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Determining the Factor Affecting Property Value Increments: The Cause Study of Dire-Dawa City, Ethiopia

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Abstract: In the next 25 years, cities in the developing world will grow by almost 2 billion people, accounting for some 90 percent of world population growth. This growth will create a huge demand for infrastructure. Infrastructure investment will be required to make cities efficient locations for economic production, to provide basic services for a larger population, and to upgrade public services in line with household incomes. At the same time, population and economic growth will drive increases in urban land and property values. The ability of cities to finance the needed infrastructure will depend in large part on their ability to capture a portion of these gains and to channel them into infrastructure finance. This shows the various ways in which land values can be used to help pay for investment in infrastructure, in addition to their role as part of the property tax base as well as Land has a long history as an instrument of urban infrastructure finance. The main aim of this research article focuses on the possibility to implement land value capture to finance to expand infrastructure in the city. This research article tries to investigate how the factors affecting property/ land value increment and land value capturing mechanisms are implemented when a government provides different infrastructures expansion to community and the property value increment around that infrastructure corridor in Dire Dawa city. However, further investigation should be started nation-wide to discover the problems throughout the country. The study applied both qualitative and quantitative approaches where primary and secondary data sources were used. The data analyzed using Microsoft excels, Strata software and regression analysis (SPSS). The regression analysis shows that, the identified independent variables that affect the property value at 89.5%. The finding of this study showed that there was a higher need for sustainable fund sources to respond to an increase in road infrastructure expansion demand in the future. However, there is a big gap between the actual practice of land value capturing, valuation methods, practice, the laws and proclamation. Lack of application of consistent land value capturing mechanisms and procedures created situations of a shortage finance to provide infrastructures service to the whole community in the city and to obtain the sustainable funding sources. Therefore, applying land value capturing is legitimate to solve the shortage of finance for future expansion of different public infrastructure expansion in Dire Dawa City.

Keywords: Property Value, Land Value, Land Value Capture, Property/Land Value Increment

1. Introduction

In the next 25 years, cities in the developing world will grow by almost 2 billion people, accounting for some 90 percent of world population growth. This growth will create a huge demand for infrastructure. Infrastructure investment will be required to make cities efficient locations for economic production, to provide basic services for a larger population, and to upgrade public services in line with household incomes. At the same time, population and economic growth will drive increases in urban land and property values. The ability of cities to finance the needed infrastructure will depend in large part on their ability to capture a portion of these gains and to channel them into infrastructure finance. This shows the various ways in which land values can be used to help pay for investment in infrastructure, in addition to their role as part of the property tax base. Land has a long history as an instrument of urban infrastructure finance [14].

From time immemorial, real property is considered one of the three fundamental necessities of life. The fact remains that unlike food and clothing, real property is difficult and costly to

acquire. People need to be housed, as it is very essential and indispensable because it is the platform of all human activities. Hence, it plays a vital role in social, economic and psychological development of an individual, a state and a nation at large. In view of the rapid urbanization coupled with rapid population growth, demand for properties has experienced an up shot [23]. The value of landed properties is influenced by several factors among which accessibility stands to be prominent [19]. Many property investment analysts often play down accessibility whereas it is a key element in the functioning of land resources that creates advantages and disadvantages of location in the process.

The Oxford English dictionary defines property as ‗a thing or things belonging to someone‗. Those things belonging to someone (short term properties) could be ‗either tangible or intangible‗ and those tangible properties have physical substance whereas intangible property is property that represents a set of rights that have no physical existence, but which do represent control or ownership of something of value [4]. The other classification of property is real property and personal property. Personal properties include all properties other than real properties.

Real estate is defined as land and all things that are a natural part of the land, things that have been attached to the land, and all permanent building attachments [5].

In general, it is defined as the ‗land and its permanent improvements. ‘From legal and practical limit of a component, real estate can be noted as it is not only the surface of the earth, but also including above and below the Earth surface [4]. Therefore, in this context real estate includes land and any permanent fixtures attached to it.

Every investment is in some way or another dependent on land and property [20]. Although land value is one of the most important data needed for all these investments and applications, it is usually hard to predict the "real value". To assess the value of land by evaluating several factors, related to a real estate, e.g. location, environment, topography, utilization conditions etc. is called real estate valuation, which is a key factor for land management. There are many theories behind what exactly it is that determines the value of a property, from which choices of location can be deemed as one of the most crucial. Recent studies (13) suggest that land values are derived from transportation savings afforded by the location of the stand or land parcel.

