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The Analysis of Dimension of Instability in the Informal Settlements (Case Study: Hesar Neighborhood of City of Karaj, Iran)

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Abstract- Squatters (or informal) settlements have existed in Iran since 1961. There were turning points for the massive migration from the village and small cities to political and capital centers (city of Tehran as the capital city and other big cities like the city of Karaj as the case study). The most important object of this paper is recognition and analysis of dimensions of instability in the informal settlements (Hesar Neighborhood). The methodology of the research involves a pilot study and a qualitative study where exploratory and case study analysis methods were used. A questionnaire was prepared and interviews were conducted in the Hesar informal settlement of city of Karaj. The result shows this settlement has an unstable situation. In general, an environmental issue is the most important challenge of sustainable development and stability in Hesar informal settlement. Other dimension of sustainability (social and economic sustainability) has an unstable situation too.
Key words: Squatters, informal settlement, instability, sustainable development, Hesar Neighborhood

I. INTRODUCTION

More than half of the world's population currently lives in urban areas. Projections of urban population growth around the world indicate that between 2000 and 2050 urban space will need to be doubled in developed countries and expanded by 326% in developing countries to accommodate the population (UN-Habitat, 2013). Rapid urban growth presents challenges to sustainable urban planning and good governance, particularly when localities are not properly prepared. Managing urban areas has increased in both scope and complexity, and it is one of the most important challenges of the 21st century. Cities are often described as cradles of civilization and sources of cultural and economic renaissance but for the roughly one third of the developing world's urban population that lives in extreme poverty, they are anything but that. According to the United Nations's reports, 863 million people, or 31.6% of the world's total urban population, lived in slums in 2012 compared with 650 million in 1990 and 760 million in 2000 (UN, 2014). Most of these urban poor have no option but to find housing in squalid and unsafe squatter settlements or slums (UN, 2000). The World Bank and the United Nations have joined forces to respond to this challenge by building a global alliance of cities and their development partners. An ambitious “cities without slums” action plan was launched in December 1999. It has aimed at improving the lives of 100 million slum dwellers by 2020. By the end of this year, the study will continue to emphasize ensuring access for all to adequate, safe, and affordable housing with basic services and upgrading slums by the year 2030. In this context, the international community and national governments have been trying to improve the conditions of illegal settlements (Uzun, Cete, & Palancıoglu, 2010).

Informal and squatter settlement existence is the one of the most important challenges of metropolitan areas in Iran. These challenges appears in Structural, environmental, economic, social and political dimensions (Lotfi, 2008).

II. LITERATER REVIEW

A. Informal Housing

Informal housing, frequently detested as ‘squatting’ or ‘slum proliferation’, has become the predominant mode of shelter provision for the world’s urban populations and rural–urban migrants in particular. In Asia and elsewhere it fills the huge gaps left by the failures of the formal market, which does not serve anyone but a wealthy minority, and by governments’ almost complete retreat from housing provision. According to UN figures, between 30 and 70% of the urban dwellers live in ‘irregular’ settlements and up to 85% of the new housing stock is produced in an extralegal manner, with severe social and environmental consequences. Not only newcomers and the urban poor, but also teachers, office clerks, and other regular workers have no choice but to stay in

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overcrowded, underserviced, smelly, and noisy informal settlements. These are often in hazardous locations, and residents are exploited by slumlords and harassed or even brutally evicted by the police. The UN's Millennium Development Goal of ''significant improvement in the lives of 100 million slum dwellers by 2020'' is an ambitious one, and even in the case of success, an 'increase' in the number of residents of unimproved slums by 400 million to then 1.4 billion can hardly be considered progress(Berner,2012,56).

B. Sustainable Development

In 1987, the Bruntland Commission published its report, Our Common Future, in an effort to link the issues of economic development and environmental stability. In doing so, this report provided the oft-cited definition of sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations General Assembly, 1987, p. 43). Albeit somewhat vague, this concept of sustainable development aims to maintain economic advancement and progress while protecting the long-term value of the environment; it "provides a framework for the integration of environment policies and development strategies" (United Nations General Assembly, 1987).

