**Managing Risk in a Post-COVID-19 Economy: Investors'
Perception of Lagos State Real Estate Sector.**

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Abstract

Purpose: As the global community continues to grapple with the effect of the COVID-19 pandemic, there is a prospect of negative/undesirable business outcomes in Nigeria. The scourge has been a regular topic of discussion in businesses, policy-making, and the academic community in many countries around the world. The pandemic has introduced a novel systematic risk class in the real estate sector. This study investigated how real estate investors in Lagos State perceive the emerging business climate following the pandemic.

Methodology: The study had a population of 2,400 while a sample size of 240 was drawn using a 10% rate. The study adopted a descriptive survey design. The statistical Package for Social Sciences (SPSS) was used to analyze data collected through questionnaires.

Findings: The findings showed that COVID-19 had a significant relationship with the level of investment in real estate in Lagos State though at a weak linear associative level. Secondly, while risk managers in these sectors have adopted different strategies to minimize their risk exposures, the study revealed that funds providers are placing a higher risk premium on investible capital as a result of uncertainties in the economic outlook occasioned by the COVID-19 pandemic. However, the study shows that the demand for real estate property in Lagos State was not negatively affected to a significant extent as a result of the pandemic, but rather a shift in preferences by property owners and occupiers. The study has implications for taxation and housing policy as well as business planning decisions.

Recommendation: The study recommends that government should create a favorable investment climate for real estate investors with appropriate risk mitigation measures that can reactivate the real estate sector while aiding its recovery from the COVID-19 debilitations.

Keywords: *Risk management, real estate, post-COVID-19 economy, Lagos State, Nigeria.*

JEL Classification Code: C11, C81, D1, D6, D72

1.0 Introduction

The world is still reeling from the economic devastation caused by the COVID-19 pandemic. Virtually all sectors of society were affected by the coronavirus-induced health crisis which eventually led to a global economic crisis. As explained by Priya, Cuce and Sudhakar (2021), COVID-19, or novel coronavirus is not only an international emergency for public health but also has significant consequences on energy, economy, and the environment. To date, countries around the world are still feeling the impact of the pandemic. Chidume, Oko-Out and Aro (2021) confirmed that the outbreak of the scourge has negatively and significantly impacted the socio-economic and political activities in the international system. Short-term policies to cope with the urgency of the pandemic are unlikely to be sustainable models in the long run (Ibn-Mohammed et al., 2021). The transmission of the fragility and vulnerability from the pandemic to the post-pandemic era increased the exposure of businesses to greater risk and uncertainties. This is more pronounced for the real estate sector in a developing economy like Nigeria with the attendant drop in income and shift in demand pattern from luxury goods to necessary goods. The pandemic era brought about a drop in income even as the economy had to contend with two recessions. The post-pandemic era for the Nigerian economy and the business ecosystem has been that of two-fold recovery. First, a recovery from the crippling effect of the pandemic and secondly from the twin recession that the economy faced.

The COVID-19 pandemic created a contagion that no other socioeconomic crisis has created in recent memories. Business collapse, lockdown of economies, a temporary halt to activities of diverse nature nationally and internationally. COVID-19 protocols and palliatives became the new normal and distortions of varied nature affected work schedules creating remote working types as opposed to the on-site work pattern. The uncertainty and risk profile of different industries and sectors increased significantly with the pandemic and its negative payoffs. Evidently, the fragility and vulnerability of businesses in particular and economies, in general, became heightened by the pandemic. The pandemic has increased systemic risk across countries (Duan et al., 2021).

Investors are obviously risk-sensitive in a most conventional setting and their degree of risk sensitivity increases as the investment climate changes (Odean, 1995; Rabin, 1997; Rabin, 1998). For a country like Nigeria with a low-income profile, a good chunk of the investment in the real estate sector is expected to be foreign (Ajakaiye et al., 2014; Ake, 1985). The lockdown and waves of the pandemic closed out the flow of foreign investment. The uncertainties caused by the pandemic and the post-pandemic era impacted in no small measures, the perception and response of investors to risk in the real estate sectors. The argument came with a greater risk sensitivity to the investment climate and the nuances of the real estate sector expose it to such risk-adjustment tendencies by investors. The magnitude of such adjustments is of significant research interest. This study, therefore, is a field survey of the response of investors to risk and uncertainties in the post-pandemic real estate sector using Lagos (the epicenter of the real estate sector in Nigeria) as the geography of interest.

