum.
1	39	18.75	18.75
2	24	11.54	30.29
3	57	27.40	57.69
4	34	16.35	74.04
5	24	11.54	85.58
6	6	2.88	88.46
7	10	4.81	93.27
8	8	3.85	97.12
9	1	0.48	97.60
10	1	0.48	98.08
11	4	1.92	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018)

Educational Background of Respondents

1

```
. tab edu
```

Level of Education	Freq.	Percent	Cum.
Illitrate	10	4.81	4.81
Read & Write	19	9.13	13.94
Primary Level	33	15.87	29.81
Secondary Level	28	13.46	43.27
Deploma	37	17.79	61.06
Degree	75	36.06	97.12
Above Degree	6	2.88	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018)

3. Marital status of respondents

```
. tab ms
```

Martial Status	Freq.	Percent	Cum.
Single	62	29.81	29.81
Married	131	62.98	92.79
Widowed	6	2.88	95.67
Divorced	9	4.33	100.00
Total	208	100.00	

```
.
```

(Source: compiled from questioner's survey, 2018)

4. Dependency Ratios of Households

```
. tab depr
```

How Many of Your Family Have a Job?	Freq.	Percent	Cum.
1	105	50.48	50.48
2	71	34.13	84.62
3	22	10.58	95.19
4	3	1.44	96.63
6	6	2.88	99.52
7	1	0.48	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018)

5. Employment Status of Respondents

```
. tab emps
```

What is Your Employement Status?	Freq.	Percent	Cum.
Unemployed	5	2.42	2.42
Private Business	52	25.12	27.54
Government Employee	48	23.19	50.72
Private Sector Employee	84	40.58	91.30
NGO	12	5.80	97.10
Other	6	2.90	100.00
Total	207	100.00	

(Source: compiled from questioner's survey, 2018)

6. House Type

```
. tab ht
```

Which One is Your House?	Freq.	Percent	Cum.
Studio	54	25.96	25.96
One Bed Room	99	47.60	73.56
Two Bed Room	44	21.15	94.71
Three Bed Room	9	4.33	99.04
Shop	2	0.96	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018)

7. Source of Income of Households for Monthly and Down Payment

```
. tab pmts
```

Where Did You Get the Money to Pay the First Payment?	Freq.	Percent	Cum.
From Pesonal Saving	58	27.88	27.88
Informal Credit	12	5.77	33.65
Family & Relative	89	42.79	76.44
Bank Loan	13	6.25	82.69
Other	36	17.31	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018

8. Monthly Incomes of Respondents

```
. tab inc
```

How Much is Your Monthly Income?	Freq.	Percent	Cum.
1700	1	0.48	0.48
2000	1	0.48	0.96
2300	2	0.96	1.92
3000	5	2.40	4.33
3200	3	1.44	5.77
3500	3	1.44	7.21
3700	2	0.96	8.17
4000	5	2.40	10.58
4200	5	2.40	12.98
4500	3	1.44	14.42
4600	4	1.92	16.35
4800	7	3.37	19.71
5000	2	0.96	20.67
5200	2	0.96	21.63
5500	6	2.88	24.52
6000	13	6.25	30.77
6200	2	0.96	31.73
6400	7	3.37	35.10
6500	13	6.25	41.35
6700	2	0.96	42.31
7000	7	3.37	45.67
7018	2	0.96	46.63
7080	2	0.96	47.60
7200	2	0.96	48.56
7500	10	4.81	53.37
7600	1	0.48	53.85
7755	1	0.48	54.33
7800	1	0.48	54.81
8000	5	2.40	57.21
8400	2	0.96	58.17
8500	7	3.37	61.54
8900	2	0.96	62.50
9500	1	0.48	62.98
10000	12	5.77	68.75
10200	3	1.44	70.19
10209	1	0.48	70.67
10400	1	0.48	71.15
10500	4	1.92	73.08
10600	3	1.44	74.52
10798	2	0.96	75.48
11000	3	1.44	76.92
11100	1	0.48	77.40
11779	1	0.48	77.88
12000	13	6.25	84.13
12300	1	0.48	84.62
12400	1	0.48	85.10
12417	2	0.96	86.06
13000	6	2.88	88.94
13500	3	1.44	90.38
13522	3	1.44	91.83
14000	1	0.48	92.31
15000	7	3.37	95.67
15553	2	0.96	96.63
15730	2	0.96	97.60
16000	3	1.44	99.04
18550	2	0.96	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018)

. **Payment Behaviors of Respondents**

```
. tab pmtb
```

Do You Pay th Monthly Service Payment Regularly?	Freq.	Percent	Cum.
Yes	191	91.83	91.83
No	17	8.17	100.00
Total	208	100.00	

.

(Source: compiled from questioner's survey, 2018)

9. Reasons for not Paying Regularly

```
. tab nopmt
```

If You are Not Paying Regularly Why?	Freq.	Percent	Cum.
Lack of Income	13	76.47	76.47
Lack of Capacity Due to Double Loan Pay	4	23.53	100.00
Total	17	100.00	

.

