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Impact of Online Purchase of Food Items on Diet Pattern of Adults between 25-35 Years of Age in Central Mumbai

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Abstract: ***In the context of online purchasing of Grocery and other food items it was observed that the major advantage was the ability to purchase things from any location at any time with convenience and reduced use of time which made it more practical than visiting stores and very easy.***
Objectives:- To know the type and quantity of food purchased online and assess the effect of online food purchasing on body composition and Body Mass Index.
Methodology:- The respondents being studied belonged to the age group of 25-35 years, the samples were selected by purposive random sampling. The number of participants were 100. Food frequency questionnaire was the tool used and The frequency of the food products that the participants purchase online and consume included categories such as groceries, frozen food, canned foods, ready to cook meals, packaged foods, chocolates and candies, desserts, jams and conserves, beverages, fast food.
Results:- It was observed from BMI (Body Mass Index) that 23% of the participants were overweight and 51% of were Pre obese indicating that their consumption of processed energy dense food was high. It was observed that more than (50%) participants preferred to Purchase food items online on a monthly basis and (28%) preferred it on a weekly basis. Thus Indicating that the participants are used to purchasing food items online and find it more convenient Than offline shopping. When BMI was correlated with the frequency of Online purchase of food items it was not significant (p-value=0.29). Also participants mostly preferred to purchase Fast food (34%) online followed by Grocery (29%) on the other hand the least purchased food item Was frozen food indicating that the consumption of Frozen food is not much. The difference in Percentage of Body Mass Index (BMI) in relation to the purchase of groceries and other food items was not significant (p-value= 0.43). It was also noted that (41%) of the participants gained weight after purchasing food items online however there was no significant relation in the BMI and weight status of the respondents.
Keywords: online purchase, Body Mass Index (BMI), Groceries, obesity, energy dense food

I. INTRODUCTION

Online shopping of food items has become a day to day act in the age group of 25-35 years. Due to perceived ease of use and the act of impulsive shopping to satisfy hunger and cravings.
Online shopping because the internet, technology, and applications were more accessible, easier, and less expensive ways to find greater variety in products than traditional shopping techniques, online shopping was a rapidly growing industry. Food purchases made online will rise at a rapid rate, parallel to the expansion of online shopping. (Hartono et.al., 2014).
It was noted that According to the technology acceptance model both Purchasing ease of use and Perceived usefulness motivates the consumers attitude of using a new technology system. In the online shopping context, consumers developed positive attitudes towards buying products online when they perceived that devices or tools connected to the internet were easy to perceive. Perceived usefulness was also important in determining attitude as the more useful consumers perceived online shopping to be the more they will favour online shopping. (Çelik et.al., 2011)
When the Intentions towards online food purchasing were studied it was reported that the study was conducted to use the theory of planned behaviour (TPB) as a framework to Explore in depth the range of beliefs held by consumers about internet shopping in general and Internet grocery shopping in particular. The usefulness of purchasing food Online which is affected through its convenience, product availability, and less time consuming, is Important among consumers when they plan to Purchase food online.

Also in the minds of Consumers, internet grocery shopping was an advantage compared with conventional grocery Shopping in terms of convenience, product range and price. Disadvantages, which acted as mental Barriers, are, for instance, the risk of receiving inferior quality groceries and the loss of the Recreational aspect of grocery shopping. (Nielsen et.al., 2005)

A. Online Purchasing Behavior

(Briesch et al., 2009) reported that in the existing literature on online shopping that one of the major advantages of online purchasing was the ability to purchase things from any location at any time, removing the distance barrier and making the Internet a viable option for purchases that would otherwise necessitate a long trip to the store. The study looked at how product assortments (variety), convenience, pricing, and featured advertising influenced customers' grocery shopping selections.

The study found that people from urban and rural areas experienced two Major advantages of shopping for groceries online. Firstly, some consumers shopped online as they needed a particular product but could not find it at an affordable price where they live. Secondly, some consumers were not affected with the price of the wanted product, but, They shopped online since the Physical distance created a barrier for the product they want (Sunil.,2015).

B. Disadvantages Of Online Food Purchasing

A few participants enjoyed going into the store and saw a disadvantage of online shopping as missing out on the joy of shopping. Many participants had reported that the disadvantage in online shopping was that there could be poor product quality if someone else is selecting the food/beverage items. When the participants were asked if they would be willing to grocery shop online again, most of them said they would do it occasionally, especially if they did not have the fee to pay for shopping online. Also, participants said that they would be more likely to use online shopping if it could save time or make shopping more convenient. (Weismiller, et.al., 2020).