This theory or model developed to later on became bid-rent model, which assumes that the price of a land parcel increases due to the proximity to the CBD and land sizes increase with an increasing distance from the CBD and The retailer is willing to pay high rent for a site near the central business district (CBD) where accessibility is prime importance [3].

This study examines an important additional option for local road infrastructure finance: capturing land value increment and its attached property value increment gains from road transport infrastructure. The various ways in which land values capture can be used to help pay for investment in urban infrastructure, in addition to their role as part of the property tax base.

Therefore, this study was undertaken to assess capture the existing land value increment due to different factors that contributes to property value increment in Dire Dawa City, particularly in seido area 02 kebele. The study aims to assess the implementing of land value capture to overcome financial constraints on road infrastructural expansion in Dire Dawa City.

2. Literature Review

2.1. The Concept of Property Value

According to [1], value is defined as the monetary relationship between properties and those who buy, sell, or use those properties. Consequently, a property valuer's definition of value is the present price for the right to receive income or capital in the future to the owner [8]. Thus, value by itself is a subjective concept in that a property will have the impact of Property Values increment.

Different values at any point in time according to the purpose for which it is being valued and the circumstances of the party for whom it is being valued. Understanding the basic distinctions among the words price, cost and value which have similar meanings in the everyday use is very important in property valuation practice.

On the other hand, According to Royal Institute of Chartered Surveyors [18], as cited in [8], value is an estimate of the price that would be achieved if the property were to be sold in the open market. Also, International valuation standards committee [12, 2] defined as:

‘*Value is an economic concept referring to the price most likely to be concluded by the buyers and sellers of a good or service that is available for purchase. Value is not a fact, but an estimate of the likely price to be paid for goods and services at a given time in accordance with a particular definition of value. The economic concept of value reflects a markets view of the benefits that accrue to one who owns the goods or receives the services as of the effective date of valuation’.*

In the real estate context, the following factors of production are the basic measures of real property value i.e. land, labor, capital and entrepreneurial coordination. The combined effect of these components and their relationships create the value of a property as a whole [1, 2].

2.2. The Concept of Land Value

2.2.1. Definition

Land value is the measure of how much a plot of land is worth, not counting any buildings but including improvements [6]. Land value can be thought of as the relationship between the desired location and a potential user. The ingredients that constitute land value are utility, scarcity, and desirability. These factors must all be present for land to have value [9]. The land value is determined by the economic principle of highest and best use of land which produces the highest net return in any term, over some time.

2.2.2. Land Value Increment

According to [16], unlike other endowments, land and

natural resources confer benefits on the owner by the mere fact of being owned, without the need for any value addition to be done by the owner. Further, the rise in value of land or of any natural resource is generally independent of the amount of effort or value addition done by the owner, and is dependent on various exogenous variables. However, only the landowner captures the value increment without paying share of the value uplift for the service provider. Land values increment due to pubic activity like new roads, transport links, commercial developments etc. According to [15], the increment of land value due to public action, such as investment in infrastructure, the provision of public service, and planning and land use regulation, can also affect the value of the land and property. In fact, all these activities, called public goods, generate large amount of positive externalities, most of which are captured by the landowners in terms of increases in land values.

The property value is dependent on the structural attributes, land rates, land use and the location of the land. It is determined by the specific attribute of the land such as land use, location, accessibility, aesthetics, et c. Factors affecting Land Value are of importance to calculate or estimate land prices, understanding of these factors will provide more accurate and realistic price of land.

3. The Study Area (Dire Dawa City)

3.1. The Study Area

Dire Dawa was founded in 1902 when the railroad from Djibouti reached the area, and its growth has resulted largely from trade brought by railroad. The Dire Dawa administrative council consists of the city of Dire Dawa and the surrounding rural areas. The council has no administrative zones but one woreda – Gurgura woreda. There are 4 Keftegnas, 24 urban kebeles and 28 rural peasants associations. Dire Dawa is the capital city of the administrative council. It is located in the eastern part of the country enclosed by the State of Somalia and the State of Oromia. It is the second largest city in Ethiopia.