Although many definitions abound, the most often used definition of sustainable development is that proposed by the Brundtland Commission (Cerin, 2006; Dernbach J. C., 1998; Dernbach J. C., 2003; Stoddart, 2011). This broad definition, which will be used in this dissertation, does not limit the scope of sustainability. The explanation does, however, touch on the importance of intergenerational equity. This concept of conserving resources for future generations is one of the major features that distinguish sustainable development policy from traditional environmental policy, which also seeks to internalize the externalities of environmental degradation. The overall goal of sustainable development (SD) is the long-term stability of the economy and environment; this is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision making process(Emas,2015,2).

III. THREE PILLAR BASIC MODEL

This is one of the most well-known models created using the three dimensions -Economy, Environment and Society. The diagram shows three interlocking circles with the triangle of environmental (conservation), economic (growth), and social (equity) dimensions. Sustainable Development is modelled on these three pillars. This model is called 'three pillars' or 'three circles model'. It is based considering the society, but does not explicitly take into account 'human quality of life'(Centre for Environment Education,2007,12).

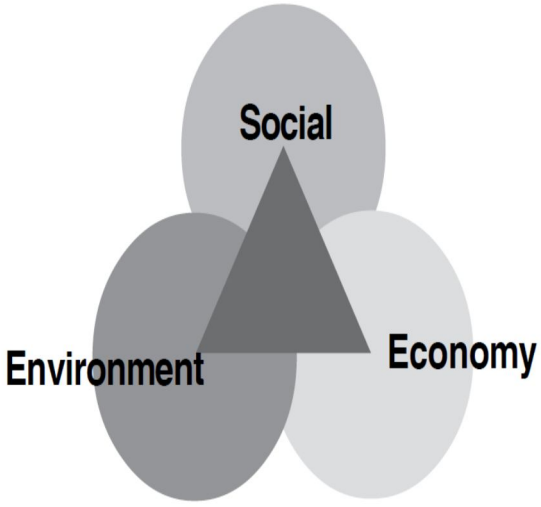

Figure 1: Dimension of Sustainability (Centre for Environment Education, 2007, 12)

Based on what is said, sustainable development will be able to use as the conceptual framework for analysis of squatter settlement stability.

C. Iranian illegal settlements Background

The influx into the towns and especially metropolises –particularly after the land reform program in 1963– is mostly to refer to the very and varying wide gap between the rural and the urban areas that persisted for many years. This in turn left to an inequity in employment opportunities, high differences between income levels, infrastructures like access to energy, communications, education, health, entertainment, power and other social and welfare services. According to statistics bureau of Iran, in 1996 61.31% of the population lived in 614 urban centers-some 36 million (www. sci.org.ir). By the 2020 is estimated the urban population of Iran will rise to 80% (zanjani, 1992:55).

In the recent years, one of the most important challenges of Iranian cities is the poor settlements and also the inappropriate quality of life in these settlements. These settlements are the place of poor dwellers and formed of large areas in the different parts of the cities. in fact, the poor settlement(and types like informal, squatters and etc) regenerate poverty and deprivation, therefore decision maker in Iran should try to promote and organize them(naghdi and sadeghi, 2008,228).

In Iran for the first time, informal settlements were formed after World War II. peak growth of this kind of settlements relates to mid-decade 1340(1962) (javan, 2005: 55), which can be a function of two exogenous process (Iran's full integration into the global economy, the dominant model of capitalist development and use of core-periphery model in the formulation and implementation of five development plans, modernism) and endogenous (national development plans, and consequently territorial terms unequal distribution of income and employment opportunities) . In addition, "the role of urban manager and urban planners in the past few decades in the bringing a lot of low-income person to informal settlements is completely clear (Ali Abadi, 1381: 5). Also ignoring of low-income groups in the planning organization and did not indicate them any policy (as goal group) caused cities be benefited from government and Municipality Capacities and absorb a lot of resources (Rahnema, 2012: 44).