The study is of great significance as it will show the gradual return or otherwise of the real estate sector to post-pandemic activities. The use of Lagos as the city of interest is of significance as one of the largest, most urban, and infinitely expanding cities not just in Nigeria but also in the African continent in general. Evidence arising from the study will provide good empirical evidence for generalization for economies in the ilk of Nigeria. Also, it can be described as one of the very few studies that have looked at not just the real estate sector but the response of investors to risk in a post-pandemic era with Nigeria as the country under focus.

Aside from the introduction, section two presents a brief review of the literature, section three shows the materials and methods while data presentation and discussions are presented in section four. Section five conclude the study.

2.0 Review of Related Literature

2.1 COVID-19 and the Real Estate Sector

The literature has recorded significant research since the outbreak of the COVID-19 pandemic. However, the majority of these researchers have focused on global and national economies, particularly the financial sectors. Notwithstanding, the effect of the COVID-19 on the nonfinancial sector has equally been devastating. As explained by Tullo (2020), the spread of the viral disease COVID-19 is the most transformative nonfinancial risk of this decade triggering the great nonfinancial risk crisis. The COVID-19 pandemic has created an emerging dynamic trend in the real estate sector demand (Uchehara et al., 2020). The economic effect of the pandemic has resulted in tightened credit standards and reduced demand for many types of loans (Li et al, 2021). In a study by Hoesli and Malle (2021) on the effect of COVID-19 on the European markets, retail and hospitality properties have been affected the most by COVID-19, while the residential and industrial sectors have been less affected by the crisis.

The financial sector, just as the real estate sector, has suffered a major shock following the pandemic. Importantly, the real estate sector is driven by the finance sector and any burden on the finance sector has a concomitant effect on the real estate sector. Consequently, countries, especially in advanced economies, adopted some measures that mitigated the negative effect of the pandemic. For instance, the U.S. took extreme monetary and fiscal policy measures in the early months of the pandemic to cushion the effect on the economy. According to Chong and Phillips (2022), the U.S. real estate market would have suffered greater declines if not for the measures adopted by the government. In Canada, the government, in order to mitigate the exposure and impact of the pandemic, reprioritized COVID-19 risk into their existing enterprise risk management framework (Tullo, 2020).

One significant conclusion reached in the many studies conducted on the effect of COVID19 on the real estate market is that property tenants develop changing preferences in their choice of properties to rent (Marona & Tomal, 2020; Tanrıvermiş, 2021). Tenants were moving from properties considered expensive to less expensive ones. In India, for example, the market value of real estate increased during the COVID-19 era due to the constrained job market as developers were unable to satisfy demand (Sanchaniya, 2021). While there appears to be a consensus about the effect of COVID-19 on the real estate sector, the nature of the effect has proved to be different from one region to another. A study in Turkey by Kaynak, Ekinci and Kaya (2021) reveals that COVID-19 had a different effect on regional real estate prices and city-level real estate prices. According to the findings, at the city level, the COVID-19 pandemic has a negative effect on abnormal returns of residential prices (Kaynak et al., 2021). The results of the several studies outlined above support the call by scholars such as Tanrivermis (2021); Hoesli and Malle (2021) for a change in business orientations, and working and living conditions that have necessitated a change in the planning and construction decisions of settlements and investments in the real estate sector.

Furthermore, while a number of studies have evaluated the effect of COVID-19 on the real sector, not much research work has been conducted on the effect of the pandemic on the real estate sector in Nigeria. For example, studies by Keke, Okafor and Sado (2020) were on the adverse effect the pandemic had on many tenants' ability to pay rents, which the authors argue, has also led to a decrease in investment yield for residential and commercial real estate as a

result of the economic "lockdown" in the country. The present study, strengthened by the dearth in the literature on the effect of COVID-19 on the real estate sector in Nigeria, attempts at examining investors' perception on the real estate sector in Lagos State as a result of COVID-19 pandemic.

2.2 Prospect theory and Investor's Response to Risk

The COVID-19 has introduced a novel 'systematic' risk class in business. Also known as beta (β), systematic risk, arising from the coronavirus pandemic has created some dynamics in the global real estate market. Liow (2007) associated systematic risk to the real estate security market volatility and its impact on real estate markets. However, looking at the Nigerian real estate sector, it is imperative to choose an appropriate theory to underpin the study. The best measure or theoretical explanation of investors' response to risk is the prospect theory of Kahneman and Tversky (1979). It presents the utility framework and how investors' responses to risk are shaped by investment outcomes. It is argued that the prospect theory's central feature is that value is carried by changes in wealth rather not absolute levels or final outcomes (Segal & Spivak, 1990).