Dire Dawa city is the Centre of the Dire Dawa Administrative Council (DDAC). It is located in the eastern part of Ethiopia within the eastern margin of Awash River Basin. About 69% of the total DDAC population (287,000) lives in the city. The railway from Djibouti to Addis passes through the city and its origin was as railway city. The city lies 515 km east of Addis Ababa and journey time is about eight to ten hours by road or 45 minutes in air. The Dire Dawa Administrative Council (DDAC) covers 1,333km^2. It is bounded by Oromia Regional State to the south and by Somali Regional State to the north, east and west.

Based on the 2007 census conducted by the central statistics agency of Ethiopia (CSA), Dire Dawa has a population of 341,834 of whom 171,461 are men and 170,461 women; 233,224 or 68.23% of population are urban inhabitants. For all of Dire Dawa 76,815 households were counted living in 72,937 housing units, which result in an average of 4.5 persons to a household, with urban households having on average 4.2 and rural households 4.9 people. Ethnic groups in the region include the Oromo (45%), Somali (35), Amhara (13%), Gurage (3%), and Harari (1%). The region with the most believers in dire dawa is Muslim with 70.8%, 25.71% are orthodox, 2.81% protestant, and 0.43% catholic.

The major of the Dire Dawa population derive their livelihood from trade activity mainly contraband trade. And also the city has a commercial industrial center and Manufactures. National cement used to be Dire's only cement produced, in the last five year though, Dire two more cement factories; pioneer cement and tour cement. There are also railroad workshops in the city. Now days Dire Dawa engaging in small and medium businesses, making huge investments or many more others are hired in these businesses created by their own fellow Dire Dawans or other from elsewhere.

3.2. Determinants of Property Value and Land Value

Both rental and capital values of properties are affected by various factors including property specific factors and factors out of the property itself. In general, the values of both residential and none residential properties are determined by demand and supply factors.

According to [10], stated that, if there is a little supply of properties and a greater demand of it in the market, the values of properties might be higher. Thus, the pattern of land use which affects properties value in an urban area is a reflection of competition for sites between various uses operating through the forces of supply and demand. In real estate business, the most and biggest determinate factor for property value is location, location, and location [13].

Certain sites have locational advantages, greater demand, and greater value because they may have a beautiful view, good rail and road connections without noise, and all kind of public and private services. If we compare similar properties in different areas, they will have different values with respect to their locational characters and importance. Some areas have good access to physical infrastructure and public services and other might not have. Similarly, sites in urban areas will tend to be devoted to the use that produces the highest value, which will largely be determined by accessibility to transportation and services; complementarity of different land use activities and availability of a different mix of activities, market, and services.

According to [7], determinants of property values can be classified as property specific factors and factors outside of the property. Property-specific factors include size, age, condition, external appearance, car parking, site improvements, the legality of the property, easements and covenants attached to the property, planning controls etc. Factors outside the property include the national situation, the international situation, and neighborhood characteristics. Thus, from different pieces of empirical evidence, there are also many factors that affect property values.

Availability of infrastructures like water, sanitation, and electrical installations has a significant positive effect on

housing prices by [21]. Similarly, a study on south London and in Port Moresby indicated that the positive factors for residential property value are access to urban amenities and the negative factors are accessibility to high voltage overhead transmission lines [22].

Another study by [23], founded that, excess liquidity, stock price and interest rates are significant factors affecting the price of residential housing units in Hong Kong and other developing world countries. Other important factors affecting residential property values are the number of bedrooms, land area, and location [7].

Empirical evidence, by [19], discovered that locational, structural (size, number of bedrooms, design quality) and neighborhood characteristics (proximity to shops and services, infrastructure development, power supply, as well as security) are the main factors that affect residential property values.

4. Research Methodology

4.1. Data Collection Methods

This research article has employed qualitative and quantitative methods in its investigation of the problem. Henceforth primary and secondary data was collected through the following methodologies:

4.1.1. Primary Data Collection Method

Primary data were collected through structured questionnaires; key informant interviews and focus group discussions (FGD). There were three types of questionnaires used for collecting the data-one for 137 local house hold respondent, another 10 key informants interview with municipality case team leaders, public service providers 'manager and kebeles higher official and local officials. Municipality case team leaders, public service provider and local and higher kebele officials working in the area of land administration and information agency, road and transport authority office have different levels of information related to land value increment and related issues. Lastly, 10 FGD held with the community members from the study area.

