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Abstract

There has been a slow growth in the commercial real estates in Kenya as compared to the demand of the houses. Demand for housing units continues to outstrip the supply; property developers in Kenya have in the recent years considerably scaled down their construction activities, pointing to a struggling property sector. In 2018 the real estate sector in Kenya recorded its slowest annual growth in four years, giving weight to property market reports that signaled a slump in demand despite increased supply of new housing units. The purpose of the study was to establish the influence of land as a factors of production on the growth of commercial real estate in Machakos County. The study adopted a cross-sectional survey research design. The target population for this study was made up of 374 registered property developers with Kenya Property Developers Association operating in Machakos County. Census approach was used to study all the 374 registered property developers. Prior to commencement of the actual study, 40 respondents from Kajiado, a neighboring county to Machakos were used in a pilot study to pre-test the research instrument. The researcher triangulated both structured questionnaires and open ended interview guide to gather and saturate data from the respondents. While the interview guides were bent to

gather in-depth qualitative data from the real estate agents, the structured questionnaire was used to collect quantitative data from the respondents who develop the real estates. Both quantitative/ numerical data and qualitative/ descriptive data were collected using structured questionnaire and unstructured interview guide respectively. Qualitative data was analyzed using descriptive statistics while quantitative data was analyzed using inferential statistics. Time series was also be utilized in this study. Statistical Packages for Social Sciences (SPSS) software was used for higher statistical computations. The findings revealed that there was a positive and significant relationship between land and growth of commercial real estate in Machakos County. Based on the findings the study concluded that land is an important factor in determining the growth of commercial real estate in Machakos County. The study therefore recommended that before considering investing in commercial real estate in Machakos County, the investors should consider a number of aspects regarding land such as land location, land size, the general appearance of the land, accessibility and the price of the land and most importantly the legitimacy of the land.

Keywords: *Land, Growth of Commercial Real estate, Investors, Developers, Machakos County.*

1.1 Background of the Study

Real estate is an enabler of economic activity; by offering the space for businesses to operate it effectively provides the business infrastructure without which an advanced economy could not operate (Lyapina, Orlova, Semenova & Stepanova, 2020). Furthermore, high-quality, modern and innovative buildings contribute to maintaining the country's reputation as an international trade hub and attract skills and capital from the rest of the world, creating further opportunities. Real estate comprises of land, building on it and other natural resources like minerals and crops which are immovable. Real estate investments are of different forms ranging from management, ownership, purchase, rental land or sale of real estate for profit (Okumu, 2017). Among the crucial needs of man, housing comes second. Real Estate investment include diversified amount of wealth which can be attested to by huge number of real estate investors in Kenya. Despite immense returns in terms of wealth accumulation, the real estate industry in Kenya has consistently failed to position itself in order to realize this major role. This is as a result of failing to consider comprehensively the determinants in the sector that influences growth of real estate in this industry.

The contributions of real estate sector to any country's economy cannot be overemphasized; it's a sector whose impact has been felt tremendously in economies of both developed and developing nations (Siniak & Marina, 2019). Real Estate is an important part of the economy and is accountable for an extensive part of its development, advancement of any nation's infrastructure stand & major originators of trade and industry activity. Guo, Zhang, Zhu and Sun (2018) opine that more money has been made in real estate sector alone than all other financial investment streams combined globally and evidence of this are shown in most world top billionaires, people like Donald Bren with a net worth of \$15.1 billion, President Donald Trump with a net worth of \$4.5 billion, Rick Caruso, David Lichtenstein, and other world billionaires were listed on Forbes magazine to have made their fortune in Real Estate. This could be because the real estate sector

has strong connections with various industries such as tiles, paints, fittings & fixtures, cement & steel to mention a few, so prosperity in this sector means wealth for all other sectors, thereby positively impacting such country's economic growth (Kauškalė & Geipele, 2017).

Real estate industry has become immensely attractive and lucrative for many investors due to its size and measure in terms of value (Su, Lin, Che & Li, 2018). Demand and supply are some of the elements of the business sector that have greatly affected the real estate business sector. Some of the piece of evidence of investor confidence in the Kenyan real estate commercial property is Old Mutual Property's recent investment in the Two Rivers Mall. The country real estate sector has also witnessed investments from the Delta Africa Property Fund, Retail Africa and Abland all from South Africa. AVIC International Holding Corporation of China is also expected to invest over US\$ 200M in constructing their Africa Headquarters in Nairobi. The multi-user development has been reported to contain the highest office block in East Africa and will undoubtedly reshape Nairobi's skyline. All these investments are attributed to the vibrant and the growth of real estate sector in Kenya.

Real estate is influenced by various factors which include; macro-economic (Fang, Chang, Lee & Chen, 2019). Macro-economic factors refer to factors that are pertinent to the broad economy at the regional or national level and affect a large population rather than a few select individuals. Macroeconomic factors such as economic output, unemployment, inflation, savings and investment are key indicators of economic performance and are closely monitored by governments, businesses and consumers (Khalid *et al.*, 2012). According to Forrest (2018), social factors can influence property prices, population growth combined with improved economic performance can lead to an increased demand, which leads to a boom in the real estate market. Another social factor that influences home prices is a rise in crime rate in any given area. The increase makes people cautious about living in that area, which can lead to a decrease in demand or a bust.

PWC (2017) in a report indicated that 37% of all homes sold in the U.S. in 2016 were purchased for investment purposes. The homeownership rate in that year was the lowest in 50 years, as renting had been increasingly the more frequent choice compared to purchasing. Following the debacle of 2007-2008, the U.S. real estate market was since then characterized by a significant improvement in prices, number of transactions and mortgage originations which was as a result of an economic recovery that completed its 8th year in 2017. The years 2007-2009 proved to be a historical event for American real estate. The economic crisis, in great part caused by the proliferation of subprime mortgages, led to significant bankruptcies in the financial sector and a recession which shrunk GDP by 0.3% in 2008 and 3.1% in 2009. The effects on real estate prices was swift and significant, as for the first time ever the USA experienced a nationwide fall in housing prices. Case-Shiller U.S. National Home Price Index from a peak of 184.62 in July 2006 reached a nadir of 134.01 in February 2012, or a fall of 27%. Regional markets, in particular Las Vegas, Phoenix, Miami and California, were hit with bigger corrections, ranging from 40% to 65%. Construction activity was

likewise hit, with housing starts falling from 1.49 mln a month in March 2007 to below 0.5 mln monthly in the first quarter of 2009.