In addition, prospect theory captures the loss aversion tendencies of the rational investor which makes them much more sensitive to reductions in wealth than to increases in wealth. This is to say that investors face a greater degree of perturbation arising from a loss than joy and excitement arising from a commensurate degree of gains (Kahneman et al., 1979). Our study incorporates prospect theory because we tend to evaluate COVID-19 and its concomitant risks as an adverse event and how investors' response will either align with or disprove the prospect theory. This evidently makes the prospect theory the theoretical underpinning for the investigation.

3.0 Materials and Methods

The descriptive survey design was adopted for the study. The Population of the study was 2,400. The study employed sampling technique as suggested by Nwana (1981) in Onwumere (2021) in determining sample size when a population is few thousand, 10% should be adopted to calculate the sample size. Therefore, 10% of 2,400 becomes 240, and 240 is the sample size. A total of 240 copies of questionnaires titled 'COVID-19 and level of real estate investment' were administered to selected participants comprising real estate agents, home owners and tenants drawn from Lagos State. However, 193 of the questionnaires were completed and returned. This represents approximately 80% of the administered questionnaires.

3.1 Normality Test

Normality test was performed on the data series to ascertain their distribution and spread on the normal curve. This target was achieved using One-sample Kolmogorov-Smirnov (K-S) test and Shapiro Wilk's Lambda tests. The essence was to ensure that appropriate further statistical tests are performed devoid of misleading results.

3.2 One Sample t-test

The 1-sample student's t-test was used to test the research hypotheses in confirmation of normality by the 1-sample Kolmogorov-Smirnov (K-S) and Shapiro Wilk's normality tests. The t-test specifically compared the *likert* mean with the average responses from the field survey. The test statistic is: $t = \frac{\bar{x} - \mu_o}{\frac{s}{\sqrt{n}}}$ with $n - 1$ degrees of freedom

Where, $\bar{x}$ is the sample mean, s = sample standard deviation of the sample, and n = sample size.

3.3 Correlation

The second estimation method was the test for linear association following the bivariate pairwise correlation matrix of the form stated below:

$$\frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum Y^2 - (\sum Y)^2]}}$$

Where: N=Number of Pairs; $\sum xy$ = Sum of the Product of the pairs; $\sum x$ = Sum of the x scores $\sum y$ = Sum of the y scores; $\sum x^2$= Sum of the squares of x scores and $\sum y^2$ = Sum of the squares of y scores

Given that the test is bivariate, x and y represent a demand for real estate and COVID-19 pandemic. The direction and size of the linear association is shown by the correlation coefficient while its magnitude is shown by the t-statistics and the relative p-value.

3.4 Regression

Real estate demand was used as a measurement of response rate of investors to risk arising from COVID-19. Real estate demand served as the dependent variable while COVID-19 served as the explanatory Variable. Following this, the estimated regression model appears thus:

$$RED_t = \beta_0 + \beta_1 COVID19_t + \varepsilon_t$$

Where RED = Real estate demand

β_0 = Constant or intercept

β_1 = Coefficient of the independent variable

ε_t = residual or error term

Analyses of the research data were aided by a statistical package for social sciences (SPSS) for Windows, version 25.0, and Microsoft excel.

4.0 Results

Socio-Demographic Statistics of Participants

Table 1: Gender

Gender	Frequency	Percentage
Males	72	37.3
Females	121	62.7

Source: Field survey, 2022

The gender distribution of the respondents shows that about 37.3% of the participants were males, and 62.7% were females. However, there were more females than males in the study.

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Table 2: Age distribution

Age Groups	Frequency	Percentage
18-25 years	20	10.36%
26-35 years	58	30.05%
36-45 years	80	41.45%
46-55 years	22	11.40%
More than 55 years	13	6.74%
Mean ±(SD)	37.5±6.9	

Source: Field survey, 2022

Results of the age distribution of the participants confirmed a normal shape (see figure 1). The mean age of the participants was 37.5 years with a standard deviation of 6.9 years. Specifically, the result indicates that about 10.4% of the participants were within the age brackets of 18-25 years; about 30.1% were within the age group of 26-35 years; about 41.5% were within the age range of 36-45 years; 11.4% were within the age range of 46-55 years, while the remaining 6.7% were above 55 years.