4.1.2. Secondary Data Collection Method

Literature review of different materials was collected from relevant sources of different published & unpublished documents of books, research papers, journals, articles, thesis works and different internet websites on determinants factors that effect on property value has been explored. An attempt has been made to include literary materials that represent developed, developing countries and Ethiopian materials. The Ethiopian materials mainly focus on the city of Dire Dawa. Like that, reports and archives, other official researchers, quarterly and annual reports, etc. were used to investigate land/ property value increment.

4.2. Data Analysis and Discussions

For this research article, raw data were collected through questionnaires, interviews, and focus group discussions that was carefully matched, tabulated and organized manually.

Both quantitative and qualitative approaches of data analysis were used. The qualitative methods were used to describe the findings qualitatively which were gathered through participatory assessment involving; key informant interviews, focus group discussion, and secondary data obtained from various data sources. Quantitative data were analyzed by using descriptive statistical tools like tables, and analytic tools by using Microsoft excel, Starta software, and SPSS.

The multiple linear regressions was used to show the quantitative effect of the independent variable over the dependent variable (sales price of the property) that explained under the variable selection section of this document above. The sales price of the house is regressed as a function of independent variables, to show independent variable impacts on housing prices.

The selected variable which was analyzed in the regression is cross-sectional data of the sales value of the property. Multiple linear regression analysis is a flexible method of data analysis that may be appropriate whenever a quantitative variable (the dependent or criterion variable) is to be examined in relationship to any other factors (expressed as independent or predictor variables).

4.3. Factors that Affect Property Value in the Study Area

The land value is determined by the economic principle of highest and best use of land which produces the highest net return in any term, over a period. The property value is dependent on the structural attributes, land rates, land use and location, accessibility, aesthetics, etc. After reviewing the literature, it can be concluded that many different types of factors have a great impact on the value of properties. Because the value of properties depends on the type of influential factors and of the contribution of these factors to the value of a property, a survey among brokers, appraisers, residents, and tenants, the researcher selected seven independent variables that affect the dependent variables in the study area.

The factors that affect property value that detailed discussion, to the residents, tenants, brokers, and several kinds of literature. The major factors that affect property value includes: Proximity to the main road, Type of house, Size of house (floor area, conditions of property, Age of house, Land area (plot size), View of the house, Distance from bus station.

According to brokers, tenants, and residents response the area has been growing rapidly in recent years which created high rental and sale value of properties in the neighborhood.

This is mainly due to the construction of road infrastructure, the neighborhood characteristics and accelerates of different economic activities across the locality. Also, Ethio Italian TVT colleges, sabian/seido bus stations and Dire Dawa University play a major role in the increasing values of the property. As the respondents, brokers, tenants, and residents argued that another most important factor for property value increment in the study area is proximity to the main road and proximity to the bus stations.

4.3.1. Proximity to Asphalt Road or Distance to the Main Road

As the respondent indicated that, proximity to the main road is one of the most significant variables that affect the value property price. In seido -sabian road Dire University road corridor, the tenants and residents are considered or prefer to buy the house is near to the main road. Because of that, the property is near to the main road is accessible to shops, hotels, garages, transports, business activities to contributes and develop the level of income.

As the respondent questioner survey, the property is proximity to the main road the value of the property is increased and the buyer is willing to buy that property whereas, the property value is decreasing where it is far from the main road, has fewer people willing to buy that property. It is mostly argued that the value of the property is determined by the proximity to the main road. It is expected that property closest to the main road will have the highest value, with values decreasing in distance from the main road.

The property that is along the newly constructed road is in high demand and command high value because of their proximity to the major road. Most of them are used for building commercial shopping stores and complex, petroleum filling stations, office complex, educational institutions among others [17].

4.3.2. Type of House

There are various types of property in the study area. According to the residents, brokers' tenants and field survey the existing housing type in the study area ordinary house (depreciated old house), wood and mud house, masonry and block, modern material and blockhouse exist. From the respondent's idea, different types of house have a different selling price. Some buyer needs to buy the modern material and blockhouse type, proximity to the main road, access to business activities, safety and security. So the price of this type of house is a higher price than other types of property in the study area. Similarly to this study, the factor of the type of house [19].

