iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** VIII **Month of publication:** August 2020

DOI: https://doi.org/10.22214/ijraset.2020.31065

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue VIII Aug 2020- Available at www.ijraset.com

A Study on Effectiveness of 5s Technology Implement in Best pumps Private Limited Coimbatore

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Abstract: ***This study mainly focuses in implementing 5S technology. 5sis a systematic Japanese technology namely the five basic elements of 5s are Seiri (Sorting and Prioritizing), Seiton (Set in order), Seiso (Shining), Seiketsu (Standardize), Shitsuke (Self Discipline).Which is implemented in an organization to increase the productivity, performance level, minimizing the wastage produced in an organization and improving the total quality of products and services. And its main task is to create an highly efficient and clean environment in an organization. The study also analysis the 5s standard implemented in an organization and the effectiveness to increase the overall productivity and quality of products. It also involves Measuring the organizational factors that influences the effectiveness of 5s audit. And also identifying the factor affecting the job performance.***
Keywords: 5s, Job performance, Total quality Management,

I. INTRODUCTION

The 5s technology came from Japan it is a collection of 5simple rules and same time it is a tool that allows you to control the workplace visually.

Its comes under five basic Japanese name Seiri, Seiton, Seiso, Seiketsu, Shitsuke. This are all the five steps which is implemented in an organization to control and reduce the waste of product. Better way to supply a product regular and without reducing the quality of product to the customer.

A. Seiri

In an organization Seiri is process of removing the unnecessary item if not needed in the workplace. Storing is an important technique to transform cluttered workplace layout into an effective area. In industry if an item is not needed remove that thing and provide some area to place it. It may improve efficiency and safety to an organization and reduce working time.

B. Seiton

Seiton is process of keep an certain document in particular order. And allocate required space to keep the tool. An order of arrange necessary item in specified marked places it may easily and return after use. It may useful for employee working in an organization and easy to do an routine work regularly. The main benefit is the searching time will be reduce and there is no human energy waste or inventory.

Speed identification of objects can be obtained by labelling in all the area and drawing line and also outlining the highlight area.

C. Seiso

It helps to keep the place clean and neat. In an organization while end of each shift each and every machinery should cleaned as per the schedule. Using that schedule timing cleaning process will done day by day. It may create the effective environment and increases the safety of employee. Daily cleaning floor, machinery and equipment benefit to employee health condition.

D. Seiketsu

It refers employee to maintain standard of organization by keeping everything clean and orderly at all times. Standardize work practices or operation in a consistent and standardized level. Adequate cleaning tool evident to clean the organization with shiny clean and free of waste. And visualizes the set of photographs to set standards. 5s audits to drive success in an organization. Standards should be very communicative, clear and easy to understand. Its aim of assuring all the easy access, obligatory standards should be found in constant and visible places.

For Example: Book – keeping, customer service, human resources.

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E. Shitsuke

It is an implementing the idea of 5s concept of self-discipline connected with implementing and work under obeying rules not harmful to anyone and to maintain proper order follow the process and also be open to improvement. Complete related to goal-oriented process and resulting feedback is necessary in monthly bases in an organization. And it increases in awareness among the employee, decrease of errors and wastage and improvement in communication among staff and employee relations in an organization.

II. REVIEW OF LITERATURE

Shanmuganathan, S. ThiriveniSripriya, A.S.Sathishkumar(2014) has done their research on Employee option towards 5S Implementation in PGC Textiles Corporation (p) limited, Thirupur. The study is focused on various activities adopted during implementation of 5S with the contribution and support by their employees. The research is done through questionnaire method by considering major factors such as productivity, environmental performance, quality improvement and health and safety standards in the work place. The evaluation of 5S practice enables each company to identify their potential level of quality improvement and success factors for their sustainability in a competitive global market The researcher demonstrates clearly that the 5S practice is seen as an effective technique and also the full benefits of the 5S cannot be experienced in the manufacturing sector until all the obstacles associated with implementation of the technique are recognized and understood fully.

