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Study On the Feasibility Systems for the Construction of a Luxury Housings

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Abstract--The economic development in India has been increasing in recent years. In the late 2000s, India's growth reached 7.5%, which had double the average income in a decade because of the boom of IT, telecommunication, and automobile industry. In India, land is a major constraint. In order reduce the constraint, buildings like apartments are constructed. The incremental demand for hi-end technology and high standard living calls in Luxury Apartments as a solution. Luxury apartments are basically which contains all the modern amenities present inside the apartments and the luxury brands used for specification which are not present in conventional apartments. Luxury also includes the location of the site. In this project, the feasibility study helps to narrow the scope of the project to identify the best scenario. Market feasibility is done to access the market size of the location and calculating the target group definition. Technical feasibility is basically analyzing the specification brands. Financial feasibility is calculated to check the profitability & viability of the project. Finally, Environmental feasibility is done by evaluating the building with The LEED India Green Building Rating System. The paper concludes that the proposed project was found to be feasible by the market, technical, financial, environmental feasibility. It also depends that the proposed project will be profitable provided the execution of the project does not exceed the timeline, minimum wastage of resources, no compromise in quality & minimal cost escalation

I. INTRODUCTION

A. General

A feasibility study is an evaluation and analysis of the proposed project which is based on extensive investigation and research to support the process of decision making. Feasibility studies aim to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats present in the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained. As such, a well-designed feasibility study should provide a historical background of the business or project, description of the product or service, accounting statements, details of the operations and management, marketing research and policies, financial data, legal requirements and tax obligations. Generally, feasibility studies precede technical development and project implementation. A feasibility study evaluates the project's potential for success; therefore, the perceived objectivity is an important factor in the credibility to be placed on the study by potential investors and lending institutions. It must therefore be conducted with an objective, unbiased approach to provide information upon which decisions can be based.

B. Objective of the Project

To assess the Technical, Market, Financial and Economic feasibility of the proposed project
To do financial, economic & environmental feasibility of the project.
To study the profitability & viability of the project.

C. Luxury Apartments

Chennai is one of the largest hubs for High Net worth Individuals (HNIs). It is estimated to be home to over 10,000 individual dollar millionaires. Chennai has a large base of expatriates who live and work in the city. The residents are well travelled, cultured and have sophisticated tastes. There has been increased demand for high-end residential apartments in the city, particularly in the Central Business District (CBD), Secondary Business District (SBD), sub-markets. We expect consumer demand for high-end residential projects in these sub-markets to be steady over the short term. Chennai is one of the most promising markets for luxury projects in India. Luxury apartment developments are most active in the south & central Chennai, OMR, and ECR micro-markets. High-end residential property buyers in Chennai are very sensitive in terms of amenities, product quality and unit sizes.

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II. REVIEW OF LITERATURE

A. Literature Overview

Azza Abou-Zeid et al (2007) expresses that feasibility study is simply defined as precise reviews and examinations to decide the feasibility of different investment alternatives. Generally, there are no standard procedures to carry out the feasibility study, especially for public projects, in Arab countries. In addition to the limited and constrained capital resources, these countries are characterized by imprecise and lack of different social, economic and environmental information. The paper presents an overview of the feasibility study procedures used in the public sector in different Arab countries along with their advantages, disadvantages, and items of inconsistency. A pilot study of 91 highway public projects, in Egypt, was conducted by the authors to gain a better understanding of the Egyptian public sector as a sample study of the Arab countries. The study concluded the existence of inconsistency in the used feasibility study procedures. This study stresses the need for developing, in light of the reviewed different used procedures, a standard feasibility study procedures that eliminate this inconsistency.This paper reviewed the feasibility study procedures used in the public sector in different Arab countries along with their advantages, disadvantages, and items of inconsistency.

Matthew E. Pace (2007) studies the primary purpose of this thesis is to estimate the demand for student housing that focuses on upper-class undergraduate and graduate students who typically shy away from dormitory housing. The initial chapters provide a brief introduction to conventional student housing, explain why the market is growing, review the growing sustainability trend and introduce the idea of green luxury student housing. Chicago serves as the test market where more than forty universities currently operate. Methods for financing, demand drivers, and overall feasibility are discussed for relevance to the market. Two examples of recently built student housing projects in Chicago and Boston are reviewed for current trends and components to their success. Research conducted includes interviews with student housing developers, a student housing consultant, academic staff and other project participants. Site visits, available online data and reviews of project documentation supplement this research.

