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Analysis on Effect of COVID -19 on Property Valuation in Real Estate Market

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Abstract: The valuation of real estate is a central tenet for all businesses. Land and property are factors of production and, as with any other asset, the value of the land flows from the use to which it is put, and that in turn is dependent upon the demand (and supply) for the product that is produced. Valuation, in its simplest form, is the determination of the amount for which the property will transact on a particular date. However, there is a wide range of purposes for which valuations are required. These range from valuations for purchase and sale, transfer, tax assessment, expropriation, inheritance or estate settlement, investment and financing. The objective of the paper is to provide a brief overview of the methods used in real estate valuation. Valuation methods can be grouped as traditional and advanced. The traditional methods are regression models, etc. MRA has been implemented by many researchers to study valuation of real property cite that MRA is possible for coefficient estimates and factor weightings using a large number of actual sale cases.
Keywords: Real property, property valuation, multiple regression analysis, SWOT Analysis

I. INTRODUCTION

Real property is the land, everything permanently attached to it, and all of the interests, benefits, and rights inherent in the ownership of real estate. Real estate is defined as land at, above, and below the earth's surface, including all things permanently attached to it, whether natural or artificial.

Real estate appraisal, property valuation or land valuation is the practice of developing an opinion of the value of real property. There are no two properties that are exactly identical and have same characteristics. Based on these different characteristics, the appraisal process is important to determine the market value of property.

Real property valuation is a topic of interest for stakeholders for various purposes. Investors are interested to know the purchase price of the property in which they are going to invest. Developers seek to find out the feasibility of selling price for their decision-making. There are risks and uncertainties in property valuation as it could be subjective. Real estate appraisal, property valuation or land valuation is the practice of developing an opinion of the value of real property.

There are no two properties that are exactly identical and have same characteristics.

Real estate is a good opportunity to employ funds for both long and short-term investments. It is safe and provides high yield investment as compared to volatile returns from the stock market and limited returns from bank deposits. Wikipedia, referred real estate as ‘Legal term that encompasses land along with anything permanently affixed to the land, such as buildings’. In-depth, real estate, which is also defined as the immovable property or even realty is frequently deemed identical with real property compare to personal property.

Technically, real estate is not defined by such physical components as land and buildings. Rather, real estate is nearly synonymous with real property, the rights that associated with land and together with the fixtures, such as roads and buildings that are permanently attached to the land. The real estate market has been on a growth and expansion phase ever since 2002. The rationale of investment in real estate is to generate the profit return in future when forgoing the present consumption by taking into the consideration of uncertainty and risk.

The globalization and the emergent of Multinational Corporation in India results to the growth of real estate market and economic growth. Moreover, growth of population, rising in income level, rapid urbanization factors influenced to the growth of Indian real estate market. Since the Indian real estate market is emerging market in under developed economy, the role of real estate investors’ play and vital role of Indian economy.

Real estate is an asset form with limited liquidity relative to other investments, it is also capital intensive and is highly cash flow dependent. If these factors are not well understood and managed by the investor, real estate becomes a risky investment. The study of investors behavior discloses that various factors influence their invest portfolio in the real estate market.

II. LITERATURE REVIEW

A literature review is a piece of academic writing demonstrating knowledge and understanding of the academic literature on a specific topic placed in context. A literature review also includes a critical evaluation of the material; this is why it is called a literature review rather than a literature report.

To illustrate the difference between reporting and reviewing, think about television or film review articles. These articles include content such as a brief synopsis or the key points of the film or programme plus the critic's own evaluation. Similarly the two main objectives of a literature review are firstly the content covering existing research, theories and evidence, and secondly your own critical evaluation and discussion of this content.

Usually a literature review forms a section or part of a dissertation, research project or long essay. However, it can also be set and assessed as a standalone piece of work.

(Adetiloye, 2013),Valuation of real estate is a function of the attached rights and the physical features. Real estate consists of four elements: the land surface, the sub-surface, the airsurface; the permanently affixed objects and fixtures; the appurtenances or incidental rights attached to the use of the properties therewith; and the immovable properties belonging to the landowner in law.