Ravi Chourasia, Dr. ArcharaNema (2016) has reviewed the implementation of 5S methodology in the service sector and it is concluded that efficient use of 5S in an organization provides a safe environment. Optimal utilization of space and leads to improved quality.

The researchers that various service industries such as hospitals, hotels, banks and higher education have utilized the principles and tools of loan to increase their competitiveness. The study reveals that 5S technology reduces the service time and increase customer satisfaction and also helps to increase the coordination between employees and improvement of staff productivity. The 5S describes now items are stored and how the new order is maintained. The 5S methodology provides a basis to create an organizational culture and start working with continuous improvement criteria. The study has also reviewed that the success of the 5S program can be attributed to the strong cooperation and active involvement of all staff members of the organization.

Richa Sharma, Jagtar Singh (2015) has studied the "Impact of implementing Japanese 5S practices on total productive maintenance. 5S technique helps to organize a work place for efficiency and decrease wasting and optimize quality and productivity via monitoring an organized environment . 5S execution is an essential prerequisite of implementation of Total Productive Maintenance. This study explicate the relation between 5S and pillars of TPM.

5S is an effective total which strongly supports the objectives of TPM implemented organization to achieve continuous improvement and higher performance. The study also demonstrates that there are obstacles in the effective implementation of the 5S in TPM implemented industries the most significant barriers identified are related to lack of communication and gap between the top management and shop floor employees and also the lack of training and consciousness will influence the poor results in managing the resources. The researchers concludes in this study that all 5S principles affects TPM directly or indirectly.

ShekharSahu, Lakhanpatidar, Pradeep kumarSoni (2015) done an analysis on "5S Transfusion to Overall Equipment Effectiveness (OEE) for enhancing manufacturing productivity ". Integrated concept is used in this study with an objective to create a systematic, clean and tidy workplace and improve overall equipment effectiveness, quality, Employees satisfaction so that manufacturing productivity of increasing can be improved. The researchers contributed to identify the relationship among 5S, OEE and manufacturing productivity as a conceptual model. This model will help industry to have better model understanding on the relationship between three techniques and step by step implementation to improve manufacturing productivity. The researchers used three hypotheses regarding the relation among 5S, overall equipment effectiveness and manufacturing productivity. Also researchers expect this study as a seed to investigator for successful implementation of OEE in large as well as small industries.

III. OBJECTIVE OF THE STUDY

A. Data Sources

1) Primary Objective: To Evaluate the effectiveness of 5s technology implemented in Enbest pumps private limited.

2) Secondary Objective

a) To identify the benefits gained by implementing 5s technology

b) To define and study the nature of 5s technology.

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IV. RESEARCH METHODOLOGY

The Research Methodology is a way to solve a research problem systematically it Is a science of studying how research is done scientifically. It is the procedure by whichthe researcher go about their work of describing evaluating and predicting phenomenon. It aims to give the work plan of research. Research methodology marks but the technique used for the study. Which includes source and method of a date collection and tool used for analysis.

This chapter describe the details of methodology which has been applied to known the effectiveness of 5s technology implementation in Besten pumps.

The research process consists of the number of selected steps, which are essentially independent. The collection of facts and information will be followed by processing using scientific technique and tools to survive at a reasonable conclusion. The research design used in the study in descriptive in nature.

A. Research Design

A research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. In fact the research design in the conceptual structure with in which research in conducted. There are many research design and this research is based on descriptive research design.

A descriptive research design has been undertaken in order to ascertain and be able to descriptive the effectiveness of 5s technology implemented in Enbest Pumps Private Limited.

B. Data Sources

1) *Primary Data:* Primary data are those which are collected a fresh and for the first time and thus happen to be original in character. Primary data can be collected after either through experiment or though survey.
2) *Secondary Data:* The Secondary data on the other hand are those which have already been collected by someone else and which have already been passed through the statistical process. The secondary data was collected through company profile, website and other databases of the company.

