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Strategies to Increase the Affordability of Publically Built Houses to Lower and Middle Income Households in Dessie Town, Ethiopia

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Abstract- The provision of affordable housing is a challenge in Ethiopia which is urbanizing fast. Hence, integrated housing development program is being undertaken on affording house to lower and middle income as one objective. This study, therefore, was conducted to forward strategies to increase affordability of publically built houses particularly Dessie town condominium houses to lower and middle income groups. Data were collected randomly from 550 respondents who have condominium house and who don't have yet but wants to acquire it. The condominium house form of installment payments are the most constraint factor for the households to purchase a condominium house. Actions in all those constraints increase affordability of condominium houses to lower and middle income group. However reducing the current amount of condominium house's down payment and it to be paid in longer year significantly increases the affordability of condominium houses to lower and middle income group. A one-sample t-test depicted that reducing initial payment and pays it for long year along with periodic payment increases ability of the respondents' household to purchase a condominium house.

Keywords: *condominium house, affordability, down payment, periodic payment, completion cost, strategies.*

I. INTRODUCTION

Everyone needs a place to live. However, it is a critical problem for millions of poor people in developing countries, and Ethiopia is no exception (Azeb Kelemework, 2007). Ethiopia's urban centers are characterized by poorly developed economic base. More daunting to that ever mounting cost of living and labor, rising prices of building materials owing to devaluation of local currency, escalation of land lease price, and others make house owning process difficult.

Ethiopian government designed a condominium house project which is under the program of the Ethiopian Integrated Housing Development Program (IHDP), to minimize the housing problem. The program has built several condominium houses in Dessie city since 2007 and distributed them to the people. In Dessie, so far 3306 condominium housing units are built in two rounds. The selling price of the different typologies' of houses are averagely 80,000 birr for

studio, 167, 000 birr one bed room and 205, 000 birr double bed room.

Access to adequate and affordable housing is a current and growing problem in all countries in Africa. Housing problems are largely to do with affordability: housing is expensive and incomes are too low. Ethiopia is a pertinent example of the challenges facing many African countries (United Nations Human Settlements Programme, 2011). Mekonen (2007) found out that the development of affordable housing for the low-income groups in the city is the challenging issues because of the scarcity of land and high cost of building materials. In general, the affordability of housing is an important subject for Ethiopia, and it has received considerable recent public attention.

Shelter cost is the biggest expenditure most households make and its affordability can have an impact on the wellbeing of household members. For this reason, housing affordability is closely watched by a wide range of stakeholders (Minister of Industry, 2008). Public concern over housing affordability is due to the fact that housing is the single largest expenditure in the budget of most families and individuals (Quigley and Raphael (2004) described in Prince Christian R. Cruz, 2008). Housing affordability is also a critical input to a country Mortgage and Housing Corporation's core housing need indicator which is used by governments to help design, deliver, fund and evaluate social housing programs (Canada Minister of Industry, 2008).

Housing affordability is more than just a personal trouble experienced by individual households. It has implications not only for housing but also for employment, health, labour market performance, aged care, finance, community sustainability, economic development and urban and regional development (Michelle Gabriel, Keith Jacobs, Kathy Arthurson, Terry Burke and Judith Yates, 2005). Housing in its very nature has different connotations that range across social, economic and cultural spirits beside its direct function of sheltering. It is a universal fact that shelter is one of the basic necessities of life and occupies the biggest portion of any human settlement.

This study is initiated, more, because the different researches done in Ethiopia (Azeb Kelemework, 2007; UN Habitant, 2011a; Mekonen Wube Ermed, 2007; Tameru Woundimagegnehu, 2010)

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particularly in Addis Ababa regarding condominium houses affordability lacks inclusiveness in measuring affordability and their recommendations to increase affordability of condominium houses. The strategies they suggested to increase affordability are about subsidizing and changing construction designs which don't work yet, but other than these, this current research found out the possible strategies to increase the affordability of condominium houses on the existing condition by analysing the instalment payments as well as the sites distances of CH. Due to these reasons this study sets an objective of identifying the strategies which increases the affordability of condominium house to lower and middle income households.