Table 3: Status/profile

Status/Profile	Frequency	Percentage
Real estate agents	66	34.2%
Home owners	58	30.1%
Tenants	69	35.8%

Source: Field survey, 2022

Statistics of profile of the respondents shows that 34.2% were real estate agents, 30.1% were home owners while 35.8% were tenants.

Table 4: Academic qualifications

Academic Qualification	Frequency	Percentage
Diploma	62	32.1%
B.Sc./HND	31	16.1%
M.Sc./MBA	45	23.3%
Ph.D.	18	9.3%
Others (specify)	37	19.2%

Source: Field survey, 2022

The distribution of academic qualification of the participants indicated that about 32.1% had Diploma certificates, 16.1% were B.Sc./HND holders, 23.3% were M.Sc./MBA holders, 9.3% were Ph.D. holders, while the remaining 19.2% have other qualifications not specified in this paper.

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COVID-19 and Level of Real Estate Investment

Table 5: COVID-19 and level of real estate investment

Question Items		Responses					Statistics	
		5(SA)	4(AG)	3(UN)	2(DA)	1(SD)	$\sum W_i X_i$	$\bar{X}\pm$Std
Since the emergence of COVID-19, sales of commercial and residential properties had dropped due to lack of funds.	Freq.	135	30	5	17	6	850	4.40±1.096
	%	69.95%	15.54%	2.59%	8.81%	3.11%		
COVID-19 caused increases in interest rate, thereby reducing demand for real estate.	Freq.	128	40	3	10	12	841	4.36±1.151
	%	66.32%	20.73%	1.55%	5.18%	6.22%		
Because of COVID-19, many people moved down to village, thereby reducing demand for real estate.	Freq.	118	69	4	2	0	882	4.57±0.592
	%	61.14%	35.75%	2.07%	1.04%	0.00%		
Because of COVID-19, investors slowed down in making investment plans.	Freq.	103	82	2	4	2	859	4.45±0.721
	%	53.37%	42.49%	1.04%	2.07%	1.04%		
COVID-19 caused increases in collateral required to access building funds.	Freq.	121	61	4	4	3	872	4.52±0.778
	%	62.69%	31.61%	2.07%	2.07%	1.55%		
Cluster stat.								**4.46±0.867**

Source: Field survey, 2022

Note: *SA means Strongly Agreed, AG means Agreed, UN means Undecided, DA means Disagreed, SD means Strongly Disagreed.*

The results in table 5 confirmed that since the emergence of COVID-19, sales of commercial and residential properties had dropped due to lack of funds (mean = 4.40>3.00); many people have moved down to village (mean = 4.57>3.00); investors have slowed down making investment decisions (mean = 4.45>3.00); collateral required to access funds have increased (mean=4.52>3.00), and the interest rate has increased, thereby reducing demand for real estate (mean=4.36>3.00). The one-sample t-test result with a statistic value of 38.080 and associated probability value of 0.000<0.05 provided enough evidence to confirm that COVID-19 significantly affected the level of real estate investment in Lagos state, Nigeria.

Hypothesis One

This hypothesis sought to ascertain the extent to which COVID-19 has affected the level of investment in real estate in the study area. The decision to reject/accept the hypothetical statement lies on a benchmark of 0.05 level.

Table 6: Result of hypothesis one

Null hypothesis	Test statistic	Result
COVID-19 does not have any significant relationship with the level of investment in real estate in Lagos State	1-sample t-test	t*=38.080, p<0.001

Tests of Normality

Sk = 0.218

Kurt.= −1.698

Kolmogorov-Smirnov (K-S) stat. = 0.158, Prob (K-S stat.) = 0.200;