C. Population, Sample Unit, Sample Size

There are over 850 people are in Enbest Pumps (India) Private Limited. The data has been collected by the researcher from the employee working in Enbest pumps Private Limited. Sample Size mean the number of individual taken for the observations used in the survey or experiment. The sample size selected was 120.

D. Tools For Data Analysis.

An interview schedule was the main tool used to collect the primary data from the selected sample respondents.

Simple percentage method was used to analyze the data collected through interview schedule.

V. DATA ANALYSIS AND INTERPRETATION

A. Descriptive Statistics

This chapter deals with the descriptive and statistical analysis of the primary data collected from the customer who visited apparel retail store. The hypotheses drawn by the researcher are confirmed with the support of statistical tools and results are inferred.

Percentage analysis is a simple statistical instrument which is widely used in analysis and interpretation of primary data. It deals with the number of Respondents' reply to a questionnaire in percentage attained from the total population nominated for the study. It is one of the simple forms of analysis which helps the researcher to realize the outcome of the research.

Demographic Profile		Count	Column N %
Age	Below 25	17	14.2%
	26-35	32	26.0%
	36-45	33	27.0%
	46-55	23	19.2%
	Above 56	16	13.3%
Gender	Male	84	70.0%
	Female	35	29.2%
Marital	Yes	100	83.3%

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Status	No	20	16.7%
Year of Experience	Below 1 Year	8	6.7%
	2-5 year	25	20.8%
	6-10 year	32	26.7%
	11-15 year	24	20.0%
	Above 15 year	31	25.8%
Monthly Income	Below 10000	10	8.3%
	11000-15000	24	20.0%
	16000-25000	31	25.8%
	21000-25000	24	20.0%
	Above 25000	31	25.8%

Table 4.1 Shows that, 27.0% of the respondents belongs to be age group between 26-35 years and 36-45 year 13.3% of the respondents belongs to the age group 55. Shows that 70.8% of the respondents are male and 29.2% of the respondents are female. 27% of the respondents have experience of 6-7 years, 26% of the respondents have experience above 15 year, 21% of the respondents have experience of 11-15 years, 6% of there have experience below 1 year. 26% of the respondents belongs to monthly income of 16000-20000 and above 25000, 20% of the respondents belongs to monthly income of 11000-15000 and 10000-25000 8% of them belongs to below 10000. 48% of the respondents agree, 37% of the respondents are very good, 14% of the respondents are Average and 1% of the respondents bad that the floor are is free from unwanted item.

B. Simple Percentage Analysis

First 'S' Seiri	VB %	B %	A %	G %	VG %	X	∑
The floor area is free from unwanted items?	%	17 0.8 %	57 47.5 %	45 47.5 %	45 37.5 %	4.00	.71
Tops and insides of all cupboards, shelves, tables, etc. free from unwanted items?	2 1.7 %	5 4.2 %	19 15.8 %	53 44.2 %	41 34.2 %	4.00	.91
All the items stored according to frequency of use?	0 0.0 %	1 0.8 %	11 9.2 %	64 53.3 %	44 36.7 %	4.00	.65
All the walls are free from old posters, calendars, notices, etc.?	0 0.0 %	2 1.7 %	11 9.2 %	55 45.8 %	52 43.3 %	4.00	.71
General clutter free appearance.	1 0.8 %	3 2.5 %	9 7.5 %	57 47.5 %	50 41.7 %	4.00	.71
Unused machines or other equipment around is removed.	1 0.8 %	2 1.7 %	20 16.7 %	48 40.0 %	49 40.8 %	4.00	.83
Obvious items have been marked as unnecessary.	0 0.0 %	2 1.7 %	34 28.3 %	46 38.3\ %	38 31.7 %	4.00	.82