The Nigerian real estate industry has witnessed positive growth in recent years (Ogbenjuwa, Egbu & Robinson, 2018). According to a report released by the Nigerian National Bureau of Statistics (NNSE), the real estate sector grew by 5.9 per cent and contributed 8.37 per cent to the gross domestic products (GDP) in the 4th quarter of 2014 alone. Another report by Price water house Coopers (PwC) put the value of the real estate sector in Nigeria at \$9.16 billion in 2014. According to the projections, further growth was expected to increase the value of the real estate industry in Nigeria to \$11.36 billion in 2015 and \$13.65 billion in 2016. According to the report titled “Real Estate: Building the Future of Africa”, the Nigerian real estate sector is growing at a rate of 8.7 per cent and is now the sixth largest sector in the economy. The report also indicated that high net worth individuals invest 25 per cent of their assets in real estate compared to 18 per cent or less in equities and other instruments.

In Kenya, real Estate investment has attracted both local and global investors due to its diversified amount of wealth, return and market availability. In addition, real estate investment is an interest that is placed on buildings and real property housing for commercial and residential purposes. Real estate investment is also referred to as the business of renting, selling or buying buildings or housing (Cummings, 2013). In Kenya, real estate attractiveness has been witnessed because many investors have diversified their savings. That is from the low-yield treasury bills to the huge profitable property market. Banks have boosted this attractiveness through introducing and actively marketing different mortgage products especially to property developers.

Ruitha (2014) notes that slow and lack of innovation in technologies for housing has a negative effect in real estate investment because of improved mortgage facilities offered by financial institutions. Real estate performance in the country is likely to increase in terms of higher returns, less risk and increased rental income due to the government commitment to promote and encourage investors. An improvement in one of the factors will positively lead to the other improvement. When real estate finance is poorly developed, it is difficult to mobilize the capital tied up in this sector. In the year 2020, different factors such as global warming and natural hazards have significant consequences on property investment portfolios. The ever-dynamic legal liabilities, consumer preferences, government regulations, environmental risks and other factors all together. This makes it difficult to ignore social, political and environmental problems. It is therefore beneficial in terms of finances to address them in real estate investing process (Tharachai, 2013).

Land as a factor of production refers to all natural resources either on the surface of the earth or below the surface of the earth or above the surface of the earth is Land (Dankevych, Pyvovar & Pyvovar, 2019). Land is the primary and natural factor of production; all gifts of nature such as rivers, oceans, land, climate, mountains, mines, forests etc. are land. Therefore for development of commercial real estate, land is necessary.

Kenya has a well-developed real estate industry with readily available quality engineering, building and architectural design services (Bor & Ochieng, 2019). Kenya's commercial and residential real estate is currently on an upward trend, due to the implementation of programmes such as the Urban Transport Infrastructure plan. The increase in population and rural to urban migration has presented numerous opportunities for investors, especially in the commercial real estate sector. It is projected that Kenya will have a population of over 60 million people by the year 2030 and more than 50% of them will be living in urban areas, creating a huge demand for new commercial and residential units (Gitau, Kiragu & Riro, 2019). It is estimated Nairobi alone requires approximately 150,000 new housing units per year against a maximum construction of about 10,000 units per year (Chege & Bett, 2019).

According to Kuria, Riro and Kiragu (2018), it is estimated that over 80% of Kenyan population will have migrated from rural areas by 2030, meaning that shelter is one of their basic needs. Presently, slum dwellers are 1/3 of the urban dwellers population whereby Kenya's Kibera slum is one of the largest dwelling in Africa yet only approximately three million people are urban dwellers. Hence as more rural urban migration occurs more houses, well-constructed must be built to combat slum uprising problem. The real estate industry must be supported and it will have to grow at a faster pace that it currently does (Mwathi & Karanja, 2017). The Kenya industry is benefiting from economic growth of the country and the inflow of foreign aid is being regarded as a very promising venture. The government is also heavily investing in this industry in various ways such as the inclusion of the ministry of housing in the government body, availing of funds to the housing ministry; enforcement of laws to do urban planning, regulatory laws in license permits (Homes Expo Kenya, 2017). It is also worthy to note that in some segments such as luxury real estate it has been observed by analysts that the cities of Nairobi and Mombasa are global trailblazers. In terms of growth, Kenya's real estate market is still superior in comparison to her peers in the region. Although the rest of East Africa is also making considerable headway with much improved infrastructure and renewed interest by developers to build and sell more in trying meet the growing demand in both residential and commercial property segments. Growth drivers are quite similar across the region with factors such as rapid urbanization, modern household formations, regional economic growth, improved government policies among others (Kamau, 2018).

In Kenya, statistics from CBK reflects that there is a significant increase on real estate value over the last ten years (2006-2015). The value of property in the city of Nairobi and its environs (Kiambu, Machakos and Kajiado) has increased by more than four times from 7 million to 28 million, (Hass Consult, 2015). Commercial real estate is any property that is exclusively used for business activity, it compresses of malls, hotels, health centers, stores, office buildings and industrial parks. Investment in real estate is undertaken for its ability to provide returns inform of capital, income and intangible benefits (Baum & Crosby, 2015). However returns in commercial real estate are maximized when there is full occupancy, prompt and total rent collection, full market rent, good physical condition of building, minimal irrecoverable outgoings and low rate of tenant turnover and that is what is referred to as the growth in real estate. The real estate sector is

one of the many pillars that define a country's economic and infrastructural growth, as the country's economic growth is connected with its economic evolution and development (Warren, 2018). The economic condition of a country influences the buying decision of the residents. Thus affects the buyer's ability to invest in properties, as a result, it impacts the overall health of real estate of the country (Sanfelici & Halbert, 2019).