Although green luxury housing serves to define a new market niche and attempt to fill an untapped demand, there still are considerable obstacles to creating a successful product. This thesis‘ simple attempt to estimate demand for the market may involve too few variables besides segregating student demand based on financial aid. The thesis concludes with the expected demand believed to support the newly defined market niche and its potential feasibility

B. Critical Summary Of Literature

Estimating for luxury housing, this is able to execute market feasibility and can complete against projects. Perform Market Analysis with a Feasibility Study. Some studies, implemented the material management. From that, waste generation can be reduced and a green construction environment can be achieved

The forecasted numbers are compared with actual data collected. The comparison reveals a huge difference between estimated numbers and actual numbers. The revenue is found out from the forecasted numbers. Calculating the financial statement by executing, the feasibility for project investment. Determination of the value of a proposed project and whether the value equals or exceeds development costs. The financial analysis section of the report analyses a property‘s capacity to generate income.

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III. METHODOLOGY AND CONCEPTUALISATION

A. General

The Figure 3.1 represents the Framework for Feasibility Study

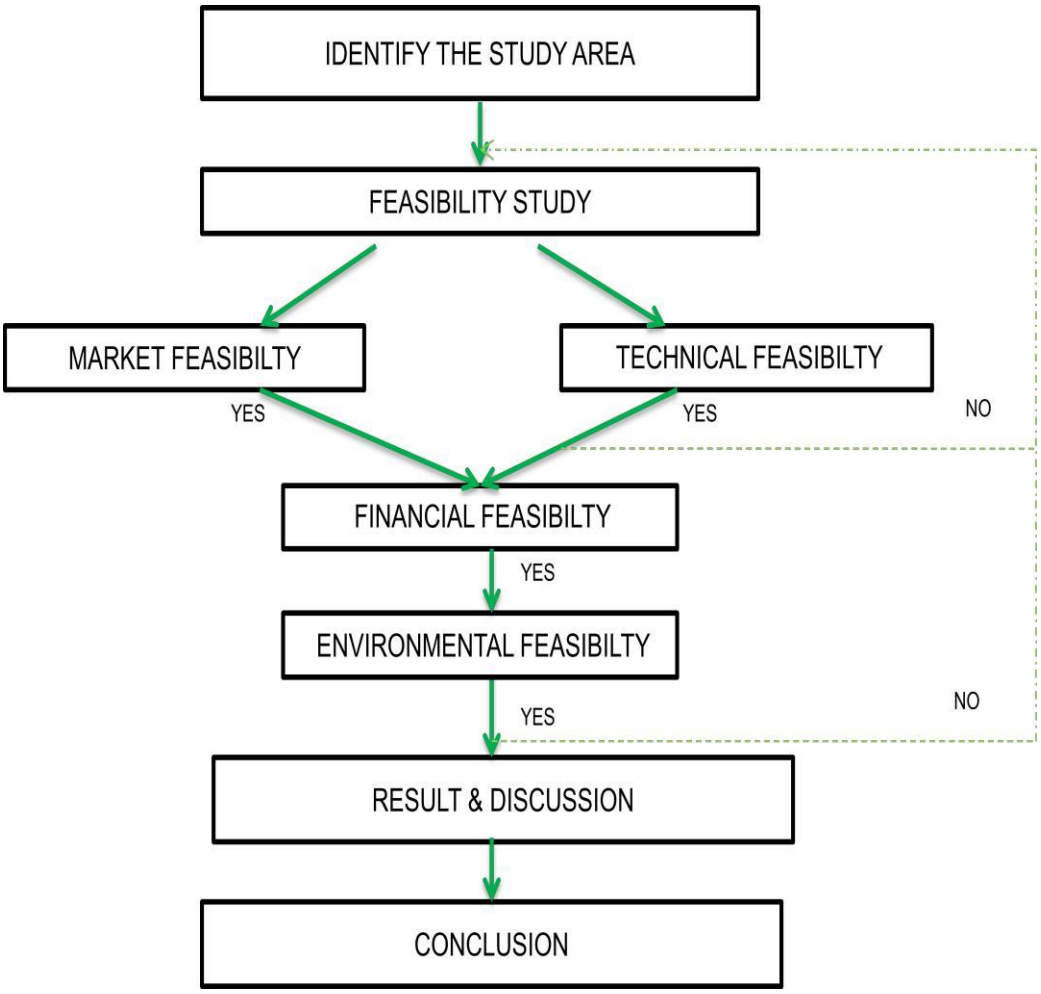


Figure 3.1 Framework for Feasibility study

The study area is located in Dr.Thirumoorthy Nagar, Nungambakkam, which is located at a distance of 0.23km from Nungambakkam main road. Analyzing the factors of feasibility includes Market feasibility, Technical Feasibility, Financial Feasibility & Environmental Feasibility.