C. Indian Scenario In Online Food Purchasing

It was seen that online food delivery market in India has been estimated to be valued at $7billion. Large portion of the market is occupied by Zomato and Swiggy who have a combined share of 80%. The food delivery and restaurant were at its peak. Currently, multiple food delivery Apps in the Indian market are available for download on smart phones to order food on – the – go and enjoy The comfort of their homes. However currently the most used method of payment is cash on Delivery. Consumers now are spending Lesser time in food preparation due to various factors such as increase in wages, less free time, and Work pressure, there is a huge market for online food delivery start –ups. Therefore, it was now Time to have a look at the progress and see where these opportunities take India in the online food Purchasing criteria. (Anita, et.al., 2019)

II. METHODOLOGY

The study was conducted on residents of Central Mumbai in adults aged 25-35 years inclusive of both the genders. Frequency of Online purchase of different food items was evaluated and the impact on body composition was noted.

A. Background Data

The study was conducted in Mumbai city, Maharashtra, India. Mumbai urban, being one of the largest metropolises in the world, has population with a vast variety of people who purchase different things online, food being one of them. Online purchase of food items was on a rise as the younger generation is tech savvy and online shopping is getting more popular due to its convenience. Also, due to Covid 19 pandemic as there was a nation wise lockdown imposed. Thus the purchase of processed and ultra-processed food increased which could be a risk factor for diseases such as Obesity, Diabetes, Cardiovascular diseases, metabolic syndrome etc. Therefore, taking into consideration of the above data the study was carried out between male and female adults of age 25-35 years residing in central Mumbai.

B. Sample Size And Sampling Method

100 adults within age group of 25-35 years from both Male and Female genders, various socioeconomic status (Low, Medium, High), Dietary pattern including vegetarian, non- vegetarian, ovo- vegetarian, Body Mass Index (BMI) in Central Mumbai were included. The samples were selected by purposive random sampling. The data was collected by circulating survey forms through food frequency questionnaire, some open ended questions related to dietary pattern, online purchase of food and body composition.

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C. Dietary Pattern

The Food frequency questionnaire FFQ is an advanced form of the checklist in dietary history method, and asks respondents how often and how much food they ate over a specific period. Presenting about 100 to 150 foods, this questionnaire takes 20-30 minutes to complete and can self-administered or collected via interview. This method enables the assessment of long-term dietary intakes in a relatively simple, cost-effective, and time-efficient manner. FFQs should be developed specifically for each study group and research purposes because diet may be influenced by ethnicity, culture, an individual's preference, economic status, etc. Average consumption frequency can be assessed using open-ended questions, but most FFQs collect data across nine possible responses from never to three or more times per day. (Chang Kim et.al., 2014)

The food group classification (FAO)

1) Cereals and their products
2) Pulses, seeds and nuts and their products
3) Milk and milk products
4) Fish, shellfish and their products
5) Meat and meat products
6) Vegetables and their products
7) Fruits and their products
8) Fats and oils
9) Sweets and sugars
10) Beverages
11) Composite dishes
12) Savory snacks

The frequency of the food products that the participants purchase online and consume was asked the categories include groceries, frozen food, canned foods, ready to cook meals, packaged foods, chocolates and candies, desserts, jams and conserves, beverages, fast food. On the basis of the food products purchased online we can determine the consumption of high fat, high sodium, processed and ultra-processed foods and the number of times these foods are consumed was measured.