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1) *Inference:* Table 4.2 Shows that, 47.5% of the respondents says good , 37.5% of the respondents are very good, 14.2% of the respondents are Average and 0.8% of the respondents bad that the floor are is free from unwanted items. 34.2% of the respondents are very good, 15.8% of the respondent are average, 0.8% of the respondents are bad and none of the respondents are very bad that tops and insides of all cupboards, shelves, tables are free from unwanted items. 53.3% of the respondents says good, 36.7% of the respondents are very good, 9% of them are told average, 0.8% of them bad and none of them are very bad in condition that all the items are stored according to the frequency of use. 46% of the respondents are says very good in condition, 44% of the respondents says good, 9% of them are average, 1% of them are bad and none of them very bad that all the walls are free from old posters, calendars, pictures and notices. 47% of the respondents were says good, 42% of the respondents says very good in condition, 7% of them are says average, 3% of them says bad and 1% of them told very bad in condition that general cuttler free is appeared. 41% of the respondents told very good in condition,40% of the respondents are says good, 17% of the respondents are average, 1% of them bad and 1% of them are very bad in condition that was unused machine or other equipment around are removed. 38% of the respondents are good, 32% of the respondents were says very good in condition, 28% of them are average, 2% of them says bad in condition and none of them says very bad in condition that items marked as unnecessary is obvious.

C. *CHI Square Test for Storage of Materials According to Frequency of Use and General Clutters Free Appearance.*

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.798[a]	12	.029
Likelihood Ratio	16.485	12	.170
Linear-by-Linear Association	.098	1	.754
N of Valid Cases	120		

1) *Inference:* Since the calculated value (P) is less than the level of significance (5%), we reject null hypothesis and accept alternative hypothesis. Hence it is inferred that there is a significant relationship between storage of material according to frequency of use and general clutter free appearance.

D. *Correlation Between Standardization of 5S and Regular Inspect of 5S.*

Correlations			
		Are all 5 S procedures standardized.	Standard check lists used to regularly inspect 5 S.
Are all 5 S procedures standardized	Pearson Correlation	1	.228*
	Sig. (2-tailed)		.012
	N	120	120
Standard check lists used to regularly inspect 5 S.	Pearson Correlation	.228*	1
	Sig. (2-tailed)	.012	Sig. (2-tailed)
	N	120	120

1) *Inference:* Since the calculated value (P) is less than the level of significance, we reject null hypothesis and accept alternative hypothesis. Hence it is inferred that there is a inter connection between standardization of 5s procedures and regular impact of 5s.

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E. Regression

Display of Machines and Tools Cleaning Schedule & Display of Regular Cleaning Schedules

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.460	1	1.460	3.956	.049[b]
	Residual	43.532	118	.369		
	Total	44.992	119			
a. Dependent Variable: Cleanliness and maintenance schedules of Machines, equipment, tools, furniture maintained at a high level of displayed?						
b. Predictors: (Constant), Cleaning schedules are available and displayed?						

1) *Inference:* Since the calculated value (P) is less than the level of significance (5%), we reject null hypothesis and accept alternative hypothesis. Hence it is inferred that there is a impact between display of machines & tools cleaning schedule and display of regular cleaning schedules.

F. Weighted Average

Rank	VG	G	A	B	VB	Total	Weighted Average
2	5.513308	3.878327	0.570342	0.038023	0	526	4.383
3	5.029014	4.255319	0.638298	0.077369	0	517	4.308
4	5.339806	3.495146	1.165049	0	0	515	4.291

Overall opinion of the factor: Statistically Average

Inference: The above table shows that the weighted score overall total for rank 2 is 526 in that 5.5% of the respondents says very good opinion, 3.8% of them says good, 0.5% of the respondents says average opinion and none of the respondents says bad or very bad opinion and 4.38 is an overall weighted average for rank 2.