Market feasibility is done by primarily by analyzing the proposed location. The market size is being analyzed. The competitors near by the proposed location are being identified and their amenities are found out. The target group definition for individual to purchase & rental yield is calculated. The technical feasibility is done by assessing the specifications by identifying brand products based on prices & quality. Each specification will have each luxury branded product. Financial feasibility is obtained from the gross profit achieved from the difference between the income & revenues. From the gross profit, the gross margin of the proposed project will be achieved. The proposed project will be rated from the LEED India Green Building Rating System and certified as a Green Building. This satisfies the environmental feasibility.

B. Project Overview

Proposed is a Luxury residential apartment project on a 19200 Sq.ft. property, located approximately 240 meters off the Nungambakkam high road. The project will have a total saleable area of 3000 Sq.ft. featuring 19 units‘ luxury units. The project being a luxury apartment will have high end specifications & all the states of art modern amenities & facilities. The project will be

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designed by DESIGN REALM & developed by RSD FOUNDATIONS Pvt. Ltd. The project will be marketed by reputed international property consultants like JLL, Cushman & Wakefield, CBRE, Colliers international etc. The project will consist of luxury apartment catering to white collar employees & business people in Nungambakkam. The project will feature all luxury & modern amenities that one can expect in a large scale residential project.

IV. MARKET FEASIBILITY

A. Position Definition

The project features 19 luxury group units. The project will have all the luxury and modern amenities that one can expect in a modern luxury apartment development.

B. Project Positioning

The project is positioned as ―LUXURY APARTMENTS‖ catering to high network individuals, top executives of reputed corporate, NRI investors. The project will be luxury in price & also will have quality fitments & all smart features with all luxury facilities and social infrastructure. The project will be a huge BRAND BUILDER in the space of luxury housing. Creating social infrastructure & housing will help in creation of large format townships and luxury housing projects.

C. Market Study

1) Catchment Analysis – Catchment Analysis From User's Perspective: The project is developed on an 8 grounds property located in Nungambakkam. The project location is in the heart of the city with reputed corporates, high end residential developments, retail outputs & institutional developments. This area predominantly consists of upper & upper-middle income group residing. Development in the neighbour is a mixture of commercial, residential & retail use. Significant commercial developments have created huge need for residential developments in Nungambakkam. Residential developments in the catchment include mostly high end apartments to businessmen, white collar men & NRI investors. The supply of apartments mainly lies in the location of that particular area. A number of high-rise residential townships of varying scales are under construction in Nungambakkam with major national developers developing projects including VGN, Akshaya homes, Adroit etc.,

Table 4.2 Competitor Studying

S. NO.	PROJECT	DEVELOPER	NO. OF UNITS	UNIT SIZE RANGE In Sq.ft	UNIT RATE / Sq.ft	LOCATION
1	Presidency	VGN	<100	3280 - 3454	22000	Nungambakkam, Chennai
2	Imperia	Adroit	5	2375 – 5143	25000	Nungambakkam, Chennai

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3	Kairali	Ceebros	8	1580	22000	Nungambakkam, Chennai
4	LUZ Amor	Appa-swamy Real Estates	32	1155 – 2494	28000	Mylapore, Chennai
5	Atlantis	RWD	42	726-1922	NA	Nelson Manickam Road, Chennai
6	Czar	Real Value	18	4500 - 6500	NA	RA Puram, Chennai
7	Art	Vijay Shanthi Builders	21	5498 - 5969	22000 + tax	Nungambakkam, Chennai

D. Amentites

The traditional and conventional style of living by the residents of Chennai have made it clear in the survey that basic amenities are only required for a successful project. Social infrastructures such as school, medical facility, shopping area, lift etc. are some of the very important requirements. Other facilities such as power backup, pooja room, security too are some of the important factors to be considered while designing the dwelling unit. Even amenities such as swimming pool, gymnasium, health club and community hall which are being promoted by developers in their development. Amenities provided in this project are:

Community hall
Swimming pool
Gym
Clubhouse
Solar Water heater
Centralised RO water Purifier
6 Passenger lift
Home automation
LED Lights in common area
Roof Garden / Party Lawn

E. Target Group Definitions

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The primary target group (TG) for this project is high network individuals, top executives of reputed corporate & NRI investors in Nungambakkam. The primary TG are the professionals with GROSS ANNUAL SALARY off over Rs.1 crore (Monthly salary of over 8 lakhs) as shown below in Table 4.4. The secondary target group for the project is the Investors looking for rental yield & value appreciation as shown in Table 4.5.