The process of the population displacement along with Growth pole formation in the big cities, especially in the city of Tehran as the capital city has a bigger portion. The formation of settlement that grew up outside of formal planning and controls the informal market, and with the efforts of people, mostly was poor. this process with increasing the share of service activities of the economy country is developed. the sudden growth(economy growth) in the late 50s and 60s (equal 1970s -1980s) confirm this relationship.

based on Official reports state in 2001 , 12.5 percent of the country population lives (over 20% of urban population of Iran) in the informal settlements. 520 thousand kilometers of urban lands in the 77 cities has a population size equal 6 million people have shaped the area of informal settlements in the country. Recently 27% of the population in Mashhad, 20% of the population of Tabriz, 27% of the population of Ahvaz, 36% of the population of Zahedan, 39% of the population of Kermanshah, 28% of the populations of Orumieh have settled in informal settlements.

IV. METHODS

This study adopts a qualitative research methodology. It anticipates two stages. The exploratory study was adopted during the first stage which is confined to the library-based research. The second stage embarks on field work of interviewing and observing the settlers in their natural settings and fill out questionnaire among settlers. Thus, the survey performed within the scope of the study was applied to houses located in that section of sample neighborhood that was excluded from development plans. The neighborhoods selected for the research was Hesar, 1 district of the city of Karaj, Alborz province, Iran. We could not attain exact statistic of the population of Hesar neighborhood, therefore we were choose 120 as a sample size. Therefore 120 questionnaires were filled out between squatters. The survey was performed in August 2016. We were used statistical analysis Test (One-Sample t-Test in spss software 18) for analysis our findings.

A. Determination of the study area

According to the last public census in Iran, Alborz Province has had the population size of 2412513. city of Karaj as the capital of Alborz Province Hosting a population around 1.615 million, as recorded in the 2011 census, it is the fourth-largest city in Iran(census center of Iran, 2011).Hesar neighborhoods(as the one of the informal settlement of city of karaj) locate at the east part of the beltway of the city of Karaj along Karaj-Bayfan- chaloose road. This neighborhood located out of Karaj boundary city. Hesar is formed as a marginal(and informal) settlement. Hasar has a population size of 12000. The texture of this areas disorder. The poor population was settled in this area since 40 years ago. The majority of settlers in this area have a rural Originality(pardaraz engineer consulting, 2007).

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Figure 2: Case study area

V. RESULTS

Totally we were used 3 indexes, 14 sub-indexes and 52 items for analysis of living situation (stability) in the Hesar informal settlement.

Table 1: Indexes, sub-indexes and items

Index	Sub-Index	Items(Question)
Social sustainability	Education	4
	Hygiene	4
	Entertainment	3
	Consumption	3
	Safety-Security	3
	Place Dependence	3
	Participation	4
Economic sustainability	Employment	3
	Housing	5
	Infrastructure	4
	Transportation	4
Environmental sustainability	Contamination	6
	Landscape	3
	Green spaces	3

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A. Indexes

We have 3 indexes that every one of them consists of some sub-indexes and some items. Social sustainability as the first Index consist of 7 sub-indexes and 24 Items(Question). Indeed, we have tried to notice to all of the aspects of social matters that make a society sustainable. Based on Likert scale, (five options) the score of social sustainability (in this Neighborhood) is 2.2075 , that means social matters in our case study is not in a good opportunity.

The second Index that we have is Economic sustainability. This index consists of 4 sub-indexes and 16 Items(Question). Sub-indexes of this index are Employment, Housing, Infrastructure, Transportation. The average of the score of Economic sustainability is 1.8242. this score stay between very bad and bad situation (based on Likert scale).

The third Index that we have is Environmental sustainability . This index consists of 3 sub-indexes and 12 Items (Question). Sub-indexes of this index are Contamination, Landscape, Green spaces. The average score of environmental sustainability is 1.659. This score is the lowest one, among all indexes.