4.3.3. Size of House (Floor Area)

According to the brokers and residents believed that the size of the house is important up to a point, and many people desired to live in a big house. When estimating the house value, size is an important element to consider, since a bigger home can positively impact its valuation. Most buyers need to the considered large size of the property and other buyers are considered the small size and modern materiality house. However, the large size property has a higher value than the small size of the property in the study area. This indicated the size of the house is a positive relationship to the value house in the study area. The features and overall size of a property will also influence its worth. A four-bedroom house is likely to fetch more than a two-bedroom house in the same area, while features such as extra bathrooms, garages, swimming pools, and outdoor entertaining areas can all have an impact on property value.

In busy cities, the absence or abundance of parking opportunities is another critical factor, while the functionality of a home's layout is always important. The number of bedrooms has the highest weight. The more space and living room fit families and help create a good quality of life command higher prices. More rooms mean higher construction costs, thus the higher the value of the property by [7].

4.3.4. Conditions of Property

Condition of property is nominal variable. The willingness to pay for a property which is in good condition is higher. Condition is determined by considering the building materials, roofing materials, floor covering, types of door and etc., [22]. A property with very good, good and fair condition reported under condition of the property.

4.3.5. Age of House

The year of construction refers to the year in which the building was completed and was ready for use. According to the property owners and brokers' responses, the new house is a higher value than of the older one. Most house buyers prefer to buy new and modern house in the study area. Because of this the newer the home, the higher the price will be simply because the structure is almost new and no major repairs and renovations are needed however some homes have been built decades ago and are still worth far more than the modern homes. The construction year of most houses within 15- 50 years in the study area. The age of the house is one of the important determining factors of the price of houses. The age of buildings is negatively correlated with the value of properties. This means that the prices were decreasing with the increasing age of buildings. Similar to this study, other studies are also confirmed this [21].

4.3.6. Land Area (Plot Size)

From the broker's and residents' questioner survey, the width and depth of a parcel of land will often determine the highest and best use of its purpose. According to the respondent answers, the land area costs more than the smaller land area. The buyer assumes that the large pilot size enables them for parking, ground decoration and playground, and further construction of additional houses in line with the building permit. Hence the area of the land influences the value of the property (lot size for entire property including home and accessory dwelling unit). According to [19], Describes the bigger the land size, the higher the value of a property. Households normally prefer a bigger leisure area. Furthermore, the bigger land size implies a potential for further improvement and land subdivision.

4.3.7. View of the House

As the respondent indicated that, the buyers consider when looking for a property to buy is the view they will see when they look out of the window. A home with a roadside view and good neighborhood characteristics can demand a much higher price than one with a blocked view. Good views are attracting to buyers and the property has a higher price. In the study area, the buyer and tenants confirmed the above statement. Their research results show that proximity to main

road features has a positive effect on housing prices. The properties with a full view reached considerably higher prices in comparison with the properties with partially or obstructed views. Also important is the distance of viewed natural areas from the property. This fact is also tested by other work [11].

4.3.8. Proximity to the Bus Station

A bus station is a place where buses start and end their routes. Sabian- seido bus station is one of the main bus station places which are found in Dire Dawa city. The bus station also has to contribute the great impact the property price increment in the stud area. As discussed by household respondents, tenants, brokers, and several kinds of literature indicates that the property is cloth proximity to the new bus station the property price is highly increases. A bus station is continuous variable. It is a distance from the bus station to the property in meter. When properties are located nearby, bus stations, train stations or other transports, the great traffic flow will bring them with more successful opportunities [24]. High traffic level is a prerequisite to the property value. Properties with short distances or direct access to bus stations are expected to be more appealing and thus will charge higher values from consumers. It is expected to have appositive sign.

Definition of variables used in the regression analysis.

In this study, the sale price of property value is affected by different determinant factors. The model decomposes the sales price into variables that affect property values price and tries to consider the contributions of the following variables: Proximity to the main road, Type of house, Size of house (floor area), condition of property, Age of house, Land area (plot size), View of the house and proximity to bus station are listed below the following table.

Table 1. Definitions of variables used in the regression analysis.

Category	Explanatory variables name	Definition of variables	Expected Relationship	Type of variables
Sale price	SP	Sales price (in ETB birr)	Dependent variables	Continuous
Proximity to the main road	PR	Distance from property to the main road (in meter)	-	Continuous
Type of the house	TH	Purposely built = 1 Storied = 2 Converted = 3	+	Nominal
Size of house (floor area)	SH	Gross floor area in meter square	+	Continuous
Condition of property	CON	Very good = 1 Good = 2 Fair = 3	+	Ordinal
Age of house	AH	Year of the house was built	-	Continuous
Land area (plot size)	LA	Area of the plot (in meter square)	+	Continuous
View of house	VH	0 = bad (for abstracted view house or) 1=good (for good neighbourhood characteristics)	+	Dummy
Proximity to the bus station	BUS	Distance from property to the bus station (in meter)	-	Continuous

Source: field survey, 2021.