Table 4.3 Secondary Target Group

APARTMENT DETAILS	
Average Unit Size (Sq.ft)	1920
Average price/Sq.ft. (Rs.)	22,000
Unit price (Rs.)	4,22,40,000
FUNDING DETAILS	
Own money (%)	20%
Own money (Rs.)	84,48,000
Bank loan (Rs.)	3,37,92,000
EMI CALCULATION	
Bank loan(Rs.)	3,37,92,000
Interest rate(p.a.)	10.50%
Loan Tenure (yrs.)	20
EMI(Rs.)	3,37,373
ELIGIBILITY SALARY CALCULATION	
Banker's thumb rule (%)	40%
Net salary per month(Rs.)	8,43,431
Annual Salary (Rs.)	1,01,21,176
RENTAL YIELD CALCULATION	
Apartment price (Rs.)	4,22,40,000
Rent per month (Rs.)	2,50,000
Annual rent (Rs.)	30,00,000
Return on investment (%)	7.1%
EMI out of pocket (Rs.)	87,373

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F. Product Positioning & Marketing Strategies

The project shall be developed as a luxury development with all the basic and most modern amenities that one can associate with a luxury project.

This project is located in the heart of the city, with all basic facilities in the nearby radius. The market strategies for promoting this project as pan India project are given below:

The Project shall feature in all national property shows

Once launched the project shall feature in property shows of all national TV News channels



The company & the project shall be the title sponsors for all major events that get high viewership or foot fall



The Project shall be posted in pan India & International property portals

V. TECHNICAL FEASIBILITY

A. General

One of the major aspects in the luxury housing is the specification.

An apartment is considered ―luxury‖ when luxury branded products is being used for the specifications. In this paper, Technical feasibility is done by analysing each branded products. A luxury branded product is identified by quality and price range of the product. Thus each branded products are identified for each specification.

B. Premium Specification Analysis

1) Steel: Steel is an alloy of iron, with carbon being the primary alloying element. Carbon content of steel is between 0.002% and 2.1%. TMT means Thermo Mechanically Treated steel is new-generation-high-strength steel having superior properties such as weld-ability, strength, ductility and bendability meeting highest quality standards at international level when compared to TOR steel. Under thermo mechanical treatment of bars, the steel bars are made to pass through a specially designed water cooling system where these are kept for such a period that outer surface of bars becomes colder when the bars are taken out of the cooling system, the heat flows from the core to the outer surface causing further tempering of steel bars thereby helping them in attaining higher yield strength of steel. TMT Bars are much superior to conventional TOR Steel by virtue of their various engineering properties and can be used for Residential Buildings, Bridges, Drums, Industrial Establishment and all types of concrete reinforcement purposes. The various grades of steel are being compared as shown in Table.5.1.

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Table 5.1 Comparison of Grades of Steel

PROPERTY	Fe415	Fe500	Fe500d	Fe550	Fe600
0.2 percent proof stress / yield stress, Min, N/mm2	415	500	500	550	600
IS:1786-2008Tensile strength	450	530	580	600	660
% Elongation	14.5	12	16	8	10
Ductile		Less ductile compared to Fe 500d	FE500D is more ductile		
Minimum guaranteed yield strength (0.2% proof stress)		4250 Kg/cm2	5100 Kg/cm2		
Advantages		Fe 500 re-bars offer better yield strength, elongation, earthquake resistance	Fe 500d enables to withstand the sudden load absorption capacity, which is encountered during earthquakes, cyclones and tsunamis etc. Events and provides higher safety to the		

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			structure.		

VI. RESULTS & DISCUSSIONS

A. Results & Discussions

1) Market Feasibility:

Table 8.1 Market feasibility analysis

Project Location	Nungambakkam
Land Location	The project is located in Nungambakkam, at a distance of 0.23km From Nungambakkam main road. The project falls Under Chennai Corporation, Chennai district.
Competitors	VGN Adroit Ceebros Akshaya homes Appaswamy real estates RWD Real value & Vijay Shanthi Builders.
Amenities	Community hall Swimming pool Gym Clubhouse Solar Water heater Centralised RO water Purifier 6 Passenger lift Home automation LED Lights in common area Roof Garden / Party Lawn
Target Group	
Apartment Details	
Average Unit Size (Sq.ft)	1920

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VII. CONCLUSIONS

The proposed project was found to be feasible by the market, technical, financial, environmental feasibility.