Table 2: Descriptive Statistics of Indexes

Descriptive Statistics					
Index		Minimum	Maximum	Mean	Std. Deviation
Social sustainability	20	1.75	3	2.2075	0.24475
Economic sustainability	20	1.4	2.25	1.8242	0.1715
Environmental sustainability	20	1.25	2.25	1.659	0.21768
Valid N (listwise)	20				

We can compare means score of indexes in the below chart. As we can see , all of the three indexes get a score lower than average (3). The best score between three indexes relates to Social sustainability, Economic sustainability gets the second score and finally, Environmental sustainability has the third score.

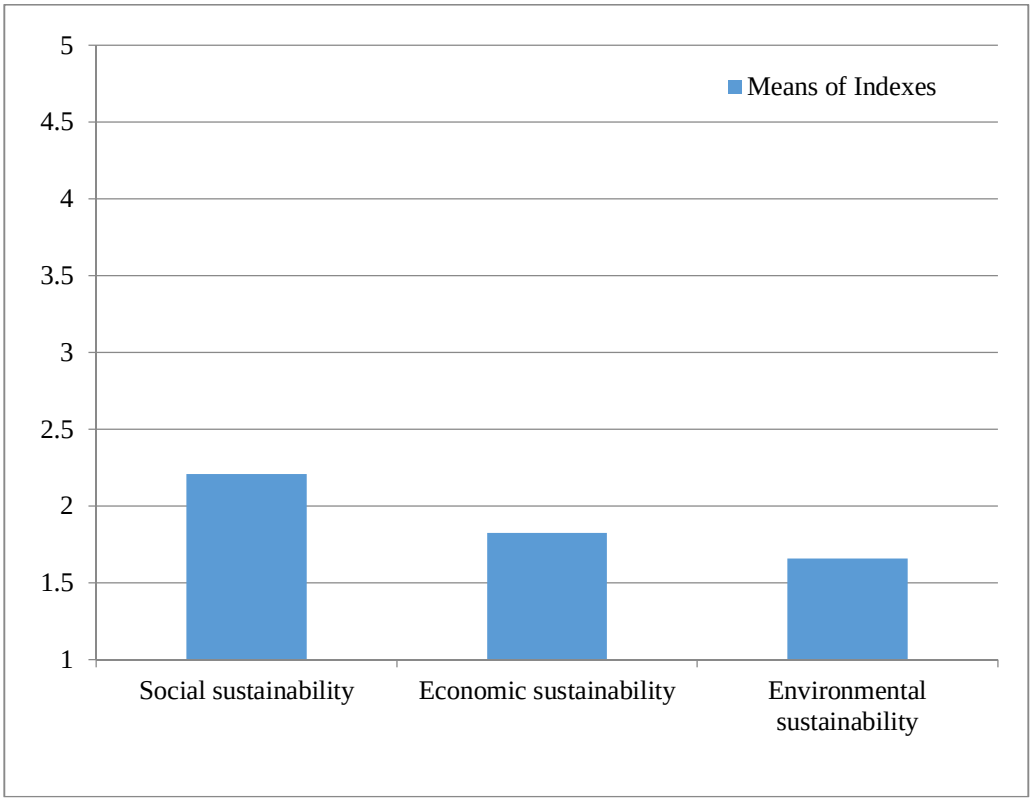

Figure 3: Means Scores of Indexes

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Figure 4: structure and environmental qualities of Hesar neighborhood (Source: Tasnim agency: http://www.tasnimnews.com/fa/media)

1) *Sub-indexes*

a) *Social sustainability Sub-indexes:* We have here 14 sub-indexes that consist of 52 items. We have present all of sub-indexes situation(base on mean score). At first we have 7 sub-indexes relate to Social sustainability. The best score of this sub-indexes is Place Dependence(2.8583) and second one is Education(2.2271), third one is Entertainment(2.7194), forth one is Hygiene(2.1083), fifth one is Participation(1.9417), sixth one is Consumption(Commodity and services)(1.7667) and finally the most lost sub-indexes is Safety-Security(1.4167).