4.4. The Assumption of Linear Regression

Before running the regression analysis, it is important to check whether the assumptions are satisfied or not. As a result, different tested were conducted. The following test has been conducted a test of normality, a test of auto-correlation, a test of multi-collinearity, a test of heteros-cedasticity, the details are described hereunder as follows.

4.4.1. Normality Test

In the multiple linear regressions analysis, the relationship between the dependent and independent variables must be linear. The residuals of the regression should follow a normal distribution so that the acceptable inference for the regression. For this reason, the data is 95 determined whether the data is normally distributed using the normal predicted probability (p- p) plot and using the Shapiro-Wilk test. Thus the following table shows the Shapiro-Wilk test. The pvalue is 0.569 which is greater than 0.050 (confidence level), it can be concluded that the data derive from a normal distribution table.

Table 2. Normality test.

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Sales price in birr (ETB)	0.108	40	.200[*]	0.977	40	0.569
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

Source: filed survey, 2021.

Similarly, the normal distribution of the data can be shown on the normal p-p plot. The following figure illustrates the normality of the distribution, because of this the little circles follows along the normality line.

4.4.2. Multi-Collinearity

Occurs when, there is a relationship between the independent variables. There are other different methods of testing multi-collinearity; VIF (variance inflation factor) has been employed in this study. The values to be below 8 and the best case would be if the values have to be below 5. Thus, based on table 5 below, each value is below 5 indicating that there is no multi-collinearity problem in the assumption of this linear regression.

4.4.3. Homoscedasticity

Describes (the relationship between the independent variables and dependent variable) is the same across all value of the dependent variables.

This test shows that the variances around the regression line the same for all values of the predictor variables. Depending on the following figure, the data is Homoscedastic because the points are equally distributed above and below zero on the x-axis, and to the left and right of zero on the y-axis. As well as there is no very tight or wide distribution to the left and right or above and below the plot.
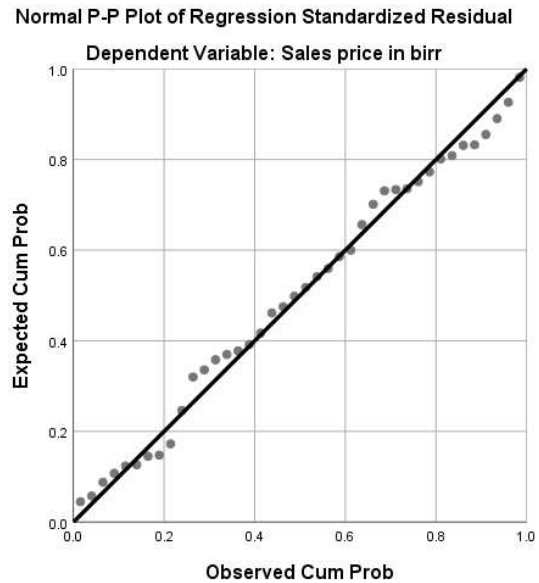
Source: field survey, 2022

Figure 1. *Normal p-p plot of regression standardized residual.*
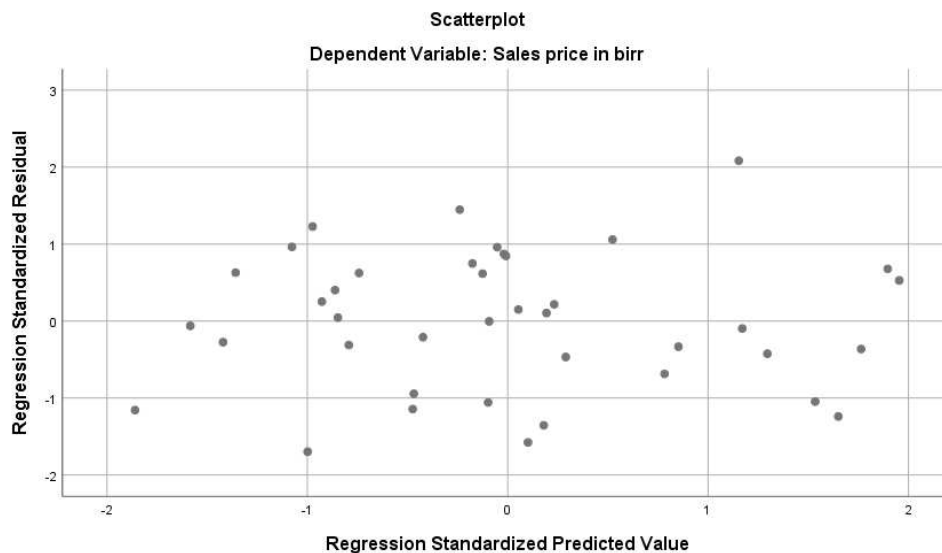
Source: field survey, 2021.