Shapiro-Wilk (S-W) stat. = 0.966, Prob (S-W stat.) = 0.850

Source: Author's extract from SPSS 25.0 output

With the t-statistic value of 38.080 and associated probability value of 0.000<0.05, it was drawn that COVID-19 has a significant relationship with the level of investment in real estate in Lagos State. On the normality test result, the data series was seen to be positively skewed (Sk>0) and without excess kurtosis (k<3). However, the lower bound significant value of the true significance value for the K-S and S-W tests (p=0.200>0.05 and 0.850>0.05) respectively, shows that the data series follow a normal distribution.
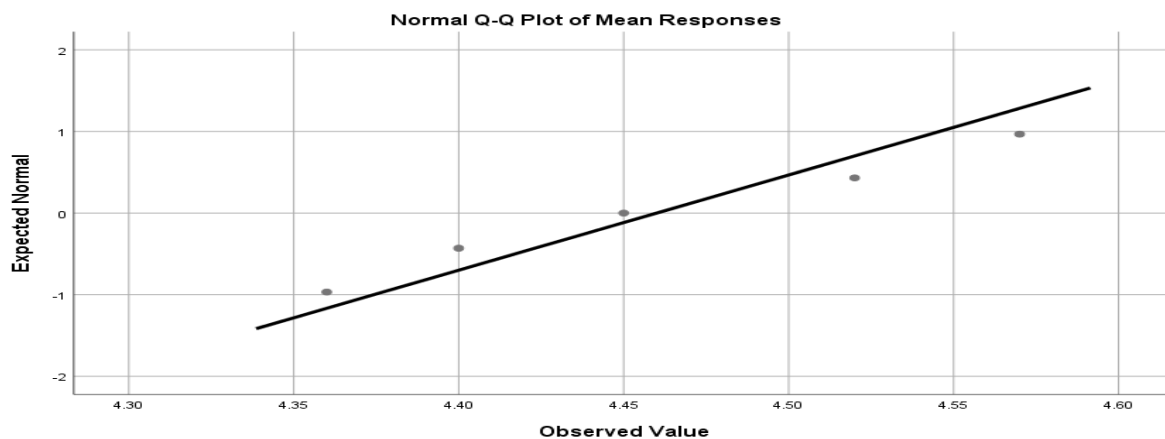

Figure 1: The graph of normality for hypothesis 1

Table 7: Regression result for hypothesis one

Dependent Variable: Level of investment in real estate

Variable	Coefficient	Std. Error	t-statistic	p-value
Constant	4.559	0.082	55.339	0.000
COVID-19	-0.609	0.025	-1.329	0.276
$R^2 = 0.370$ (37.0%)				
D-W stat. = 3.319				

Source: Author's extract from SPSS 25.0 output

The regression results further confirmed a negative (coeff. $= -0.609$) but insignificant (p=0.276>0.05) influence of COVID-19 on the level of investment in real estate in Lagos state, Nigeria. The coefficient of model determination (R-sq. = 37.0%) revealed a weak explanatory power of COVID-19 to the level of investment in real estate in Lagos state, Nigeria. This implies that COVID-19 does not have a strong linear relationship with the level of investment in real estate in Lagos state, Nigeria. The Durbin-Watson test of first-order autocorrelation (D-W stat. = 3.319) did not raise the alarm of the autocorrelation problem.

COVID-19 and Demand for Real Estate Property

Table 8: COVID-19 and demand for real estate property

Question Items		Responses					Statistics	
		5(SA)	4(AG)	3(UN)	2(DA)	1(SD)	$\sum W_i X_i$	$\bar{X}\pm$Std
Abandonment of apartments in metropolitan areas due to payment difficulties in redeeming their mortgages, high infection rates, among others.	Freq.	99	87	3	2	2	858	4.45±0.683
	%	51.30%	45.08%	1.55%	1.04%	1.04%		
Reduction in demand for residential and commercial real estates.	Freq.	116	71	3	2	1	878	4.55±0.636
	%	60.10%	36.79%	1.55%	1.04%	0.52%		
Due to COVID-19, tenants had continued to switch over to smaller and lower cost accommodations.	Freq.	123	63	5	2	0	886	4.59±0.598
	%	63.73%	32.64%	2.59%	1.04%	0.00%		

		SA	AG	UN	DA	SD		
Postponement of property (real estate) purchase decisions by home buyers.	Freq.	113	75	5	0	0	880	4.56±0.548
	%	58.55%	38.86%	2.59%	0.00%	0.00%		
Closure of malls, retail outlets and entertainment venues, thereby putting commercial real estate deals on hold.	Freq.	125	59	6	2	1	884	4.58±0.658
	%	64.77%	30.57%	3.11%	1.04%	0.52%		
Cluster stat.								**4.55±0.625**

Source: Field survey, 2022

Note*: SA means Strongly Agreed, AG means Agreed, UN means Undecided, DA means Disagreed, SD means Strongly Disagreed.*