The market feasibility done in the proposed site in NUNGAMBAKKAM is found feasible by location. The various amenities make the project luxury.

The technical feasibility is feasible by using the specification of luxury brands.

The financial feasibility infers, 34% of gross profit is achieved to the construction company, making it feasible.

The proposed project accomplishes 29 level points on the overall through the LEED India NC criteria. Thus, this building is rated as ―certified green building ―and also environmentally suitable project. The proposed project is IGBC Pre certified Rated building & which makes it environmentally feasible.

The proposed project will be profitable provided the execution of the project does not exceed the timeline, minimum wastage of resources, no compromise in quality & minimal cost escalation.

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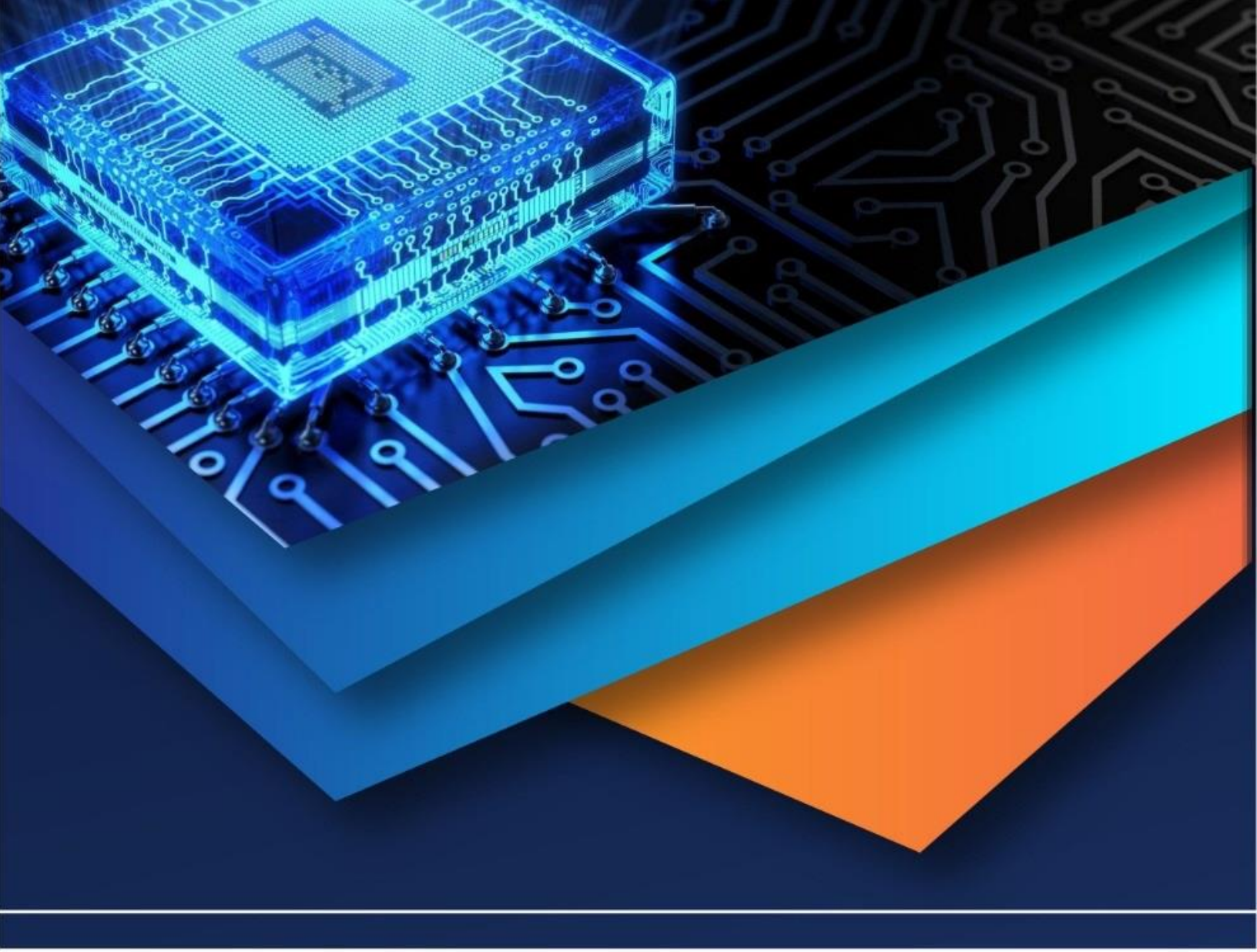
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