III.RESULTS

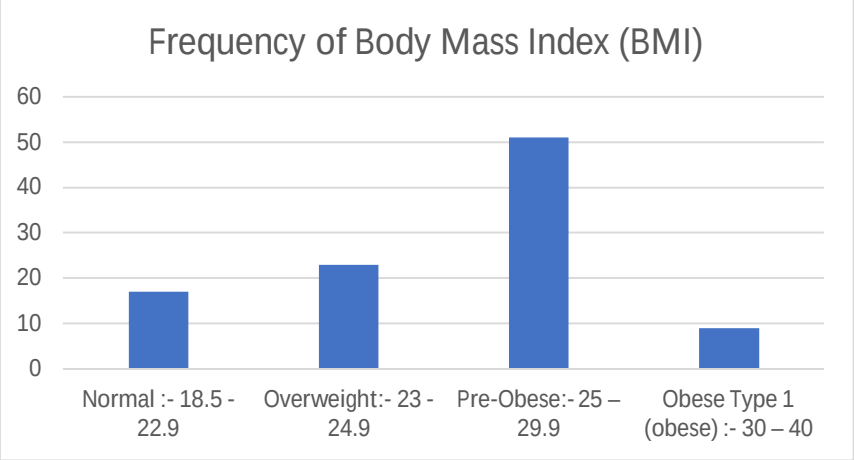

Figure:- 4.1 Frequency of Body Mass Index

From the above table and figure 4.2 of frequency of Body mass index it was observed that (51%) participants were in the Pre obese category, (23%) were Overweight and (17%) were Normal. Thus indicating that the participants were leading a sedentary lifestyle with consumption of energy dense high fat food items purchased online. Obesity and other disorders such as diabetes and metabolic syndrome would result if the participants did not adjust their eating habits and exercise regularly along with decreasing the frequency and amount of fast food purchased online.

Table:- 4.1 Mean Value of frequency of online purchase of grocery items.

Descriptive Statistics		
	N	Mean ± Std. Deviation
Bread	100	2.90 ±2.14
Milk	100	3.32 ±2.54
Milk products	100	3.02 ±2.10
Fruits	100	2.95 ±2.35
Vegetables	100	3.05 ±2.31
S_GROCERY GROCERY	100	48.61 ±29.17

In the above table 4.2 it can be seen that the mean value of food items that were purchased online on daily basis by most participants were Milk (3.2 ± 2.54), Vegetables (3.05 ± 2.311), Milk Products (3.02 ± 2.103), Fruits (2.95 ± 2.35) and Bread (2.90 ± 2.14). It has indicated that purchasing these grocery items online was more convenient to the participants than the rest of the grocery items as they are used on a day to day basis.

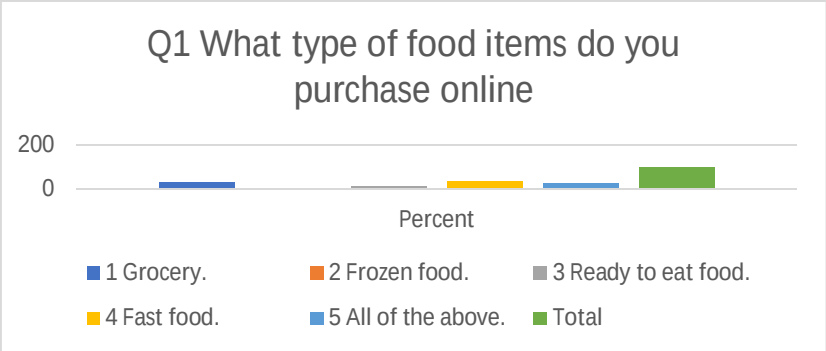

Figure:-4.2 Frequency of types of food items purchased online.

Table:- 4.2 Crosstab of BMI and types of food items purchased online.

			BMI (Body Mass Index) For Asians WHO				Total
			Normal :- 18.5 - 22.9	Overweight:- 23 - 24.9	Pre-Obese:- 25 – 29.9	Obese Type 1 (obese) :- 30 – 40	
What type of food items do you purchase online	Grocery	Count	7	5	13	4	29
		% within BMI (Body Mass Index) For Asians WHO	41.20%	21.70%	25.50%	44.40%	29.00%
	Frozen food.	Count	0	0	2	0	2
		% within BMI (Body Mass Index) For Asians WHO	0.00%	0.00%	3.90%	0.00%	2.00%
	Ready to eat food.	Count	3	1	7	0	11
		% within BMI (Body Mass Index) For Asians WHO	17.60%	4.30%	13.70%	0.00%	11.00%
	Fast food.	Count	6	9	17	2	34
		% within BMI (Body Mass Index) For Asians WHO	35.30%	39.10%	33.30%	22.20%	34.00%
	All of the above.	Count	1	8	12	3	24
		% within BMI (Body Mass Index) For Asians WHO	5.90%	34.80%	23.50%	33.30%	24.00%
Total		Count	17	23	51	9	100
		% within BMI (Body Mass Index) For Asians WHO	100.00%	100.00%	100.00%	100.00%	100.00%

From the above figure 4.2 it was observed that participants mostly preferred to purchase Fast food (34%) online followed by Grocery (29%) on the other hand the least purchased food item was frozen food indicating that the consumption of Frozen food is not much. The difference in percentage between the different BMI categories in relation to the purchase of groceries and other food items was not significant (P = .43), as shown in table 4.2

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Figure:- 4.3 Frequency of how often is food purchased online.