(Brown and Matysiak, 2000),Real estate or property investment is concerned with acquiring real assets that is worth more than their cost. Unlike the stock market, properties are not frequently traded in the open market and access to information is limited. Thus, professional valuers have to acquire information about comparative transactions as guide when making an assessment of value. This has led to emergence of independent property information services whose role is the provision of information about the market, for investment decision.

(Calhoun, 2001),The increasing importance of real estate to the social, political and economic life of different economies has craved the indulgence of researchers into dearth of information for proper valuation of properties. Valuation provides the impetus for major property tax reforms and other public policy measures .

Gill,A,S.P Sharma, H.S Mand, N. Mathur, 2012 .The globalization and the emergent of Multinational Corporation in India results to the growth of real estate market and economic growth. Moreover, growth of population, rising in income level, rapid urbanization factors influenced to the growth of Indian real estate market. Since
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Gill and Biger (2008) (2012) [6] also indicate that investors' tendency to invest
capital is positively affected by their own perceived knowledge of neutral information. Thus, investors do not rely on a single integrated approach, but rather on many categories of factors such as price movement.

According to Anarock (2020) study, in the Indian real estate in normal times, the advancing time frame usually observes an increase in real estate activities because of folk festival festivities, as new deals sprout up. The upcoming excursion period for Indian colleges, which runs from April to June, also provides time for homebuyers to make purchase decisions. Regrettably, 2020 is shaping up to be unprecedented. The nationwide lockdown, which lasted until mid-April, brought an end to all drills. As it is evident, venture destinations have been closed, site visits have ceased, and construction activity has come to a grinding halt, adversely impacting deals in the long run. Additionally, developers have delayed the launch of their latest ventures for an unknown time. Apart from the industrial sector, the business sector is still vulnerable to the COVID-19 aftermath.

JLL (2020) indicates COVID-19 global real estate ramifications. Now, speculation activity can slow as valuation difficulties and increased vulnerability impair investors' ability to appropriately price danger. Despite adequate liquidity through stock and debt markets, loan specialists and speculators continue to operate in a valuation disclosure phase. Despite shifts in sentiment and behaviour, the general trend has been toward greater allocation to real estate, and the author of the study sees little reason for this trend to reverse in the medium to long term, considering the benefits of such investment.

Gujral et al.(2020), commercial real estate could be able to do more than respond to coronavirus. In the post-coronavirus world, most buyers and operators are reconsidering all capital decisions. Due to the severe uncertainty around periods of cash-flow deflation and exit capitalization rates, it is exceedingly challenging to underwrite acquisitions and incremental capital investment with confidence. And some in the private sector who are not now in financial difficulty plan to keep assets through the crisis. Others see the current condition as a valuation challenge rather than a value concern. However, investor sentiment is swayed by record-high amounts of dry powder.

Aggarwal S. (2003) in his paper try to present the problems of developing and less developing economies in coming days in real estate sector. He point out the deficiency of resource shortage which will be major challenges in the real estate sector. He also emphasised the negative environment impact on the environment.

Singh V. and Komal (2009) presented the psychological behaviours of a customers in real sector market. He describes the various market factors which impact the customer behaviour. He also discussed about present scenario in real estate sector of our country India.

Mohanty (2013) discusses the future of housing finance in light of the demand-supply gap, favorable demographics and increasing urbanization. He asserts the need to preserve financial stability along with attempts to increase the availability of housing finance and presents evidence from Reinhard and Rogoff (2009) to illustrate that the six major banking crises in advanced economies since the mid-1970s were associated with a housing bust. Mohanty compares the housing market in India with the housing market in the US, observing several crucial differences such as "the predominance of new construction and first time ownership" in India.