Commercial real estate sector in Kenya has seen growth in the past years due to robust office space demand (Mwathi & Karanja, 2017). Major cities in Kenya such as Nairobi, Mombasa and Kisumu have witnessed a rise in the price of commercial property. This is because of the huge competition in workers looking for jobs that pay well. This has put a strain on the real estate market in these cities, in that; new construction is not able to keep up with the demand due to a lack of available land (Chege & Bett, 2019). The real-estate sector of Kenya is diversified among three sections; people, geography, and property types where people include high, middle and lower sections of society, geography defines the area to be utilized for property developments and property types including retail, office, residential, Industrial and special properties mainly found in urban areas (Mang'ong'o, Githui & Omurwa, 2018). A significant growth of about 6% was seen in the real estate market in Kenya in the financial year 2016 (Njoroge, Aduda & Mugo, 2018). The population growth rate is about 2.7% per annum and the urban growth of the country analyzed in 2016 was over 27% of the total population of Kenya and is expected to exceed up to 50% by 2020. Today 55% of the world's population lives in urban areas, a proportion that is expected to increase to 68% by 2050 (UN Department of Economic and Social Affairs, 2018).

1.2 Problem Statement

Real estate industry play important role in economic growth. In Kenya, real estate recorded a growth of 5.8% in September 2018 which is the slowest registered since 2014 (KENBS, 2018). Population growth rate is growing faster than the provision of new housing and housing infrastructure (Ogbenjuwa, Egbu & Robinson, 2018). Real estate provisions have diminished besides the government of Kenya's commitment to provide affordable housing for the period between 2018 and 2022. Demand for houses has increased from 150,000 units to 200,000 units per year compared to the production of only 35,000 units per year, (NHC, 2018).

Vision 2030 has managed to achieve 10% of the target by 2018 (NHC, 2018) which translates to a short fall of 90% equivalent to 200,000 units. The government of Kenya has come up with the Big Four Agenda after realizing there is a shortage of affordable housing in Kenya. Several studies have addressed demographic, social –economic and the impact of economic factors on mortgage institutions in Kenya, (Lieser & Groh 2011, Ariemba, Kiweu & Riro 2015). The studies have both contextual and conceptual gaps. This study sought to bridge the gaps by addressing the effect of land on the growth of commercial real estates in Kenya specifically in Machakos County.

1.3 Study Objective

To establish the influence of land on growth of commercial real estates in Machakos County

1.4 Research Hypotheses

H₀: Land has no statistically significant influence on growth of commercial real estate in Machakos County

2.0 Literature Review

2.1 Theoretical Review

Conventional Economic Theory

The conventional economic theory or the Neoclassical is based on a conception that every individual is rational (Nordhaus, 1969). Neoclassical economics is a broad theory that focuses on supply and demand as the driving forces behind the production, pricing, and consumption of goods and services. It emerged in around 1900 to compete with the earlier theories of classical economics. According to Na (2016), one of the key early assumptions of neoclassical economics is that utility to consumers, not the cost of production, is the most important factor in determining the value of a product or service. This approach was developed in the late 19th century based on books by William Stanley Jevons, Carl Menger and Léon Walras. Neoclassical economics theories underlie modern-day economics, along with the tenets of Keynesian economics. Although the neoclassical approach is the most widely taught theory of economics, it has its detractors.

Following conventional economic theory, the demand for real estate space can be defined as the quantity of space or number of units demanded at various prices. The nature of real estate market makes it complex to apply an economic theory to it. Therefore, even if you got the difference, quantitatively of supply and demand, the analysis may not be appropriate as it will not show how decisions were reached in the market. This can be confirmed in decisions regarding location as normally it is of temporary nature depending on the prevailing needs or circumstances of the buyer for example the distance from work, school for children and so on. Competition in the real estate market forces both suppliers and buyers to respond appropriately (Brim, 2017). Considerations of trends that shape the competitive field and innovations brought about by technological transfers greatly alter the demand functions which cause effects on the activity in the property market. Despite the difficulties of attaching the economic theories to the real estate market, the market is an institution where ability to pay all debts is key to success in the long term. Moderating variables together with other non-economic deliberations have to be considered as part of the equation. These non-economic considerations emphasize the need to apply solutions that are market based to elements like sustainability and managing growth.

During the evaluation of the supply of real estate property, it is necessary to categorize the property into classes that have almost similar pushers of demand in the market. The property market, like any other market is under the forces of supply and demand laws and thus the prices are determined by the supply and demand factors. When demand exceeds (relatively fixed) supply, the price rises, according to standard economic theory and vice versa. When defining demand, we incorporate effective demand which is defined as demand supported by the power to purchase. Some instances require that the real estate property market analysis may require the need to concentrate on ex-ante demand and not the actual demand. This refers to the consolidated quantity of real estate property

desired before the interaction in the market place with consumers. After the interaction, the ex-post demand may be different due to several factors like the constraints of supply.

2.2 Empirical Review

In China, Wang, Wang and Wang (2018) examined the Effect of land prices on the spatial differentiation of housing prices. The aim of the study was to analyze the spatial patterns and driving forces of housing prices in China using a 2,872-county dataset of housing prices in 2014. The findings of the study indicated that Land prices were the primary drivers of housing prices, and their impacts on housing prices were found to vary over different administrative levels. To be specific, the effect of land prices was found to be strongest in the urban districts of provincial capital cities. The study further indicated that, the internal influence mechanisms for land prices driving housing prices were: topographic factors, urban construction level, the agglomeration degree of high-quality public service resources, and the tertiary industrial development level. The urban land supply plan (supply policies) is the intrinsic driver that determines land prices in cities; through supply and demand, cost, and market mechanisms, land prices then impact housing prices and affecting the development of real estate. The study findings were consistent with that of (2017) which examined the relationship between housing prices and their potential determinants. Their results showed that land prices can predominantly explain the spatial differences in housing prices at the county level in China. Using panel data from 45 research units for 2002–2012 in Israel, Rubin and Felsenstein (2017) found that land control is the core mechanism for land prices affecting housing prices. From the existing literature, it is apparent that land prices play a decisive role in determining housing prices.

In Nigeria, Ibrahim (2017) assessed the Impact of land Location on Real Estate Value and Business Development in Ilorin metropolis, Nigeria. The aim of the study was to establish the effect land location has on the performance of real estate. The study adapted descriptive survey design. The target population for the study was surveyors in real estate practice to whom questionnaires were administered to collect data on property rents based on the location. The study discovered variation in rental values from different places and then examined the causes of the variation and effects on properties and business development in the areas. According to the findings, real estate development was found to be concentrated and was growing more intensively in neighborhoods with highest level of accessibility. The study indicated that, this led to skyrocketed rents on the properties in the areas which could eventually give rise to gentrification whereby important but less financially rewarding businesses are forced to relocate elsewhere. The study further found that, land properties located in positions of greatest accessibility, are more sought after.