The survey results as presented in table 8 shows that generally, COVID-19 caused a reduction in demand for real estate property (cluster mean=4.55>3.00). Specifically, the results unveiled that as a result of COVID-19, people abandoned their apartments in metropolitan areas due to payment difficulties (mean=4.45>3.00), there is a reduction in demand for residential and commercial real estates (mean=4.55>3.00), tenants had continued to switch over to smaller and lower cost accommodations (mean=4.59>3.00), postponement of property (real estate) purchase decisions by home buyers (mean=4.56>3.00), and closure of malls, retail outlets and entertainment venues (mean=4.58>3.00), thereby putting commercial real estate deals on hold. These findings confirm the results of studies by Keke et al. (2020) which revealed that the COVID-19 pandemic had an adverse effect on tenants' ability to pay rents hence reducing investors' interest in the real estate sector.

Hypothesis Two

This hypothesis sought to ascertain the level at which COVID-19 relates to the demand for real estate property in Lagos State, Nigeria. The decision to reject/accept the hypothetical statement lies on a benchmark of 0.05 level.

Table 9: Result of hypothesis two

Null hypothesis	Test statistic	Result
COVID-19 does not have any significant relationship with demand for real estate property in Lagos State.	1-sample t-test	t*=61.791, p<0.001

Tests of Normality

Sk = −1.802

Kurt.= 3.491

Kolmogorov-Smirnov (K-S) stat. = 0.328, Prob(K-S stat.) = 0.083;

Shapiro-Wilk (S-W) stat. = 0.803, Prob(S-W stat.) = 0.086
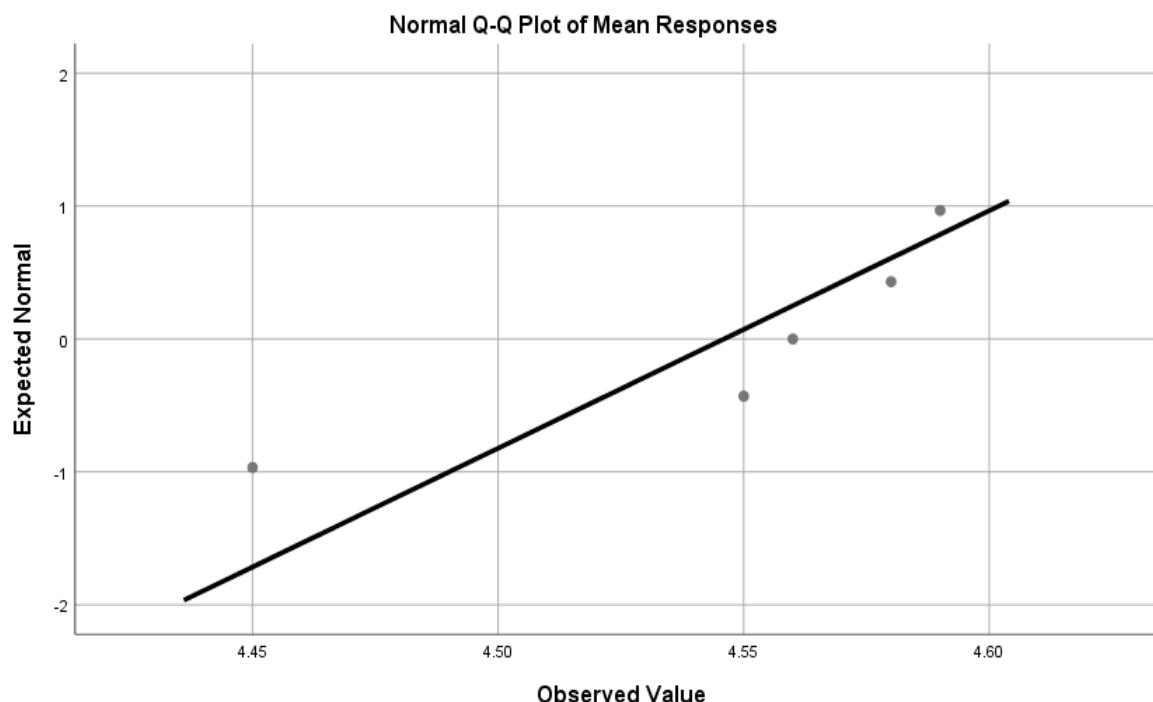
Source: Author's extract from SPSS 25.0 output

Figure 2: The graph of normality for hypothesis 2

The t-statistic value of 61.791 with an associated p-value of 0.000<0.05 uncovered that COVID-19 interacts substantially with demand for real estate property in Lagos state, Nigeria. The normality test estimate [with Sk<0, K>3, K-S stat. = 0.083>0.05, Prob (S-W stat.) = 0.086>0.05] indicates that the data series is negatively skewed and has excess kurtosis. Also, the result provided enough evidence that the data series are normally distributed and statistically different from zero.