III. DATA ANALYSIS

A. Use of Multiple Regression Analysis (MRA) in Valuation

MRA has been implemented by many researchers to study valuation of real property. cite that MRA is possible for coefficient estimates and factor weightings using a large number of actual sale cases. It offers a very reliable tool to get accurate value for any property. In the study of, there are benefits such as less human bias and error when making adjustments for property differences, and easily updated assessment figures. MRA method is most popular because of their established methodology, long history of application, and acceptance among both practitioners and academicians. MRA relies on econometric modelling i.e. fluctuation in market value which reproduces the market behaviour based on probability framework.

B. Identification of Independent Variables/ Factors

In regression modelling there are two types of variables involved i.e. the dependent variables and independent variables. The dependent variable is a market value, which can be represented by rents, sale price or owner's estimated price. The second category consists of the independent variables namely locational, structural and environmental factors. In structural attributes, variables such as size of plot, floor area, age of building, number of rooms, number of storeys, level of unit and housing fixtures are often used.

The attributes considered in the multiple regression model were sale price, age of property, size, number of bedrooms,number of floors, nearness to amenities and access road. The finding was that location and structural characteristics are the key determinants of residential property values. There are obstacles and risks associated with property valuation as it is matter of subjective opinion and opinions vary. The market value of a property depends on various factors which may be broadly classified into quantitative and qualitative factors. For analysis of variables through regression analysis it is necessary to quantify each independent variable.

Table 1. Variables identified for the study

Sr. No.	Variable	Variable Code	Value
1	Area (Sq. Ft)	X1	Quantitative
2	No. Of floors	X2	Quantitative
3	Age of Building	X3	Quantitative
4	No. Of rooms	X4	Quantitative
5	Nearness to amenities	X5	Qualitative
6	Access Road	X6	Qualitative

In table 1, In quantitative attributes, variables such as floor area, age of building, number of rooms. Variables such as accessibility to amenities or facilities, access road, etc which cannot be numerically measured are identified as qualitative factors. The properties having access to amenities within a range of 0-3 km are assigned 1, range of 3-6 km are assigned 2 and 6-10 km are assigned 3.

C. Application of Regression Analysis

The dependent variable is subjected to the impact of independent variables. Regression analysis uses statistical modelling to assess the impact of variables on each other. Regression Analysis is used to identify the impact of multiple variables/ factors on the dependent variable individually as well as the combined effect of all the factors on the dependent variable. For the purpose of this study, data of 20 comparable residential properties are collected in and around Bangalore which are shown in Table 1 and are denoted as P1, P2, P3, through P20. The regression analysis is done through the data collected from these twenty properties with recent valuation based on the 6 independent variables chosen as shown in Table 1.

The regression equation for the chosen independent variables is as follows:

Z = A0 + A1X1 + A2X2 + A3X3 + A4X4 + A5X5 + A6X6 + E

Z is the dependent variable which here represents the market value, A0 is the regression constant which is the Y-intercept. The terms X1, X2, X3 … X6 represents the independent variable as shown in Table 1. A1, A2, A3…A6 represents the regression coefficient which signify the change in value of the dependent variable for unit change in the individual independent variable, when other variables remain constant. E is the error term which represents the impact of all factors other than the independent variables which have an effect on the dependent variable.

Regression is carried out in Microsoft Excel. Converted data of total Twenty valuation reports are fed to the software in transposed form in such a way that the first column contains the observations on the dependent variable i.e market value and then the other, adjoining columns contain the observations on all the six independent variables.

Table 2.

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.994603674
R Square	0.989236469
Adjusted R Square	0.984268686
Standard Error	269618.8168
Observations	20

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- *Interpretation:* As shown in table 2, the multiple regression is 0.995. This indicates that the correlation among the independent and dependent variables is positive. The coefficient of determination, from the regression results is 0.989, showing that the combined influence of six variables explains 98.9% of all house price variations. The R2 range should be within 0 < R2< 1. The adjusted R-square, a measure of explanatory power, is 0.984. This statistic is not generally interpreted because it is neither a percentage (like the R2), nor a test of significance (such as the F-statistic). The standard error of the regression is 269618.82, which is an estimate of the variation of the observed home prices.