Otieno (2016) conducted a study to determine the Factors Influencing Demand and Supply of Real Estate Property in Nairobi County, Kenya: A Case of Erdemann Property Limited. The aim of the study was to establish the influence of demand and supply of real estate property in Nairobi County, Kenya, with focus to Erdemann Property Limited. The study was guided by the following specific objectives, that is, to establish how price, economic situation, land availability and demographic profile influences demand and supply of real estate property in Nairobi County. The

study adopted descriptive research design with the target population being the managers of Erdemann Property Limited in Nairobi County. The results of the study indicated that, competition for limited key resources and sharp increases in the price of some building materials led to high costs of housing. High cost of land in areas profiled as prime areas was found to hinder real estate developers to meet the demand of affordable housing in such areas. The study concluded that increased demand for real estate property in most urban areas leads to building more housing developments and accelerated growth in supply of property in that area. Based on the study findings, it was recommended that the government should regulate the real estate market and since demand is expected to keep on increasing; persistent regulatory restrictions on land supply or how intensively land can be used should be put in place.

2.3 Conceptual Framework

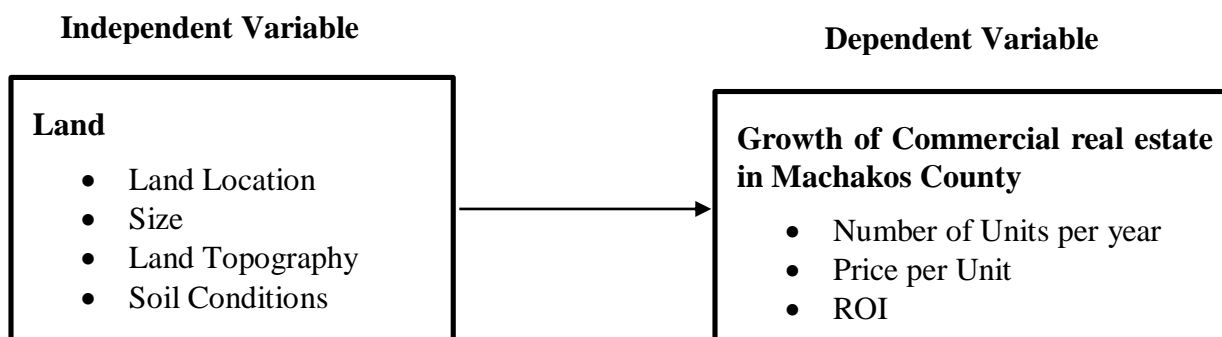


Figure 1: Conceptual Framework

3.0 Research Methodology

The study adopted a cross-sectional survey research design. The target population for this study was made up of 374 registered property developers with Kenya Property Developers Association operating in Machakos County. Census approach was used to study all the 374 registered property developers. Prior to commencement of the actual study, 40 respondents from Kajiado, a neighboring county to Machakos were used in a pilot study to pre-test the research instrument. The researcher triangulated both structured questionnaires and open ended interview guide to gather and saturate data from the respondents. While the interview guides were bent to gather in-depth qualitative data from the real estate agents, the structured questionnaire was used to collect quantitative data from the respondents who develop the real estates. Both quantitative/ numerical data and qualitative/ descriptive data were collected using structured questionnaire and unstructured interview guide respectively. Qualitative data was analyzed using descriptive statistics while quantitative data was analyzed using inferential statistics. Time series was also be utilized in this study. Statistical Packages for Social Sciences (SPSS) software was used for higher statistical computations.

A linear regression model was used to show the relationship between the independent variable to the dependent variable as follows;

$$Y = \beta_0 + \beta X + \epsilon$$

Where;

Y =Growth of Commercial Real Estate

X = Land

The error (ϵ) term capture the unexplained variations in the model.

4.0 Results and Discussion

4.1 Descriptive Statistics

4.4.1 Descriptive Statistics on Land

The results presented in Table 1 revealed that majority of the respondents agreed that land location was an important factor in determining the performance of real estate in Machakos County since land location was found to largely determine growth of Commercial real estate in Machakos County as indicated by a mean of 4.466 and standard deviation of 0.873 which implies that land location is an important aspect to consider by developers in the real estate industry in Machakos County. In addition, the results revealed that most of the respondents believed land size is an important factor determining the growth of commercial real estate in Machakos County as indicated by a mean of 4.448 and standard deviation of 0.948. This implies that real estate investors in Machakos consider the land size before considering investing on it. According to Moniz and Santosa (2018), the development of houses would require space; if this is not controlled or has managed properly it will give a negative impact because land is limited.

The results further indicate that majority of the respondents were very positive that land accessibility was an important aspect of land which they believed was impacting on the growth of commercial real estate in Machakos County as indicated by a mean of 4.386 and standard deviation of 0.916. This implies that land accessibility is a necessary factor to be considered by investors in the real estate industry in Machakos. Concerning soil type, most of the respondents agreed to the fact that the type of soil in Machakos County was good for real estate development hence influencing the growth of Commercial real estate in the County. This was confirmed by a mean of 4.441 and standard deviation of 0.987 implying that most of the respondents who were the senior managers of registered real estate companies in Machakos agreed to the fact that soil type plays a role in determining the growth of commercial real estate industry in Machakos County.

In addition, the results in the table show that most of the respondents agreed on the fact that land description had effect on growth of commercial real estate in Machakos County as indicated by a mean of 4.521 and standard deviation of 0.893. This implies that it is important for real estate investors and property buyers to consider land descriptions before settling on a deal. Every settlement agent worth their salt understands how important the legal description is in a real estate

transaction. It's especially important in a commercial real estate deal, where an investor needs to know exactly what they're getting, but an incorrect legal description can also have dire consequences for a homebuyer, the legal description is an equally important tool for surveyors. According to the results, majority of the respondents were in agreement with the statement that the topography of land in Machakos County was one that favours the development of commercial real estate in Machakos County as indicated by mean response of 4.466 and standard deviation of 0.865. This implies that the general appearance of the land is important in the development of commercial real estate. Fois, Fenu and Bacchetta (2019) indicated that, the topography of an area can have a huge impact on real estate development and can be a crucial factor in a market analysis. Topography can influence issues such as runoff and flooding hazards as well as availability of land for development and this is why most of the real estate investors in Machakos County are considering the topography of land before investing.