b) *Economic sustainability Sub-indexes:* Economic sustainability Sub-indexes as the second groups of sub-indexes has four group. The best situation of this sub-indexes relate to Employment that has 2.0042 mean score. Second sub-index is Transportation that get 1.8792 score mean. Third sub-index is Infrastructure that has 1.875 as mean score. Forth sub-index is Housing that get 1.63 mean score. Therefore housing has worse situation between Economic sustainability Sub-indexes.

c) *Environmental sustainability Sub-indexes:* Environmental sustainability Sub-indexes as the second groups of sub-indexes has three group. All of scores of this group is below 2(based on likert scale means very bad situation). The first sub-index in this group is Green spaces(1.8556). second one is Landscape(quality of landscape)(1.6) and finally is Contamination(1.5903). in fact environmental situation of Hesar informal settlement is the worst challenge of this squatter.

Table 3: Descriptive Statistics of Indexes and Sub-indexes

Descriptive Statistics						
Index	Sub-Index		Minimum	Maximum	Mean	Std. Deviation
Social sustainability	Education	20	1	3.5	2.2271	0.66579
	Hygiene	20	1	3.75	2.1083	0.59474
	Entertainment	20	1	5	2.7194	0.88561

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	Consumption	20	1	2.67	1.7667	0.38796
	Safety-Security	20	1	2	1.4167	0.32981
	Place Dependence	20	1	4.67	2.8583	0.64916
	Participation	20	1	3	1.9417	0.55788
Economic sustainability	Employment	20	1	2.75	2.0042	0.3273
	Housing	20	1	2.4	1.63	0.29975
	Infrastructure	20	1	3	1.875	0.46064
	Transportation	20	1	3	1.8792	0.43481
Environmental sustainability	Contamination	20	1	2.17	1.5903	0.24815
	Landscape	20	1	2.67	1.6	0.36566
	Green spaces	20	1	3	1.8556	0.48648
	Valid N (listwise)	20				

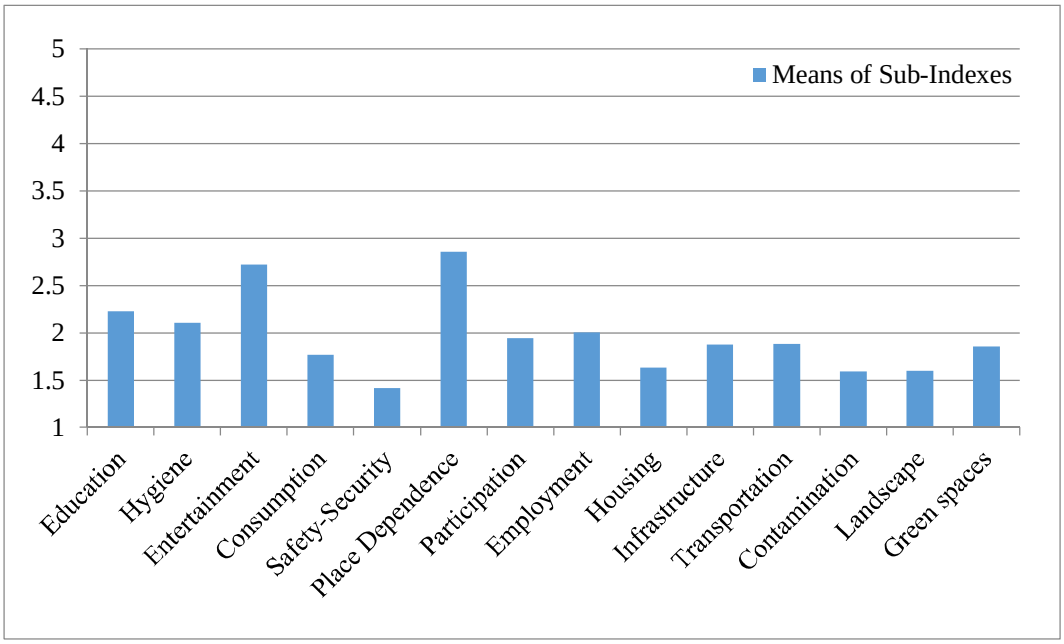

Figure 5: Means scores of Sub-indexes

B. One Sample T Test

The One Sample t Test determines whether the sample mean is statistically different from a known or hypothesized population mean. The One Sample t Test is a parametric test.