Table 3.

ANOVA			
	df	*F*	*Significance F*
Regression	6	199.1303503	0.0468
Residual	13		
Total	19		

- *F:* Overall F test for the null hypothesis.
- *Significance F:* The significance associated P-Value.
- *DF:* Degree of freedom

- *Interpretation:* Table 3 shows ANOVA analysis of variance information which provides the breakdown of the total variation of the dependent variable i.e. house prices. The F-statistic is calculated using the ratio of the Mean Square regression (MS Regression) to the Mean Square residual (MS Residual). If the value of significance F is lower than that of value F then the test is said to be significant. In above case, the significance F value is very small as compared to value F hence test is said to be significant.

The column labeled significance F has the associated P-value.
Since 0.0468 < 0.05, we reject H0 at signficance level 0.05.

Table 4.

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-1201184.496	323253.9048	-3.715916431	0.002590261
Area(Sft)	2584.692949	127.2241461	20.31605657	3.11623
No. of Floors	190078.1033	75571.65947	2.515203512	0.025836925
Age of Building(years)	47374.70374	26240.30022	1.805417748	0.094209545
No. of Rooms	38583.07016	69101.43569	0.558354103	0.586091262
Nearness to amenities	-162017.1018	85302.78931	-1.89931775	0.079937495
Access Road	125733.3793	125252.8722	1.003836296	0.33377733

Lower 95%	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
-1899532.1	-502836.8924	-1899532.1	-502836.8924
2309.841891	2859.544006	2309.841891	2859.544006
26815.45885	353340.7477	26815.45885	353340.7477
-9314.018394	104063.4259	-9314.018394	104063.4259
-110701.5056	187867.6459	-110701.5056	187867.6459
-346302.5742	22268.3705	-346302.5742	22268.3705
-144858.9999	396325.7585	-144858.9999	396325.7585

- *Coefficient:* Gives you the least squares estimate.
- *Standard Error:* the least squares estimate of the standard error.
- *T Statistic:* The T Statistic for the null hypothesis vs. the alternate hypothesis.
- *P Value:* Gives you the p-value for the hypothesis test.
- *Lower 95%:* The lower boundary for the confidence interval.
- *Upper 95%:* The upper boundary for the confidence interval.

- *Interpretation:* Table 4 shows the coefficients of each independent variable. The T-statistic is calculated using the ratio of the coefficients of variable to the standard error of variables. The intercept value -1201184.496 is the value of Y when values of all the independent variables are zero. For hypothesis testing, if we consider 95% of confidence level then P should be less than 0.05 of output variable. If output variable has P>0.05 then the intercept value is not significant showing that these variables are not going to affect dependent variable. If the P-values of output variables have 95% of confidence level then only these variables are accepted for further regression analysis.

From the Final Regression Table 4, the regression equation would be

Z = -1201184.496 + (2584.692949*X1) + (190078.1033*X2) + (47374.70374*X3) + (38583.07016*X4) - (162017.1018*X5) + (125733.3793*X6)

D. Overall test of Significance of the Regression Parameters

From the ANOVA table the F test statistic is 199.130
Since 0.0468 < 0.05, we reject H0 at signficance level 0.05.
Hence we can see that the market value of a property is effected by quantitative and qualitative factors, so here the alternate hypothesis is accepted and null hypothesis is rejected.
An alternative hypothesis is the inverse of a null hypothesis. An alternative hypothesis and a null hypothesis are mutually exclusive, which means that only one of the two hypotheses can be true.
A statistical significance exists between the two variables. If samples used to test the null hypothesis return false, it means that the alternate hypothesis is true, and there is statistical significance between the two variables.