Similarly, the results show that most of the respondents were in agreement with the fact that shape of land determines growth of commercial real estate in Machakos County as indicated by a mean of 4.383 and standard deviation of 1.082. A lot shape can dictate how useful land is; If you have a pie lot, you will have very little frontage that means a big back yard, but also no room for parking out front. Conversely, if you have a reverse-pie lot, you will have ample frontage for parking, but may have a large front yard, which is less desirable than a large back yard. Rectangular lots are most efficient for space when it comes to urban development, but they force the use of a grid system, which precludes quiet winding streets. Each lot shape has its benefits and drawbacks. Finally, the results show that most of the respondents agreed that features of land was one of the aspects of land influencing growth of commercial real estate in this county in Machakos County. This was shown by results having a mean of 4.486 and standard deviation of 0.873. In the real estate business it is common to assume that the value and potential of a property is fundamentally determined by its location. Certain sites are attractive because they may have a beautiful view, shore and forests in the vicinity, good rail and road connections without noise and all kind of public and private services. Based on the results, the process of site evaluation includes identifying trade areas, analyzing demographics and distinguishing convenience locations for new constructions. Site quality evaluation considers demographics, site features (such as visibility and access) and competition. In general all the indicators of land as a factor of production had an average mean and standard deviation of 4.450 and 0.930 respectively, showing that most of the respondents were in agreement with the statements on land; however, their responses sharply differed.

Table 1: Descriptive Statistics on Land

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
Land location largely determines growth of Commercial real estate in Machakos County.	3.10%	1.70%	1.70%	32.40%	61.00%	4.466	0.873
Land size is an important factor in the growth of commercial real estate in Machakos County.	2.80%	2.10%	9.70%	18.60%	66.90%	4.448	0.948
Land accessibility is a factor on growth of commercial real estate in Machakos County.	2.80%	2.10%	7.20%	29.70%	58.30%	4.386	0.916
The type of soil in this county determines growth of Commercial real estate in Machakos County.	3.10%	5.50%	1.00%	24.80%	65.50%	4.441	0.987
Land description affects growth of commercial real estate in Machakos County.	3.10%	2.40%	1.40%	25.50%	67.60%	4.521	0.893
The topography of land in this county favours the development of commercial real estate in Machakos County.	2.80%	2.40%	1.00%	33.10%	60.70%	4.466	0.865
Shape of land determines growth of commercial real estate in this county.	6.20%	2.80%	1.00%	26.60%	63.40%	4.383	1.082
Features of land influence growth of commercial real estate in this county in Machakos County.	2.10%	3.80%	1.70%	28.30%	64.10%	4.486	0.873
Average						4.450	0.930

The results in Table 2 show that majority of the respondents were in agreement with the statement that there had been an increase in the number of units of commercial properties built each year within Machakos County over the past 12 years. This was indicated by a mean of 3.979 and standard deviation of 1.170. This implies that Machakos County has been recording an increase in the number of real estate properties over the past decade. The results also show that most of the respondents were in agreement with the fact that prices per unit of a commercial property in

Machakos County had influenced the growth of commercial real estate in the county as indicated by a mean of 3.928 and standard deviation 1.179.

The results further show most of the respondents agreed that being able to offer competitive prices per unit had effected the growth of commercial real estate in Machakos County significantly. The results had a mean of 4.024 and standard deviation of 1.169 implying most of the respondents was in agreement with the statement, even though the responses were varied sharply. Majority of the respondents believed that the price of a commercial property in Machakos County had gone high attracting more investors to venture in real estate business in the county. The result recorded a mean of 3.969 and standard deviation of 1.160 implying that in deed the prices of property in Machakos County have become attractive to the real estate investors. According to the results, most of the respondents indicated that cost of investment was a factor on growth of commercial real estate in Machakos County. The results had a mean of 3.955 and standard deviation of 1.192. Similarly, the results show that most of the respondents indicated that expected returns on properties had gone higher in Machakos County as indicated by a mean of 3.948 and standard deviation of 1.159. Finally, it was established that most of the respondents were of the opinion that ease to adapt to changes of prices in the real estate industry had effected growth of commercial real estate. The statement had a mean of 3.997 and standard deviation 1.169 implying that most of the respondents were in agreement with the statement. In general, the statements on growth had an average mean and standard deviation of 3.971 and 1.171 respectively implying that most of the respondents agreed with all the statements of growth of commercial real estate in Machakos County.

Table 2: Descriptive Statistics on Growth of Commercial Real Estate

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
There has been an increase in the number of units of commercial properties built each year within the County over the past 12 years.	7.60%	5.20%	8.30%	39.70%	39.30%	3.979	1.170
Price per unit of a commercial property has influence on growth of commercial real estate.	6.90%	7.90%	7.90%	40.00%	37.20%	3.928	1.179
Being able to offer competitive prices per unit has an effect on growth of commercial real estate.	6.60%	6.90%	6.90%	36.90%	42.80%	4.024	1.169
The price of a commercial property in this county is high.	6.60%	7.20%	7.60%	40.00%	38.60%	3.969	1.160
Cost of investment is a factor on growth of commercial real estate.	7.20%	7.60%	6.90%	39.00%	39.30%	3.955	1.192
Expected returns on properties have influence on growth of commercial real estate.	7.60%	5.20%	8.60%	42.10%	36.60%	3.948	1.159
Ease to adapt to changes of prices in the real estate industry has effect on growth of commercial real estate.	7.60%	4.80%	8.30%	39.00%	40.30%	3.997	1.169
Average						3.971	1.171

Table 3 shows the results for commercial properties in Machakos County.