Two sections (boxes) appear in the output: One-Sample Statistics and One-Sample Test. The first section, One-Sample Statistics,

provides basic information about the selected variable, sustainability, including the valid (none-missing) sample size (n), mean, standard deviation, and standard error. In our case study, the means of sustainability score is 2.2075, 1.8242, 1.659(based on Likert scale) which is based on 120 none-missing observations.

Table 4: One-Sample Statistics-1

One-Sample Statistics				
Index		ean	Std. Deviation	Std. Error Mean
Social sustainability	20	.2075	0.24475	0.02234
Economic sustainability	20	.8242	0.1715	0.01566
Environmental sustainability	20	.659	0.21768	0.01987

The second section, One-Sample Test, displays the results most relevant to the One Sample t Test.
Hypothesis of this study: sustainable development was not attained in our case study. Therefore we were chose 3 as average score of sustainability. Based on our findings:

Table 5: One-Sample Statistics-2

One-Sample Test						
	Test Value = 3					
					95% Confidence Interval of the Difference	
Index	t	f	Sig. (2-tailed)	Mean Difference	Lower	Upper
Social sustainability	-35.471	19	0	-0.7925	-0.8367	-0.7483
Economic sustainability	-75.107	19	0	-1.17583	-1.2068	-1.1448
Environmental sustainability	-67.482	19	0	-1.34097	-1.3803	-1.3016

Since $p < 0.001$, we reject the null hypothesis that the sample mean is equal to the hypothesized population mean(sustainability score equal 3) and conclude that the mean sustainable development score of the case study is significantly different than the average sustainable development of the overall (in all sorts : Social sustainability, Economic sustainability, Environmental sustainability).Based on the results, we can state the following:
There is a significant difference in mean sustainability between the sample and the overall population. for three indexes of sustainability null hypothesis was rejected because p-value amount lowers than 0.001 ($p < .001$).
Finally, we can claim sustainable development situation in our case study(Hesar informal settlement) is not attained and This area has an unstable situation in the all of the social, economic and environmental dimensions. Also the lowest amount of Mean Difference(-1.34097) linked to Environmental sustainability. Therefore this index has a must unstable situation among other Indexes of sustainability.

VI. DISCUTION AND CONCLUSION

Based on the results of the analysis, three main factors of sustainability (social sustainability, economic sustainability, and environmental sustainability) in the Hesar informal settlement have had Adverse conditions. Between these three factors, environmental sustainability is the worst and most adverse conditions into account. In fact, improving environmental quality can be the first priority of any change to improve the study area to be considered. After environmental sustainable, economic sustainability has the bad situation and has the second priority to improving. The third priority is social sustainability. Although this factor among other factors (environmental sustainability and economic sustainability) has the better situation , but still has not ideal conditions

(means of 2.2 of 5 points Likert scale is earned).

As mentioned earlier, each of the three factors consisting of several sub-criteria. Among environmental sustainability sub-indexes , environmental pollution and visual qualities (landscapes) have the lowest rating and ranked. therefore they are The most important cases for Rehabilitation(for environmental sustainability index) . The third group is social sustainability. Safety - security as a sub-index of social sustainability has the lowest scores among all sub-indexes. This confirms the safety and security crisis in the informal district of the study that should be explored further and deeper analysis. After the safety-security , consuming goods, health and education have to get the lowest scores. Therefore Rehabilitation actions for these cases have priority.

Results of this study showed that none of the qualities of sustainable development in the neighborhood of Hesar (as the case study) Not desirable. Also, residents are faced with serious crises in various aspects which mentioned. In fact, this situation is an outcome of lack of planning and urban management. Improving the situation only with the comprehensive management and take care of the dimensions of sustainable development is possible.