VI. FINDING OF THE STUDY

A. Percentage Analysis

1) It was found that 27% of the respondents belong to the age group of 26-45
2) It was found that most 71% of the respondents of Enbest pumps private limited are male
3) 84% of the respondents working in Enbest pumps private limited are married
4) 27% of the respondents have work experience of 6-10 years
5) It was found that 26% of the respondent monthly income is Between 16000-20000 and above 25000.
6) 48% of the respondents says good that the floor area is free from unwanted items.
7) 44% of the respondents says good that all cupboards, helves, table are free from unwanted items
8) It was found that 53% of the respondents says good that items are stored according to the frequency of use.
9) 46% of the respondents says very good in conditions of walls are free from old posters, calendars pictures.
10) 47% of the respondents says good opinion that general cultter free is appeared in organization.
11) It has found that 41% of the respondents were told very good opinion that the unused machines or other equipment around them are removed.
12) 38% of the respondents says Good that the item that has been marked as unnecessary is obvious.
13) Most 46% of the respondents says good that direction indicators are available to facilitate from the entrance onwards.
14) It was found that 43% of the respondents says very good opinion that items of equipment have identification labels
15) Above 55% of the respondents says good that all rooms, cubicles and similar areas are clearly numbered for easy identification.
16) Most 53% of the respondents says Good that specific areas have been demarcated for garbage or rejected items.
17) 46% of the respondents says Good that all switches, fans, regulators, control are labels for easy accessibility.
18) 48% of the respondents says good opinion that the color coding method is used effectively for easy identification

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19) Mostly 41% of the respondents says good opinion that the general orderliness of the materials is appeared respectively.
20) 39% of the respondents says very Good and that the documents are identified without delay as it arranged by SEITON technique.
21) Most 45% of the respondents says very good that the schedules for cleaning is available and displayed.
22) Most of the respondents (45%) says very good that the floor, walls are maintained at a high level of cleanliness
23) Only 47% of the respondents says very Good opinion that the cleanliness and maintenance schedules of machines, equipment are displayed.
24) About 48% of the respondents says very Good that general cleanliness is appeared
25) It was found that 41% of the respondents says good opinion that adequate were use of cleaning tools are evident.
26) 46% of the respondents says Good that the floors of their surroundings are kept shiny clean and free of waste, water, oil.
27) It is found 85% of the respondents says good that there is a person for overseeingthe cleaning operation.
28) Most 47% of the respondents are saysgood that all the 5S procedures are standardized in the organization for its effective functioning.
29) Almost 53% of the respondents says Good that standard checklist are followed regularly to inspect 5s for its updating.
30) It was inferred that 52% of the respondents says good that the labels, notices of besten pumps are standardized
31) It was found that 47% of the respondents says Good that the isles/gangways have a standard size and color.
32) It was found that 47% of the respondents says Good that pipes are cable used for the manufacturing process are color coded.
33) Most 44% of the respondents says very good opinion that the standard procedures are documented clearly and used actively as per SEIKETSU technique.
34) 42% of the respondents says good opinion that the besten pumps organization has a system for how and where the 5s activities will be implemented.
35) About 48% of the respondents says very good opinion that management provides support to 5s programme by recognition, resources, and leadership.
36) It was found that 45% of the respondents says very good opinion that the first 3S of has become a part of the daily work in the organization.
37) Mostly 92% of the respondents says good that the employee of besten pumps private limited shows positive interest in 5s activities.
38) Only 45% of the respondents says very good opinion that the 5s posters and 5s points of work reminders are displayed all over the organization.
39) 46% of the respondents says very Good that activity board is updated and reviewed regularly
40) Whereas 37% of them says good and none of them says bad that updating of activity board.

B. Suggestion

From this research, it is suggested that the organization have to install a mechanism for evaluating the performance of the 5S initiatives among various teams and departments.

The organization has to be aware with the factors that influence the employee's active involvement in 5S programme.

VII. CONCLUSION

5S techniques can be applied in any organization as it is simple and easy recognition. The Frist S makes assure that unwanted items are eliminated and reduce the searching time. It increases the space utilization and improve working environment. Second S result the easy way of storage and retrieval of the items. Third S helps the environment to be clean, safe and makes good impression for the visitors. Forth S gives the better workplace standards and visual control systems. Fifth S gives the achievement in development of team spirit and discipline. From this research it is revealed that 5S implementation is very useful, beneficial and applicable. According to the result from this research, performed in Beaten Pumps Private Limited, it is concluded that the implementation of 5S technique is very effective and also improves the quality, efficiency and productivity of the organization.