Table 3: Descriptive Statistics on Secondary Data

	Minimum	Maximum	Mean	Std. Deviation
Year	2008	2019	2013.5	3.606
Number of Units	650	2237	1313.67	563.538
Price Per sq. Metre (Ksh)	12000	30000	20733.33	6316.225

The results in Table 3 show that the minimum number of units of commercial properties in Machakos County was in 2008 which was 650 units, while the maximum number of units was in 2019 showing that there was growth in commercial real estate in Machakos County between 2008 and 2019. In addition the results show that the mean number of units was 1313.67 and standard deviation of 563.538 showing that the number of commercial properties in Machakos County is approximately 1314 units; however the number is spread. The minimum price per square metre of commercial unit in Machakos was found to be Ksh 12,000 which was the price in 2008, while the maximum was Ksh 30,000 recorded in 2019. The mean price per square metre of a unit was Ksh 20,733.33 with standard deviation of Ksh.6, 316.225. The results imply that there has been significant growth in commercial real estate in Machakos County in the past twelve years (2008-2019).

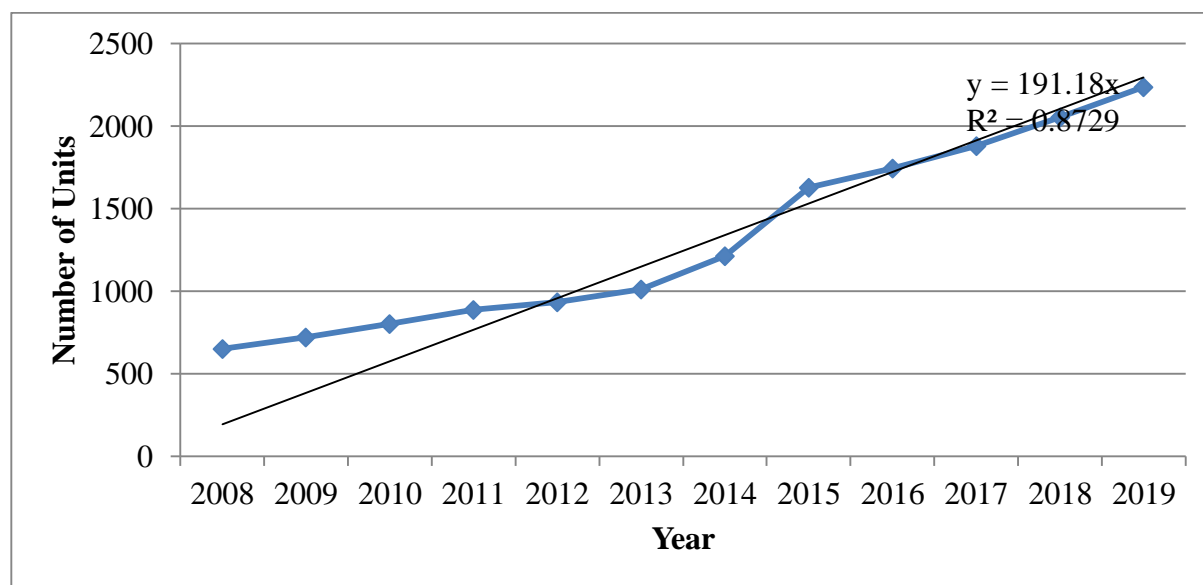


Figure 2: Number of Units

The trend line in Figure 2 show that the number of commercial properties units was on an upward trajectory in the last twelve years (2008-2019). In 2008, there were 650 commercial properties in Machakos County which moved up to 721 in the following year. In the year 2010, the number of commercial properties in Machakos County was 801 representing 11.0% growth compared to 2009; this number went up by 10.7% in 2011 to 887 units. According to the results the number of units grew in 2012 to 933 commercial units representing 5.2% growth in the number of commercial properties in the County. In 2014, the total number of commercial properties in Machakos was found to be 1011 units representing 7.9% growth compared to 2013, a number which grew further by 19.98% to 1213 units in the following year. In the year 2015 the total number of commercial

properties in Machakos County was 1630 representing 34.4% growth in the commercial real estate in the county.

In 2016 the total number of commercial properties in the county went up by 7.1% to 1745 units. Based on the results on the trend line, the number of commercial properties in the county further grew by 7.8% to a total of 1881 units in 2017. In the year 2018, Machakos County had a total of 2055 units representing 9.3% growth compared to the previous year. Finally, in 2019 the total number of commercial properties in Machakos County was 2237 representing 8.9% growth compared to what was recorded in 2018. The trend line shows that there has been consistent growth in commercial real estate in Machakos County over the past twelve years. The study found that the county recorded growth in the number of shopping centres, medical facilities, stores, malls and office properties. In addition to the growth in the number of commercial properties in the county, the study sought to establish the price trends of the commercial properties in the County and the results are presented in Figure 3.