II. METHODS OF THE STUDY

This study was conducted to identify the possible strategies to increase the affordability of condominium houses to middle and low income households in Dessie town. A descriptive study was used to test the strategies to increase affordability of Dessie town condominium houses. For this study, data were collected from potential condominium houses' buyers who are living in Dessie town permanently. Hence data were collected from 550 sample

households. A simple random sampling design was used for this research to select the representative sample with equal chance from the population. Here, as discussed above, we stratified the population into two different heterogeneous groups to select samples from each group and collect data from different source who have different experience. Self-developed questionnaire was distributed to collect data for this study. Data collected were analyzed by using descriptive statistics and t-test.

III. RESEARCH FINDING

To forward strategies to increase affordability of condominium houses to those income groups, people in Dessie who have purchased condominium houses and who did not purchased yet were taken to participate in the study. Of this infinite population of the study 550 respondents' response were used for this study.

Respondents were asked on their own cost burden experience, whether an adjustment on the current condominium houses payment patterns increase their ability to purchase condominium house. Below the opinions of respondents were described and tested for their significance.

Table 1 : Description of strategies to increase affordability of condominium houses

	increased highly	Increased	Indifferent	not increased	not increased highly
the extent that the reduction of initial payment & it to be paid for longer period along with a periodic period payment increases ability to own CH	34.1%	24.6%	15.6%	14.7%	10.9%
the extent that the reduction of periodic payment & it to be paid for longer period increases ability to own CH	33.5%	33.5%	11.5%	12.9%	8.6%

a) *Does Reduction of current initial payment and it to be paid in the long run with periodic payment increase affordability of condominium houses?*

Respondents were asked about whether reducing the initial payment and paying it in the long run increases their ability to purchase a condominium house. Accordingly, majority of the respondents which consists of 34.1% of the total respondents replied that it highly increases their ability. The other second majority respondents which comprise 24.6 % of the total respondents reported that the scenario fairly increases their ability to purchase a condominium house. In cumulative, 58.8% of the respondents indicated that the scenario is favorable for them to purchase a condominium house of their choice. The smaller proportion of respondents which consists of 10.9% of the total respondents reported that it doesn't increase highly. And 15.6% of the respondents are indifferent about the issue and the remaining 14.7% of

respondents reported that it doesn't increase their ability to own a condominium house. In general, this finding informs us that reducing the initial payment and pays the amount in long period increase the affordability of condominium houses to majority of the respondents.

b) *Does Reduction of the current periodic payment and it to be paid for longer increase affordability of condominium houses?*

As it is depicted in the above table, more than half of the respondents (67%) reflected that reduction of the current amount of condominium house periodic payment and it to be paid in longer year enhances their ability to own a condominium house. The respondents which consist of 11% of the total respondents are indifferent about the issue. The other remaining respondents which consist of 11.5% and 12.9% of the total respondents reported 'not increased' and 'not increased highly' respectively. From this result we can

understand that reducing the periodic payment by extending the installment year increase the affordability of condominium houses to most of the households.

c) *Test of mean for significance of respondents opt about the possible ways that increase affordability of condominium house*

Beyond a percentage description as discussed above below we test the significance of the majority opt from the total average of the scale.

Note: Not increased highly = 1, not increased = 2, indifferent = 3, increased = 4, and increased highly = 5. The average mean for this scale is = $1+2+3+4+5=15/3 = 3$

Table 2 : One-Sample Statistics of Test of mean for significance of respondents opt about the possible ways that increase affordability of condominium house

Strategies to increase affordability of CH	N	Mean	Std. Deviation	Std. Error Mean
- the extent that the reduction of initial payment and it to be paid for longer period along with periodic payment increase ability to own CH	211	3.56	1.373	.095
- the extent that the reduction in periodic payment and it to be paid for longer period increase ability to own CH	209	3.70	1.289	.089

The mean of both initial payment and periodic payment reduction scenarios are above the average of the scale which is 3. This implies that both scenarios

enhance the ability of the majority of households purchasing ability of condominium house.