Figure 2. *Scatter plot.*

4.4.4. Auto-correlation

It is detected by the Durbin Watson test. The value of the test is always between 0 and 4; a value of 2 or approximately close 2 usually indicates no autocorrelation problem. Thus, according to the Model Summary table 3 below, the Durbin Watson value is the data employed in this study is 1.434. It is close to 2. Therefore, there is less problem of autocorrelation, which implies the data meets the requirement of multiple linear regressions in the case of autocorrelation.

Therefore, the principle of the hedonic pricing model the dependent variable is the function of the independent variables. This can be written as

$$SP = f\,(PR,\ TH,\ SH,\ CON,\ AH,\ LA,\ VH,\ BUS) \qquad (1)$$

Thereafter, the formula for multiple linear regressions is written as follows.

$$SP = \alpha + \beta_1 PR + \beta_2 TH + \beta_3 SH + \beta_4 CON + \beta_5 AH + \beta_6 LA + \beta_7 VH + \beta_8 BUS \qquad (2)$$

Where SP is the dependent variable (sales price), the coefficient α is simply the expected mean value of SP if other explanatory variables become zero, which is the intercept of the graph. β is the beta (slope) coefficient that indicates the degree of influence the independent variable has on variations in the dependent variable (the higher the value of β the more

influential the independent variable) and the sign (positive/negative) indicates the nature of the relationship (whether the independent variable and the dependent variable move together or in opposite direction). The subscript I denotes the observation numbers (1, 2, 3, 4…. 10) and μ is error term sometimes called residuals in the regression model.

4.5. Regression Result

Based on the data collected from the own survey, the model has to be estimated by using multiple regression and the regression result is shown below.

Table 3. Model Summary sales price of properties.

Model Summary										
					Change Statistics					**Durbin-Watson**
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**	
1	.946[a]	0.895	0.869	468242.63518	0.895	33.203	8	31	0.000	1.434
a. Predictors: (Constant), Distance to the bus station in meter, Condition of property, View of the house, Age of house, Size of house (floor area) in meter square, Type of House, Land area (plot size), Distance from property to the main road in meter										
b. Dependent Variable: Sales price in birr										

Source: field survey. 2021.

The table 3 indicates the R-Square value is essentially a measure of the predictability of the model (i.e. this statistic indicates the percentage of the variance in the dependent variable that the independent variables explain collectively). Value shows, 89.5% of the variation in the dependent (sales price of property) variable can be explained by variations in the independent variables. The remaining 10.5% is explained by other variables that the research did not intend to do.

Table 4. Analysis of variance.

ANOVA[a]						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	58239213872461.600	8	7279901734057.700	33.203	.000[b]
	Residual	6796786127538.390	31	219251165404.464		
	Total	65036000000000.000	39			
a. Dependent Variable: Sales price in birr						
b. Predictors: (Constant), Distance to the bus station in meter, Condition of property, View of the house, Age of house, Size of house (floor area) in meter square, Type of House, Land area (plot size), Distance from property to the main road in meter						

Source: field survey, 2021.

From the table 4, testing for statistical significance p-value shows that the level of relation the independent variable to the dependent and if the significant number is less than the critical value (p-value) which is statistically set as 0.05, the model is meet significant in explaining the relationship between the dependent variable and independent variable otherwise the model will be deemed as non- significant. Therefore, the F-ratio in the ANOVA table above tests whether the overall regression model is a good fit for the data. The table indicates that the independent variable statistically significantly predicts the dependent variable, $F_{(8, 31)} = 33.203$, $p < 0.05$ (i.e. the regression model is a good fit of the data).

Table 5. Coefficients of determination (sales price of properties).