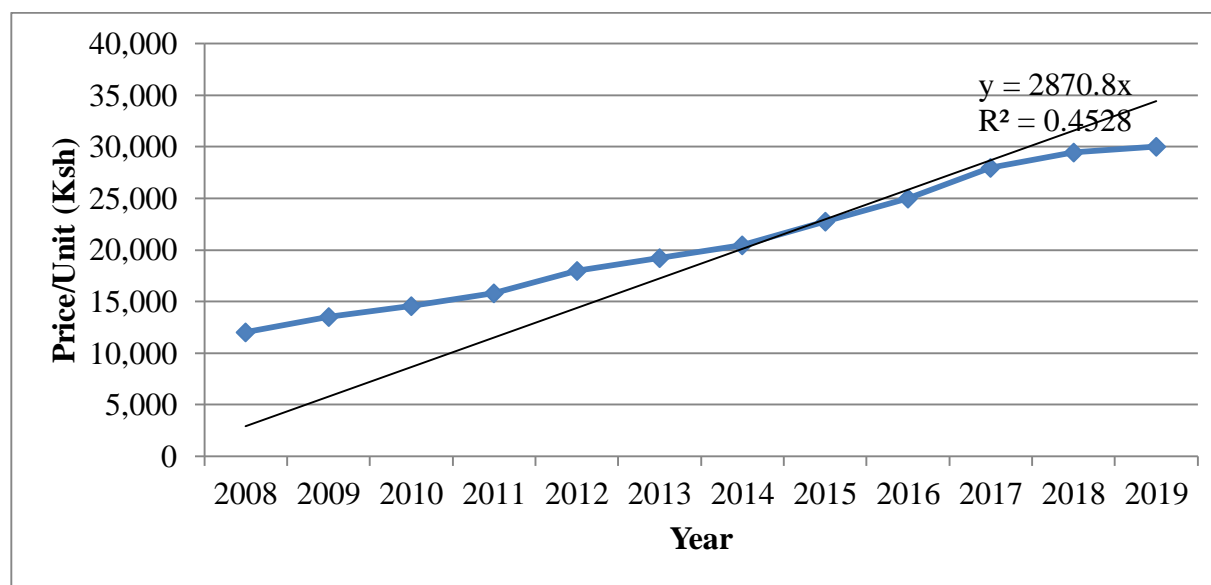


Figure 3: Price per Square Metre of Commercial Property

Based on the trend line in Figure 3, the price per m² of commercial property in Machakos has been on an upward trend since 2008. The results show that in 2008 the price per m² of commercial property in Machakos County was averagely Ksh. 12,000, a figure which went up by 12.5% to Ksh. 13,500 in 2009. In the year 2010, the price per m² of commercial property in Machakos County was averagely Ksh. 14,550 representing 7.8% increase in price compared to the previous year. In 2011, the price per m² of commercial property in Machakos was going for Ksh 15,800 on average representing 8.6% increase in property prices compared to 2010. This figure grew further by 13.9% to Ksh 18,000 per m² of commercial property in 2012. Based on the results, the price per m² of commercial property in Machakos County in 2013 was averagely Ksh 19,200 indicating 6.7% increase in property price per m² in Machakos County compared to 2012.

The results in addition show that the price per m² in Machakos County grew by 6.8% in 2014 up from Ksh 19,200 per m² in 2013. The price per m² of commercial property increased further to Ksh 22,750 in 2015 representing 11.0% increase compared to the previous year. In 2016 the county saw a 10.0% increase in the price per m² of commercial property compared to what the properties was going for in the year before. The prices continued skyrocketing in the subsequent years and in 2017 the price per m² of commercial property was Ksh 28,000, which increased by 5.4% in the following year to averagely Ksh 29,500 per m² of commercial property. Finally, in the year 2019 the price per m² of commercial property was found to be Ksh 30,000 on average indicating 1.7% increase. The trend line implies that since 2008 the price per m² of commercial property has been on the increase consistently through 2019 which imply that there has been growth in commercial real estate in the County.

In addition to the primary data and secondary data results presented above, the interview guide was administered to the CEC in charge of housing in Machakos County in which he was asked to compare the population of people in the county and the number of housing units available for them. The CEC indicated that;

“... The population of Machakos County has increased enormously over the last 15 years. However, housing production has remained far below the targets in the five-year national development plans and even further below actual demand for housing. Most of the urban population in Machakos County, especially low-income households cannot afford to buy or build their own homes and as a result, most of the housing in towns within Machakos County is rental housing. The rental housing sector is a complex one involving many actors. Tenants’ rights are poorly respected, especially in the informal settlements that provide most of the accommodation to low-income renters. So in short, the number of both commercial and residential properties within Machakos County is still way below than what is demanded and therefore there is need for more developers to invest in real estate industry within our county.”

The CEC was further asked to indicate some of the challenges facing real estate industry in Machakos County and what was being done by county government of Machakos to mitigate the challenges. The CEC indicated that;

“...as a government we have been conducting surveys to assess the real estate market industry within our county and the common challenges faced by developers include lack of affordable development-class land, increase supply, competition of property and high costs of funds as a property development requires a huge sum of capita. In addition, there is no insurance program that covers funds invested in real estate projects or protects investors from the failure or malfeasance of a sponsor of a real estate investment. Therefore, at times real estate investors within Machakos may find themselves unable to sell a property for as much as they originally paid for it when they are ready to exit the investment.”

“...Contrary to most securities, most real estate transactions within Machakos County are done in private markets. Whereas public markets offer daily pricing and extensive consumer knowledge,

private markets are priced on “as-needed” basis and lack transparency. Private markets are harder to access as well, as many private markets require a degree of credibility or status to enter into. Last but not least, real estate closings require several interested parties and a lot of paperwork. Between structuring an offering, arranging financing, and gathering necessary due diligence items, the process could take weeks, only contributing to lack of ability to turn real estate into cash quickly this demoralizes investors.”

Concerning mitigation measure by county government of Machakos on these challenges the CEC indicated that;

“...as a county government we are trying our level best to ensure the laws imposed on real estate industry within our county are favourable so as to attract more investors to invest in real estate in this county. This will help in addressing the shortage of both commercial and residential properties within the county.”

Finally, the CEC was asked to indicate the message he could have to the developers within Machakos County and across Kenya and the Public and the CEC indicated that;

“...Since development projects in real estate industry often spans two or more years, the real estate developers and investors in Machakos County should understand where they sit in the property cycle and pay attention to the big picture economic factors that will affect the real estate market. Additionally, I wish to point out that investors should not always believe the selling agent when they tell them the property will make a great development site, instead they (investors) need to undertake careful areas due diligence including checking the council zoning, as well specific property due diligence, things like checking the title for covenants, easements and overlays, the neighbourhood character as well as adjoining buildings and trees the topography of the site.”...Finally I wish to state that we have witnessed cases of conman-ship in the past where investors in real estate development have been swindled of their money. It is therefore necessary that any investor who wish to invest in real estate in this County puts everything in writing, especially when dealing with consultants and contractors. This helps avoid misunderstandings and confusion and keep very clear accounts. If your paperwork isn’t in order, it’ll only cause headaches further down the line.”

4.2 Correlation Analysis

Table 4: Multiple Correlation Matrix

		Growth	Land
Growth	Pearson Correlation	1.000	
	Sig. (2-tailed)		
Land	Pearson Correlation	.797**	1.000
	Sig. (2-tailed)	0.000	

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

Results in Table 4 revealed that there was a strong positive and significant association between land and growth of commercial real estate in Machakos County ($r=0.797$, $P\text{-value}=0.00$). The correlation analysis results are consistent to the findings of Kagendo (2011) which pointed out that, competition for limited key resources and sharp increases in the price of some building materials led to high costs of housing. High cost of land in areas profiled as prime areas was found to hinder real estate developers to meet the demand of affordable housing in such areas. The study concluded that increased demand for real estate property in most urban areas leads to building more housing developments and accelerated growth in supply of property in that area.

4.3 Regression Analysis on Land and Growth of Real Estate

Table 5: Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797 ^a	.636	.634	.46530

a. Predictors: (Constant), Land

On the basis of the results in Table 5, the coefficient of determination R Square was 0.636 and R is 0.797 at 0.000 significance level. The model indicates that land as a factor of production explains 63.6 percent of the variation in growth of commercial real estate in Machakos County. This means 63.6 percent of the growth of commercial real estate in Machakos County is influenced by land as a factor of production.