One-Sample Test

Strategies to increase affordability of CH to lower and middle income group	Test Value = 3					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
the extent that the reduction of initial payment and it to be paid for longer period along with periodic payment increase ability to own CH	5.967	210	.000	.564	.38	.75
the extent that the reduction in periodic payment and it to be paid for longer period increase ability to own CH	7.888	208	.000	.703	.53	.88

A one-sample t-test was run to determine the extent reducing initial payment and pay it for long year along with periodic payment increase ability of the respondents household to purchase a condominium house. The average mean of the scale is 3 used which is used for comparison. According to the test result as it is depicted in the above table, mean of initial payment reduction score ($3.56 \pm 0.1.37$) was higher than the average score of the scale 3.0, a statistically significant difference of 0.56 (95% CI, 0.38 to 0.75), $t(210) = 5.97$, $p = .000$. this indicated that majority of the respondents reported that the scenario increases their ability to own a condominium house.

And also, the extent reducing periodic payment and pays it for longer year increases the ability of the household to purchase condominium house is tested in

respect with the average values of the scale which is 3. Accordingly, the mean score of the respondents on the extents that reduction of periodic payment scenario increases households to own a condominium house (2.70 ± 1.29) was statistically different from the average score of the scale 3 by 0.70, (95% CI, 0.53 to 0.88), $t(208) = 7.89$, $p = .000$. Therefore, based on the above test result, we can say that the reduction of periodic payment increases the majority of the households ability to purchase a condominium.

We have also checked, of the two, which one is most preferable by the respondents by conducting a Wilcoxon Signed Ranks Test. The test below signify that there is no statistical significant difference between the opt of the two means, $z = -1.48$, $p = 0.138$

Ranks

Strategies to increase affordability of CH	N	Mean Rank	Sum of Ranks
the extent that the reduction in periodic payment enable the household to buy CH - the extent that the reduction of initial payment enable the household to buy CH	51 ^a	48.49	2473.00
Negative Ranks			
Positive Ranks	57 ^b	59.88	3413.00
Ties	98 ^c		
Total	206		

a. the extent that the reduction in periodic payment enable the household to buy condominium < the extent that the reduction of initial payment enable the household to buy condominium

b. the extent that the reduction in periodic payment enable the household to buy condominium > the extent that the reduction of initial payment enable the household to buy condominium

c. the extent that the reduction in periodic payment enable the household to buy condominium = the extent that the reduction of initial payment enable the household to buy condominium

Test Statistics^b

	- the extent that the reduction in periodic payment enable the household to buy CH - the extent that the reduction of initial payment enable the household to buy CH
Z	-1.483 ^a
Asymp. Sig. (2-tailed)	.138

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The Correlation between Instalment Payments Influence to Own CH, Strategies Increase Affordability and Respondents' Impact Rating Of Instalment Payments

Table 3 : the correlation between instalment payments influence to own CH, strategies increase affordability and respondents' impact rating of instalment payments

			DPR	PPR	SDR	DPil	PP il	CC il	SDil
Spearman's rho	DPI	Correlation Coefficient	.295**	.237**	-.086	.277**	-.127	.030	-.201*
		Sig. (2-tailed)	.000	.001	.212	.000	.122	.718	.014
		N	210	208	210	155	149	148	150
PPI	PPI	Correlation Coefficient	.004	.177*	-.145*	.038	.004	.041	-.227**
		Sig. (2-tailed)	.959	.011	.037	.641	.965	.627	.006
		N	206	204	207	150	144	143	145
CCI	CCI	Correlation Coefficient	.022	.039	-.048	-.060	-.077	.230**	.004
		Sig. (2-tailed)	.757	.582	.493	.465	.357	.005	.958
		N	205	205	207	152	146	145	147
SDI	SDI	Correlation Coefficient	.027	.143*	.166*	-.172*	-.173*	.107	.326**
		Sig. (2-tailed)	.702	.041	.017	.033	.036	.200	.000
		N	207	206	208	153	147	146	148