Table 10: Regression result for hypothesis two

Variable	Coefficient	Std. Error	t-statistic	p-value
Constant	4.627	0.044	105.661	0.000
COVID-19	-0.763	0.013	-2.045	0.133
$R^2 = 0.582 (58.2\%)$				
D-W stat. = 1.682				

Dependent variable: Demand for real estate property

Source: Author's extract from SPSS 25.0 output

The regression result (with coeff. = −0.763) further proved a negative but insignificant (p=0.133>0.05) influence of COVID-19 on demand for real estate property in Lagos state, Nigeria. The explanatory power of the model as measured by R-square = 0.582 (58.2%) disclosed that about 58.2% of the changes in demand for real estate property in Lagos state, Nigeria, are accounted for by the COVID-19 spread in the state. The implication therefore, is that, COVID-19 has strong linear relationship with demand for real estate property in Lagos state, Nigeria. Several studies confirm this relationship, for example, Li et al. (2021); Uchechara et al. (2020); Marona and Tomal (2020); and Tanrivermis (2021). Following the rule of thumb, Durbin-Watson estimate of 1.682 confirmed that the model is free from first order autocorrelation problem.

COVID-19 and Risk Management

Table 11: COVID-19 and risk management

Question Items		Responses					Statistics	
		5(SA)	4(AG)	3(UN)	2(DA)	1(SD)	$\sum W_i X_i$	$\overline{X}\pm Std$
There is increase in capitalization rate due to emergence of COVID-19, leading to high uncertainty and a shift in risk aversion.	Freq.	102	66	5	9	11	818	4.24±1.097
	%	52.85%	34.20%	2.59%	4.66%	5.70%		
There is lower (potential) future cash flows due to emergence of COVID-19, thereby causing funding liquidity.	Freq.	102	84	3	1	3	860	4.46±0.707
	%	52.85%	43.52%	1.55%	0.52%	1.55%		
COVID-19 pandemic led to increased risk of real estate vacancies.	Freq.	95	88	4	4	2	849	4.40±0.730
	%	49.22%	45.60%	2.07%	2.07%	1.04%		
Due to COVID-19, there are reduced health and safety risks (health and safety of their consumers).	Freq.	81	97	5	7	3	825	4.27±0.812
	%	41.97%	50.26%	2.59%	3.63%	1.55%		
Due to COVID-19, fund providers are reluctant in extending credit to real estate investors.	Freq.	100	77	3	9	4	839	4.35±0.889
	%	51.81%	39.90%	1.55%	4.66%	2.07%		
Cluster stat.								**4.34±0.847**

Source: Field survey, 2022

Note: *SA means Strongly Agreed, AG means Agreed, UN means Undecided, DA means Disagreed, SD means Strongly Disagreed.*

The opinion poll results in table 11 above show that in a nutshell, COVID-19 increased the level of risk management in real estate in Lagos state, Nigeria (cluster mean=4.34>3.00). Particularly, COVID-19 caused increases in capitalization rate (mean=4.24>3.00), decreased future cash flows (funding liquidity) in the state (mean=4.46>3.00), increased risk of real estate vacancies (mean=4.40>3.00), reduced health and safety risks (mean=4.27>3.00), and making fund providers reluctant in extending credit to real estate investors (mean=4.35>3.00). These findings were also supported by prior studies conducted by Duan et al. (2021) on COVID-19 and systematic risk.

Hypothesis Three

This hypothesis sought to ascertain whether a significant relationship exists between COVID-19 and funding risk premium placed by capital providers in Lagos state, Nigeria. Decision to reject/accept the hypothetical statement lies on a benchmark of 0.05 level.