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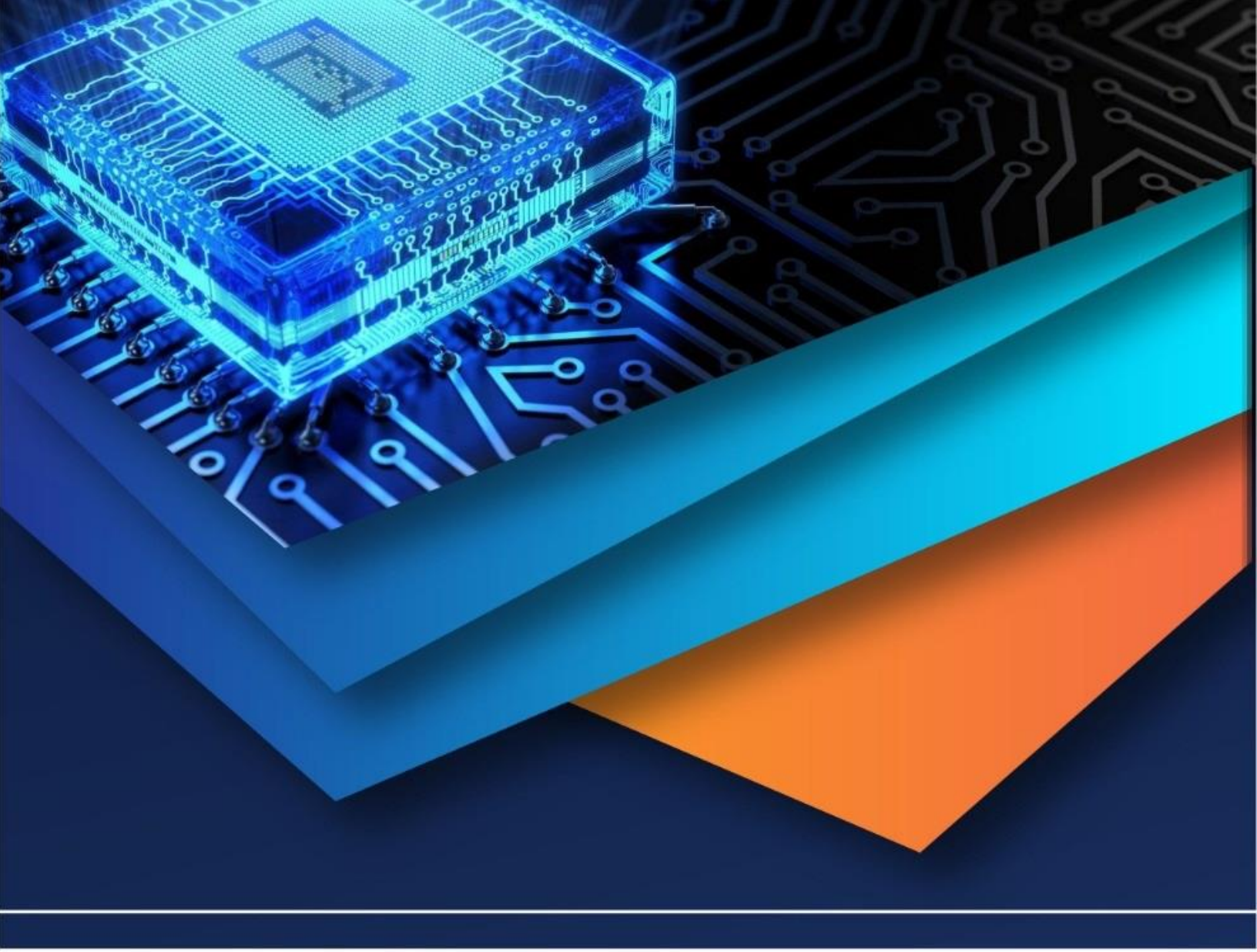

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