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Note: *DPI* = the extent that the existing down payment influences the household to buy a CH

DPR = the extent that the current down payment reduction and it to be paid in long period enable the household to buy

PPI = the extent that the existing periodic payment influences the household to buy CH

PPR = the extent that reduction of the current periodic payment and it to be paid in longer enable the household to buy

SDI = the extent that the site distance influences the household to buy CH, r

SDR = the extent that the reduction of the site distance enable the household to buy CH

PPil = periodic payment impact level

CCI = the extent that completion cost influences the household to buy a CH

CCil = completion cost impact level

DPil = down payment impact level

SDil = site distance impact level

The relationship results of the above correlation table are discussed separately for each below

i. *Relationship between DPI and DPR*

The spearman's correlation of down payment influence to own a condominium house (*DPI*) and reduction of down payment in enabling households to purchase a condominium house (*DPR*) have positive relationship, $\rho = 0.295$, $p = 0.000$. This tells us that for respondents who are highly impacted by down payment to own a condominium houses, more likely, the reduction of down payment highly increases their ability to purchase a condominium house.

ii. *The relationship between PPI and PPR*

Correlation analyses were used to examine the relationship between the extent that the existing periodic payment influences households to own a condominium (*PPI*) and the extent that the current periodic payment reduction and to be paid in longer period increases households' ability to purchase a condominium house (*PPR*). The result suggest that the relationship between those two scenarios ($\rho = 0.177$, $p = 0.011$) is statistically significant. This confirmed that for respondents who are strongly impacted by periodic payment to own a condominium houses, more likely, the reduction of periodic payment highly increases their ability to purchase a condominium house. when the influences of down payment to own a condominium house is going from 'not strongly impact' to 'strongly impact', the ability of respondent to purchases a condominium house in the reduction of down payment moves also from not increase to highly increase.

iii. *The relationship between SDI and SDR*

The relationship between the influence of site distance to own a condominium house (*SDI*) and the extent the reduction of site distance increases the ability of households to purchase a condominium house (*SDR*) is statistically significant at $\rho = 0.166$, $p = 0.017$, which means that for respondents who are not impacted by site distance to own a condominium houses, more likely, the reduction of site distance don't increases their ability to purchase a condominium house.

iv. *The relationship between DPI and DPil*

Do respondents who are strongly influenced by condominium houses current down payment to own a condominium houses more likely to rank the impact of down payment first among periodic payment, completion cost, and site distance? A spearman's correlation were undertaken to get answer for the above. Accordingly, the extent that down payment influences households to purchase a condominium house (*DPI*) has a positive relationship with down payment rating of the respondents (*DPil*), $\rho = 0.277$, $p = 0.000$. this informed us that respondents who are highly impacted by down payment to own a condominium houses are more likely to rate the impact of down payment to purchase a condominium house at first from among periodic payment, completion cost and site distance.

v. *The relationship between PPI and PPil*

As to the rho correlation coefficient the extent of periodic payment influences household to own a condominium house (*PPI*) and the periodic payment rating of the household (*PPil*) have no statistically significant relationship, $\rho = 0.004$, $p = 0.965$.

vi. *The relationship between CCI and CCil*

The correlation result of the extent that completion cost respondents assumed influenced households to own a condominium house (*CCI*) and completion cost rating of the respondents (*CCil*) indicated that the *CCI* and *CCil* have a positive relationship, $\rho = 0.230$, $P = 0.005$. The relationship reflects that respondent's expression of the completion cost influence to own a condominium houses are more likely be similarly with their rating of the impact of completion cost to purchase a condominium house.

vii. *The relationship between SDI and SDil*

Correlation analyses were also undertaken to examine the relationship between the extent that the site distance influences households to own a condominium (*SDI*) and the site distance rating of the respondents (*SDil*). The result suggest that the relationship between *SDI* and *SDil* ($\rho = 0.326$, $p = 0.000$) is statistically significant. This indicated that the respondents who are not influenced by site distance are more likely to rate site distance at fourth.