Coefficients [a]								
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**	**Collinearity Statistics**	
		B	**Std. Error**	**Beta**			**Tolerance**	**VIF**
1	(Constant)	4995961.322	966371.963		5.170	0.000		
	Distance from property to the main road in meter	-12580.621	5659.009	-0.252	-2.223	0.034	0.263	3.800
	Type of House	-24477.669	171542.535	-0.014	-0.143	0.887	0.374	2.671
	Size of house (floor area) in meter square	11565.290	3457.007	0.287	3.345	0.002	0.457	2.190
	Condition of property	245422.884	128031.723	0.122	1.917	0.065	0.837	1.194
	Age of house	-22315.052	10112.691	-0.160	-2.207	0.035	0.643	1.555
	Land area (plot size)	6521.267	1833.406	0.326	3.557	0.001	0.402	2.486
	View of the house	793585.130	202061.483	0.301	3.927	0.000	0.573	1.746
	Distance to the bus station in meter	591.541	494.060	0.072	1.197	0.240	0.927	1.078
a. Dependent Variable: Sales price in birr								

Source: Field survey. 2021.

From the table 5, the eight tested variables, only five variables have a significant effect on the sales price of the property (See Sig. Column). These are proximity to the main road, size of the house, age of house, land area and view of

the house has a positive linear relationship to the sales price of the property. Because these variables have a p-value of less than 5% and are significant variables at a 95% level of the confidence interval. The other three variables are none significant variables for this regression model. The type of house, condition of property and proximity to bus station are non-significant variables. The P-value of those variables is greater than 5% and so these variables have no significant effect on the sales price of the property.

This indicates the contribution of the significant variables for the sales value of the property is determined by the indicated coefficient.

Hereafter, the final model is estimated as follows (incessant from equation 2).

$$\text{Sales Price (SP)} = 4995961.322 - 12580.621PR + 11565.290SH - 22315.052AH + 6521.267LA + 793585.130VH + \text{Error} \quad (3)$$

Therefore, from the above equation (3), 4995961.322 (constant) is the intercept of this linear relationship which is the value of the property in which the variables become zero. Depending on the correlation analysis result, proximity to the main road, age of house has a negative relationship with sales price. This implies that a relatively new house with good condition has a higher price than old and low-quality houses. The property is near or proximity to the main road has a higher price than the house is far from the main road. The augmentation change on one-meter distance from the main road will decrease the sale price of properties 12580.62 by Ethiopian Birr (see appendix Google image). And the house is old and depreciated (low quality) will decrease the sale price of property 22315.052 by Ethiopian birr.

Based on the above regression model, the independent variables proximity to main road, size of house (floor area), age of house, land area and view of the house have their contribution to the value of the property increment, so that needs to consider for appropriate land value capture mechanisms and modern property valuation system. Hence, the current implementing land value capture mechanisms on land value increment and property value in Dire Dawa City is traditional and not consider or focus all above the contributions of the variables as it is explained on the regression model.

From the model, it can be concluded that the significant variables identified in the study have an increasing impact on land and property values in the study area.

5. Conclusion

This research article study was intended to assess the major determinant factors that affect property value and impacts of land value increment in the study area. The regression result indicates that the sales price of the property is a function of the constant and eight independent variables that can be classified as proximity to main road, type of house, condition of property, size of house, age of house, land area, view of house and proximity to bus station are significant at 95% level of confidence interval. The regression analysis shows that, the identified independent variables that affect the property value at 89.5%. The findings of the study on determining factors affecting on property value increment in appraising of properties value indicate that the view of the house in relation to the distance from the city center is the most important influential factor on the property value, similarly as in other countries across the world.

In addition to this high population, strong economic condition and close distance to infrastructure generate high demand for land and property. This increases the value of land and its attached property without any change undertaken by the owner on the property.

Land value capture is expected to create equity among poor and rich communities, protect land speculation, moderate the price of land, reduce other taxes if it is designed and implemented. The success of land value capture is also based on the ability of the responsible body to capture only the share of land value uplift. So, the government has to be facilitating how land value uplift is captured from the communities and finance back for additional infrastructural expansion in the city.

Therefore, the city administrator should appoint professional property valuers who have the skill and competence to capturing land/ property value uplift in Dire Dawa City. The share of the value increment captured by the government should be based on the impact that the above determinants or factors exerts on each parcel of the land and property value.

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