1) *SWOT Analysis:* SWOT analysis is believed to be fundamental to any proposed venture or investment as it also very important in the sustenance of same. Real estate SWOT analysis is very fundamental if not critical in planning any real estate business. This is because it helps in restructuring other aspects of the business to be in tune with the current market situation. The primary goal of real estate analysis is to enable the investors or key participant identify areas of possible conflict, note the weaknesses, and as well find out opportunities available and as well take note of threats. SWOT is a very useful model for the development of the real estate in the business and organizational level, its main target for real estate is to manage to define the company´s advantages and the general strategies which should be introduced according to the specific necessities of the real estate.
2) *Strengths:* India has always been a resilient market with great fundamentals for real estate and springing back positively. By virtue of the strong and increasing demand due to our large population base, this sector has grown continually and is expected to stay steady for long. Industrial output, though lower this year, can be positively compared with most of the developed countries. IT/ITeS and industries are still expected to grow, creating employment opportunities and job stability. Rising disposable incomes and a growing middle class will also ensure robust housing demand and overall growth for real estate in India. Moreover, Foreign Direct Investments in various sectors will continue to fuel the economy and open more doors. The newly proposed Land Bill as well as the Real Estate Regulatory Bill will bring about more transparency in the long term, hence making investments more attractive. The above fundamentals automatically create demand for more housing and also tend to support infrastructure such as retail, office, hospitality, health care, entertainment and lifestyle business.
3) *Weaknesses:* The recent past has been a little gloomy with unstable government policies, indecisiveness and inconsistencies in issues related to tax and other involved arenas. Such situations tend to hamper the overall business landscape leading to sluggish growth, directly impacting the real estate sector. Excessive red tape and long approval gestation periods increase delivery time and make the business riskier, hence increasing the overall cost of projects. Scarcity of capital available for real estate, with RBI curbs in this sector, results in increasing the cost of capital. High inflation rate has been pushing construction costs up and this, combined with the high cost of capital will lead to steep pricing. Frivolous litigations and unclear land titles has plagued this industry. Lack of transparency has hampered further investments in this field with investors focusing on other secure markets.
4) *Opportunities:* Tight liquidity in the current scenario can give new investors a great pricing advantage. Moreover, with a slight dip in sales velocity, there may be potential for discounted deals. This can be an opportunity for investors with access to a larger corpus of funds and a risk appetite. The cost of owning real estate in India has always been out of reach for the lower income group. This has resulted in a huge demand-supply gap in the affordable housing sector. There is an immense growth potential in this segment and one can cash in with limited or virtually no risk. Stringent laws including easing of mortgage enforcement in case of defaults will ultimately lead to an increase in the flow of capital to this sector hence creating further investment opportunities.
5) *Threats:* Market instability and uncertainty may create a slight flutter in this industry. The Current economic outlook, though not dire, seems bleak and can hamper the industry growth. Soaring numbers of corruption allegation cases across various State Governments and government officials shows India in poor light and can create a cascading effect in attracting further investments. Continuous change in policies will tend to affect investment as well. Moreover, restrictive laws governing Foreign Direct Investment into real estate make it difficult for foreign investors to look at India.

IV. CONCLUSION

This research work is based on how the market value of a property is effected by its quantitative and qualitative factors during Covid-19. After analysing the data with the help of ANOVA table from multiple regression analysis, it can be concluded that the quantitative and qualitative variables are effecting the market value of the properties. So in this research paper the null hypothesis is rejected and the alternative hypothesis is accepted. The market value of real estate increased during the Covid-19 era. Due to the constrained job market, developers were unable to satisfy demand. This epidemic is oppressive since it is expected to claim thousands of lives. Home values dropped in value as the housing supply decreased, reducing state revenues. Owing to the decline in demand and the increase in negotiating power in the short-supply market, location scouting has already begun, but at a slower pace. The sector must brace itself for a far direr consequence than was previously expected. With the threat of illness affecting human lives, the real estate division is now observing a decline in property visits and buyer interest. During the Covid-19 pandemic, there were changes in the way businesses operate around the world. Market participants have focused their business on the implementation of e-government services. Work from home was introduced. Organizations that perform service activities, and which were not vital to the lives of the residents, have completely ceased operations. The impact of Covid-19 was also felt in the real estate market development projects. Market participants tried to stay active during the pandemic by applying online real estate browsing technologies.