IV. CONCLUSION

The financial burden of condominium houses in the households own experiences also confirmed that condominium houses are unaffordable to lower and middle income group. Beyond the measurement results of affordability, respondents themselves experienced the burden of condominium house payments to them to own a condominium houses. Statistically a significant majority of respondents are highly impacted by condominium house initial payment, periodic payment and completion cost they assumed to purchase a condominium house. That burden makes houses unaffordable for middle and low income families. However, site distances of condominium house don't hinder households to purchase a condominium house. In fact, though one of the IHDP main objectives was to carry out slum upgrading, so far the implementation of the programme in Dessie has been carried out in open spaces. The sites of condominium houses in Dessie town looks they are far from market places as well as work place of most of the residence of the town. But, the interest of the residence/respondents of this study to own a condominium house wasn't influenced by site distance of the condominium houses because the influence of site distance to own a condominium house as a burden for the household like initial payment and periodic payment was not statistically significant to say it does have an impact to own a condominium house. Site distance was not the factor for those majority of individual who were booked to purchase a condominium house but latter become reluctant to purchased while they were asked to take their condominium house. From Among condominium house required down payment, periodic payment, completion cost and distances of sites, Condominium house down payment is the most constraining factor for household to purchase condominium house. Respondents themselves rate them based up on the burden they have to them to own a condominium house from high burden to lower burden. Accordingly though we don't have a statistically significant difference between the burden rate of periodic payment and completion costs, just to know which one is the second and which one is the third, initial payment and site distance are leveled as first and fourth respectively. Among the factors which give a burden for the household to purchase a condominium, initial payment required took the highest followed by periodic payment and completion cost. The burden of periodic payment and completion cost to own a condominium house is, in fact, statistically equal.

There are some means that reduce those burdens for the household as well as increases the affordability of condominium houses to the households. The first one is just reducing the amount of current initial payments required for condominium house and makes

it to be paid periodically in a longer period perhaps after the total payment of required periodic payments. This strategy is normally design considering initial payment is the significant factor which influences households to own a condominium house as it is discussed above with statistical significance. For the designed strategy statistically a significant majority of the households' ability to purchase a condominium house will increase. More specifically, if instalment payments are to be adjusted a priority has to be given to down payment because significant number of respondents put it in the first level based upon its impacts in comparison with periodic payment as well as distance of sites. This way we can make condominium houses affordable to households. The Ethiopian new housing project which is called usually as "Arba Silisa" complies with this scenario.

The other strategy is that there are also statistically significant majority of respondents whose affordability will increase if the amount of current periodic payment reduced and paid for longer period. If these periodic payments are reduced to a certain amount and to be paid for longer period than the above, majority of households could afford the periodic payment of a condominium house.

V. RECOMMENDATION

If reducing the current cost of construction of condominium houses as well as any housing project has no alternatives, as a second option, making some adjustments in the payment system of a house is needed. Small amount of periodic payment as well as down payment to be paid for longer period/years significantly increases the affordability of houses to lower and middle income group. Condominium house down payment is the most factor that impact individuals to purchase a condominium house than others like periodic payment, completion cost and site distance. Hence when a new housing program is designed it should propose a means to avoid or minimize the down payments requirement to make houses affordable to many households.

Housing projects which will be conducted to make lower and middle income group house owner should do the finishing activities of the house to the most possible level because there are significant majority of households which are impacted by costs to be incurred for such activities to purchase a condominium house.

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