Table 6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	108.717	1	108.717	502.151	.000 ^b
	Residual	62.353	288	.217		
	Total	171.069	289			

a. Dependent Variable: Growth

b. Predictors: (Constant), Land

The results in Table 6 show that the model was statistically significant in explaining the influence of land as a factor of production on the growth of commercial real estate in Machakos County as indicated by a p-value of $0.000 < .05$.

Table 7: Regression Coefficient

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	.281	.167		1.685	.093
	Land	.897	.040	.797	22.409	.000

a. Dependent Variable: Growth

$$\text{Growth} = 0.281 + 0.897X$$

Where X=Land as a factor of Production

The regression coefficient results in Table 7 show that land positively and significantly influences the growth of commercial real estate in Machakos County ($\beta=0.897$, $p=0.000$). The gradient coefficient as indicated by the beta value shows the extent to which unit change in the independent variable causes a change in the dependent variable which in this case is a change in growth of commercial real estate in Machakos County due to a unit change in aspects of land as a factor of production. This implies that a unit change in aspects of land leads to an improvement in growth of commercial real estate in Machakos County by 0.897 units.

According to Nabutola (2004) land is a major constraining factor in the County of Nairobi because most of the slum dwellers do not own the land which is owned by the central and county government making land inaccessible to the majority who need it most but cannot afford its premium price. Lock (2003) acknowledges the importance of land and stated that Land regulation and property titles are at the cornerstone of housing. In Kenya, land and property regulations have been inherited from colonial times and involve a rather complex tenure mechanism framed in many difference laws Gichunge (2001) observes. World Bank (2011) notes that lack of affordable constructions combined with difficulties in accessing land makes it difficult to expand access to homeownership. In particular the multiple land titling and registration mechanisms are grossly inefficient and overly complex.

4.4 Hypotheses Testing

H₀: Land has no statistically significant influence on growth of commercial real estate in Machakos County.

The hypothesis was tested by using multiple linear regression and determined using p-value and t-statistic. The acceptance/rejection criteria were that, if the p value is less than 0.05, we do not reject the H₀ but if it is more than 0.05, then H₀ is rejected. Therefore, the null hypothesis was that land has no statistically significant influence on growth of commercial real estate in Machakos County. Results in Table 7 shows that the p-value was 0.000. This was supported by a calculated t-statistic of 11.180 which was larger than the critical t-statistic of 1.96. The null hypothesis was hence

rejected. The study adopted the alternative hypothesis that land has statistically significant influence on growth of commercial real estate in Machakos County.

The second hypothesis tested was:

5.0 Conclusions

The first objective of this study was to establish the influence of land on growth of commercial real estates in Machakos County. Based on the findings on land the study concludes that land positively and significantly influence the growth of commercial real estate in Machakos County. An improvement in aspects of land leads to an improvement in growth of commercial estate in Machakos County. Land and surface structure have different trends of price changes. Under the assumption that factors of production have complete liquidity, the ground structure costs and labor costs in different regions would converge and change smoothly. However, since land cannot be transported, people can only obtain the benefits of land in a fixed location. And the huge regional difference of land supply and demand leads to the large difference of regional land price changes. The price of land was found to be an important aspect of land influencing the development of real estate in the region.

In addition it is concluded that, the market value of land and its importance in real estate investing is closely related to the economic situation of the area of investment. It is the job of an investor to understand how the growth pattern, the appreciation rates, and the use of the land for a period of time. Based on the findings of this study, it can be concluded that land is the most valuable form of asset investment in the real estate market in Machakos County. Planning or zoning laws from local authorities (County of Machakos) restricts land supply in many areas within the county; these laws are sometimes enforced to prevent the overpopulation of certain areas in the county, which means that owners of land there benefit more because of the lower supply of land in the county. Finally, the study concludes that, the price of land is a basic indicator of the attractiveness and the economic value of a specific site and of the amenities available at that location in Machakos County. These amenities include a diverse collection of attributes, ranging from the productivity of a site in agriculture to the quality of an urban neighborhood surrounding a given location. In urban areas like Machakos town and other towns within Machakos County, variations in the price of land reflect the locational and geographical advantages of a particular site, as well as local externalities and governmental policies regulating its use.

6.0 Recommendation

Based on the findings and conclusions, this study recommends that before considering investing in commercial real estate in Machakos County, the investors should consider a number of aspects regarding land such as land location, land size, the general appearance of the land, accessibility and the price of the land and most importantly the legitimacy of the land. This is because it has been established by this study that commercial properties close to residential property can lower real estate values. Part of the reason for this is that homeowners can't control the noise, traffic, and other activities that come with commercial developments. Another factor is that commercial property is valued differently than residential. The type of commercial buildings also has an impact

on home values. Retail developments can increase home values after construction is finished, but during construction, home values may drop. This reason location of the land is important when it comes to investment in commercial real estate in Machakos County. It is recommended that real estate investors should consider the location of the land they intend to invest in since proximity to amenities, green space, scenic views and the neighborhood's status factor prominently into residential property valuations. Closeness to markets, warehouses, transport hubs, freeways and tax-exempt areas play an important role in commercial property valuation.

The study recommends that the government should lower interest expenses so as to encourage the increase in supply of affordable commercial real estate property. The bank should also lower their interest rates so that the real estate firms can be able to increase the supply of housing. The government should also regulate the cost of building materials so as to be affordable to the real estate firms so as to increase the supply of housing. Despite the increase in cost of building materials the real estate firms should build quality houses. In addition, the government is still a relatively passive player in the housing sector; the government can act through various agencies, pieces of legislation, and incentives to improve stakeholder capacity with the purpose of increasing affordable housing supply and demand.

This study also recommends that, in order to encourage more investors in the real estate industry, institutional policies such as licensing, registration requirement, product standards and certification and infrastructure policies including utility development and land policies should be streamlined and centralized to encourage more investors. To accelerate sales during the construction of new units' period, real estate investment companies should make use of appropriate marketing tools such as was employed including use of competent estate management consultants. Rent collection is down across the board compared to previous months with many tenants asking for waivers or rent reductions.

7.0 References

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