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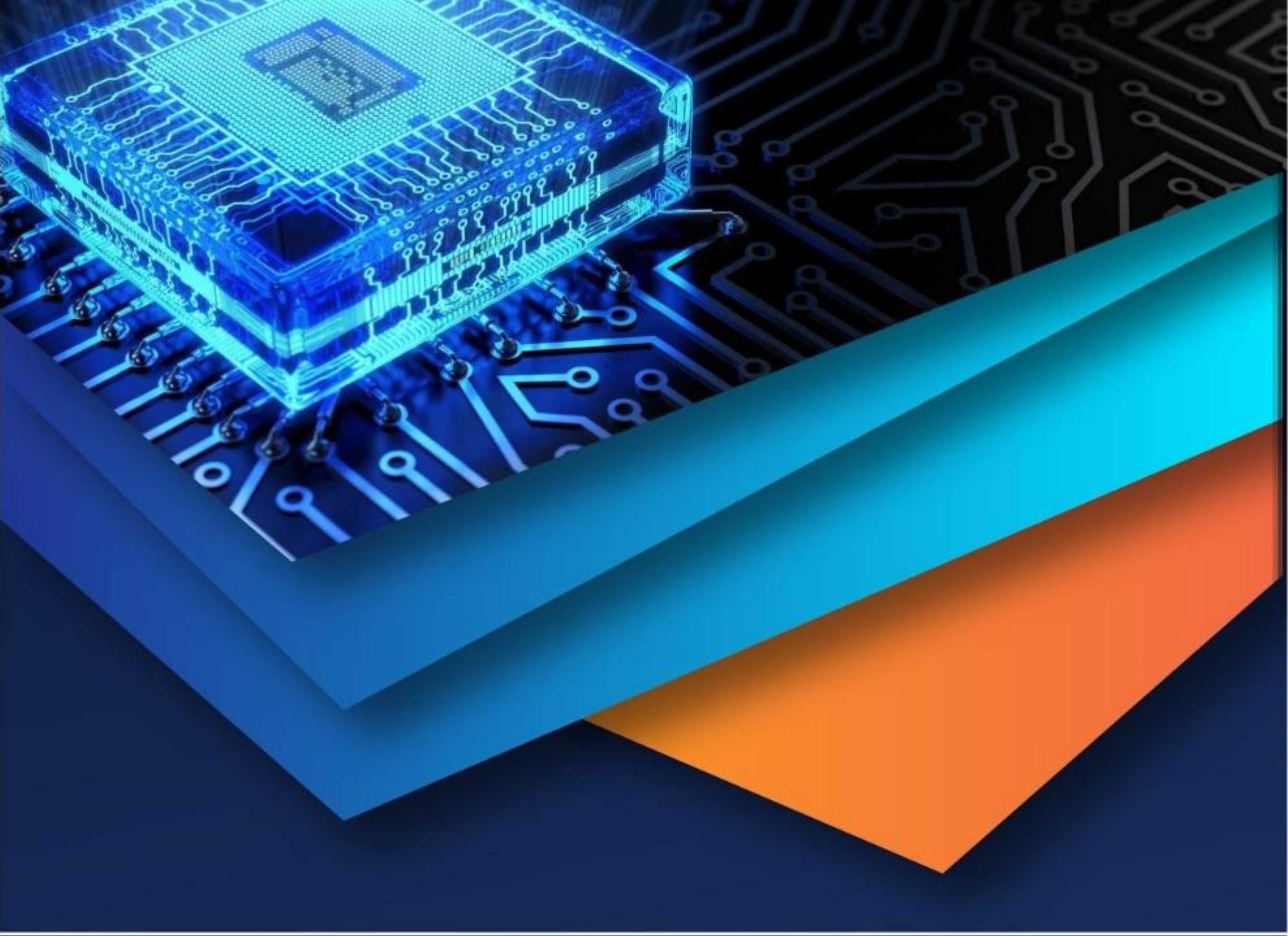

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