Table 12: Result of hypothesis three

Null hypothesis	Test statistic	Result
There is no significant relationship between COVID-19 and funding risk premium placed by capital providers in Lagos State.	1-sample t-test	t^*=33.127, p<0.001

Tests of Normality

Sk = 0.115

Kurt.= −1.765

Kolmogorov-Smirnov (K-S) stat. = 0.193, Prob(K-S stat.) = 0.200;

Shapiro-Wilk (S-W) stat. = 0.958, Prob(S-W stat.) = 0.795

Source: Author's extract from SPSS 25.0 output

As provided in table 12 above, the t-statistic value of 33.127 with an associated probability value of 0.000<0.05 indicates that COVID-19 exacts statistically connected with funding risk premium placed by capital providers in Lagos State, Nigeria. The normality test estimate [with Sk>0, K<3, Prob (K-S stat.) = 0.200>0.05, Prob (S-W stat.) = 0.795>0.05] indicates that the data series is skewed to the right and without excess kurtosis. However, the K-S and W-S statistics confirmed that the data series are normally distributed and statistically different from zero.

Figure 3: The graph of normality for hypothesis 3

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Table 13: Regression result for hypothesis three

Variable	Coefficient	Std. Error	t-statistic	p-value
Constant	4.353	0.110	39.675	0.000
COVID-19	-0.052	0.033	-0.091	0.933

$R^2 = 0.003 (0.3\%)$
D-W stat. = 2.275

Dependent variable: Demand for real estate property

Source: Author's extract from SPSS 25.0 output

With a coefficient value of -0.052 and an associated probability value of 0.933>0.05, the regression estimates in table 13 provided that COVID-19 contributes negatively but insignificantly to the funding risk premium placed by capital providers in Lagos State, Nigeria. The explanatory power of the model (R-square = 0.003) is low as only about 0.3% of the total variations in funding risk premium can be explained by the COVID-19 pandemic in Lagos State. The clear implication is that COVID-19 is not linearly connected with the funding risk premium placed by capital providers in Lagos State. These findings are in conformity with studies by Kaynak, Ekinci and Kaya (2021) that stated that COVID-19 had a different effect on regional real estate prices and city-level real estate prices. Furthermore, studies by Hoesli and Malle (2021) on the effects of COVID-19 on the European markets found that COVID-19 had affected the retail and hospitality properties the most while the residential and industrial sectors have been affected the less by this crisis. Thus, confirming the changing real estate property demand trajectory and its concomitant funding implications. The Durbin-Watson estimate of 2.275, following the rule of thumb, indicates that the model is free from first-order autocorrelation problems.

5.0 Conclusion

This study was set to appraise the reaction of investors in the real estate sectors to the risk and uncertainty profile of the sector heightened by the pre and post COVID-19 era. Adopting some key distributional tests and other key estimators like correlation and regression, it was concluded among others, the following:

i. That COVID-19 had a significant relationship with the level of investment in real estate in Lagos State though at a weak linear associative level.

ii. That there is a reduction in demand for residential and commercial real estate (mean=4.55>3.00), tenants had continued to switch over to smaller and lower cost accommodations (mean=4.59>3.00), postponement of property (real estate) purchase decisions by home buyers (mean=4.56>3.00) and closure of malls, retail outlets and entertainment venues (mean=4.58>3.00), thereby putting commercial real estate deals on hold.

iii. That COVID-19 has a strong linear relationship with demand for real estate property in Lagos state, Nigeria.

iv. That COVID-19 exerts statistical connection with funding risk premium placed by capital providers in Lagos State, Nigeria. The normality test estimate [with Sk>0, K<3, Prob (K-S stat.) = 0.200>0.05, Prob (S-W stat.) = 0.795>0.05] indicates that the data series is skewed to the right and without excess kurtosis. However, the K-S and W-S statistics confirmed that the data series are normally distributed and statistically different from zero.

In summary, the study made a discovery that the prospect theory held in the COVID-19 and post COVID-19 era in the real estate sector given that investors reduced their holdings in pure aversion to risk and uncertainties arising from oscillating demand.

5.1 Policy Implications and Recommendations

By way of policy implication, the Nigerian economic council should provide favorable investment climate with appropriate risk mitigations and cushions to reactivate the real estate sector in Lagos State while aiding its recovery from the COVID-19 debilitations. More specifically, measures such as a short-term lease for tenants with defined income streams may be conceivable. Furthermore, real estate investors are enjoined to conduct a proper evaluation of demands for commercial and residential property in order to make effective investment decisions. Finally, government should encourage work-from-home culture to minimize operational costs on real estate facilities.

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