(Source: compiled from questioner's survey, 2018)

10.House Price Fairness

```
. tab prifair
```

Do You Think the Total Price is Fair for Low Income Group?	Freq.	Percent	Cum.
Yes	26	12.50	12.50
No	182	87.50	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018)

13 Showing way to own the house

```
. tab wayown
```

How Do You Own the House?	Freq.	Percent	Cum.
Registration & Lottery System	52	25.00	25.00
Through City Administration decision Wi	37	17.79	42.79
Buying from the First Owner	94	45.19	87.98
Other	23	11.06	99.04
5	1	0.48	99.52
6	1	0.48	100.00
Total	208	100.00	

.

(Source: compiled from questioner's survey, 2018)

14 Saving Behavior of Respondents

```
. tab sav
```

Did You Save From Your Monthly Income?	Freq.	Percent	Cum.
Yes	138	66.35	66.35
No	70	33.65	100.00
Total	208	100.00	

(Source: compiled from questioner's survey, 2018)

15 Saving Amount

```
. sum savammt
```

Variable	Obs	Mean	Std. Dev.	Min	Max
savammt	208	837.0192	884.4605	0	4000

(Source: compiled from questioner's survey, 2018)

16 Correlations of Variables

```
. cor  hp  inc savammt scfe cons ht hs monthpmt
(obs=208)
```

	hpa	inc	savammt	scfe	cons	ht	hs	monthpmt
hpa	1.0000							
inc	0.2312	1.0000						
savammt	-0.0118	0.5753	1.0000					
scfe	0.1024	0.2912	0.2830	1.0000				
cons	0.0801	0.5375	0.3137	0.2194	1.0000			
ht	0.2497	0.1203	-0.0698	-0.1240	0.3589	1.0000		
hs	0.0276	0.1056	-0.0077	-0.1153	0.3857	0.8383	1.0000	
monthpmt	0.0802	0.0307	-0.0790	-0.1670	-0.1309	-0.0355	-0.0517	1.0000

```
.
end of do-file
```

(Source: Stata correlation result, 2018)

```
. pwcorr  hp  inc savammt scfe cons ht hs monthpmt, sig obs
```

	hpa	inc	savammt	scfe	cons	ht	hs
hpa	1.0000						
	208						
inc	0.2312	1.0000					
	0.0008						
	208	208					
savammt	-0.0118	0.5753	1.0000				
	0.8653	0.0000					
	208	208	208				
scfe	0.1024	0.2912	0.2830	1.0000			
	0.1412	0.0000	0.0000				
	208	208	208	208			
cons	0.0801	0.5375	0.3137	0.2194	1.0000		
	0.2503	0.0000	0.0000	0.0015			
	208	208	208	208	208		
ht	0.2497	0.1203	-0.0698	-0.1240	0.3589	1.0000	
	0.0003	0.0834	0.3164	0.0742	0.0000		
	208	208	208	208	208	208	
hs	0.0276	0.1056	-0.0077	-0.1153	0.3857	0.8383	1.0000
	0.6925	0.1289	0.9116	0.0971	0.0000	0.0000	
	208	208	208	208	208	208	208
monthpmt	0.0802	0.0307	-0.0790	-0.1670	-0.1309	-0.0355	-0.0517
	0.2498	0.6595	0.2566	0.0159	0.0595	0.6108	0.4581
	208	208	208	208	208	208	208

	monthpmt
monthpmt	1.0000
	208

```
.
end of do-file
```

(Source: Stata correlation result, 2018)

Parameter Estimation of Variables

House price affordability	Coefficient	Std. Err.	t	P>t	[95% Conf.	Interval]
Income	**15.3185**	**4.476073**	**3.42**	**0.001**	**6.492154**	**24.14486**
Saving amount	28.0161	16.42348	-1.71	0.090	-60.40151	4.369299
School fee	21.39281	13.01374	1.64	0.102	-4.26894	47.05456
consumption	-13.8688	11.27539	-1.23	0.220	-36.10267	8.365134
House type	**-157989.9**	**25208.93**	**6.27**	**0.000**	**108280.6**	**207699.3**
House size	**-6645.39**	**1382.209**	**-4.81**	**0.000**	**-9370.967**	**-3919.819**
Monthly payment	-8.543021	8.674624	0.98	0.326	-8.562436	25.64848
Constant	240781.6	48871.05	4.93	0.000	144412.9	337150.2

(Source: Stata correlation result, 2018)

Multi- Co linearity Test

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
          hs |      3.54    0.282276
          ht |      3.52    0.284255
         inc |      2.02    0.495625
        cons |      1.74    0.573790
    savammt |      1.60    0.624744
        scfe |      1.20    0.832705
    monthpmt |      1.08    0.929873
-------------+----------------------
    Mean VIF |      2.10

.
end of do-file
```

(Source: Stata correlation result, 2018)