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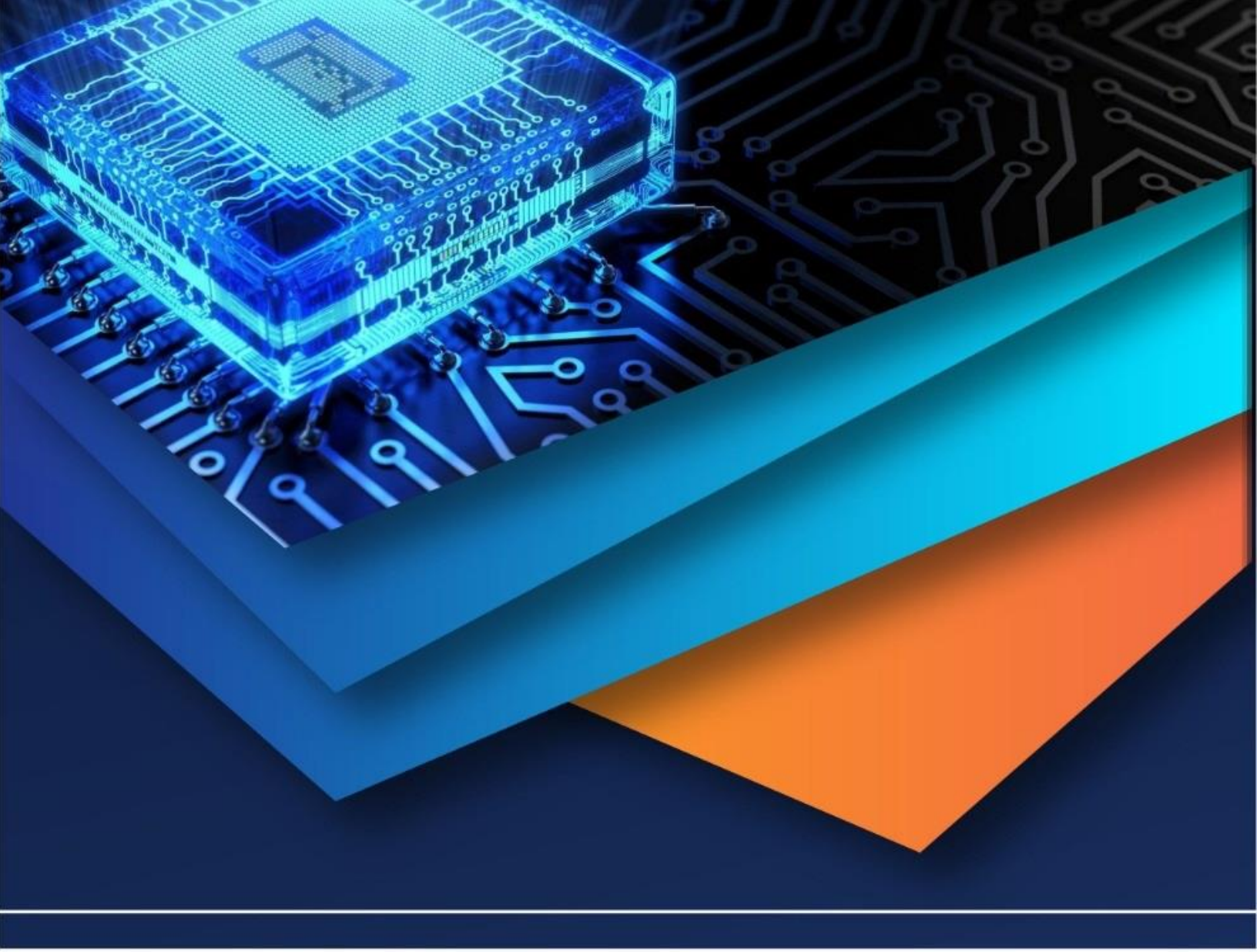

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