Table:-4.3 Crosstab of BMI and how often was food purchased online.

Crosstab							
			BMI (Body Mass Index) For Asians WHO				Total
			Normal :- 18.5 - 22.9	Overweight:- 23 - 24.9	Pre-Obese:- 25 – 29.9	Obese Type 1 (obese) :- 30 – 40	
How often do you order food online	Daily	Count	2	0	3	0	5
		% within BMI (Body Mass Index) For Asians WHO	11.80%	0.00%	5.90%	0.00%	5.00%
	Weekly	Count	3	11	11	3	28
		% within BMI (Body Mass Index) For Asians WHO	17.60%	47.80%	21.60%	33.30%	28.00%
	Monthly	Count	9	12	31	4	56
		% within BMI (Body Mass Index) For Asians WHO	52.90%	52.20%	60.80%	44.40%	56.00%
	Yearly	Count	1	0	4	1	6
		% within BMI (Body Mass Index) For Asians WHO	5.90%	0.00%	7.80%	11.10%	6.00%
	Never	Count	2	0	2	1	5
		% within BMI (Body Mass Index) For Asians WHO	11.80%	0.00%	3.90%	11.10%	5.00%

In the above figure 4.3 it was observed that more than (50%) participants preferred to purchase food items online on a monthly basis and (28%) preferred it on a weekly basis. Thus indicating that the participants are used to purchasing food items online and find it more convenient than offline shopping. In the table 4.3 when BMI was correlated with the frequency of online purchase of food items it was not significant (P = .29).

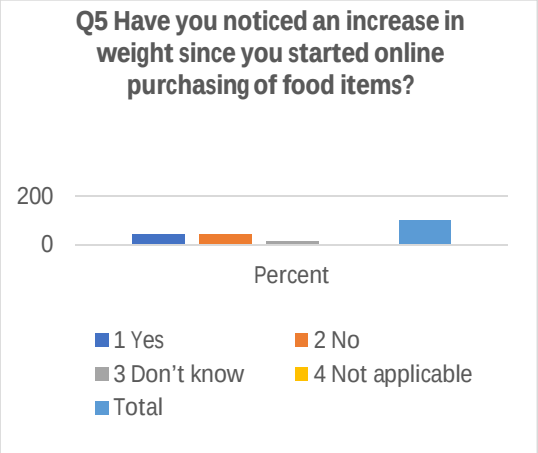

Figure:- 4.4 Change in weight status after online purchasing and consuming food items.

Table:- 4.4 Crosstab of BMI and change in weight status after purchasing food online.

Crosstab

			BMI (Body Mass Index) For Asians WHO				Total
			Normal :- 18.5 - 22.9	Overweight :- 23 - 24.9	Pre-Obese:- 25 – 29.9	Obese Type 1 (obese) :- 30 – 40	
Have you noticed an increase in weight since you started online purchasing of food items?	Yes	Count	4	10	24	3	41
		% within BMI (Body Mass Index) For Asians WHO	23.50%	43.50%	47.10%	33.30%	41.00%
	No	Count	10	7	21	5	43
		% within BMI (Body Mass Index) For Asians WHO	58.80%	30.40%	41.20%	55.60%	43.00%
	Don't know	Count	2	4	6	1	13
		% within BMI (Body Mass Index) For Asians WHO	11.80%	17.40%	11.80%	11.10%	13.00%
	Not applicable	Count	1	2	0	0	3
		% within BMI (Body Mass Index) For Asians WHO	5.90%	8.70%	0.00%	0.00%	3.00%
Total		Count	17	23	51	9	100
		% within BMI (Body Mass Index) For Asians WHO	100.00 %	100.00%	100.00 %	100.00 %	100.00 %

When question was asked on the weight changes as noted in figure 4.4 it was observed that after purchasing online food items which also included unhealthy food choice, it was noted that (41%) respondents had gained weight and (43%) participants observed no changes in the weight status. Increase in weight is a risk factor for many diseases such as diabetes, obesity, et. Knowledge in Nutrition can help with the weight status and in choosing the right food items. When the BMI of the participants was compared to the change in weight status after purchasing food online, the difference between the different categories of BMI was very small, indicating that it was not significant (P = .47) (see table 4.4).

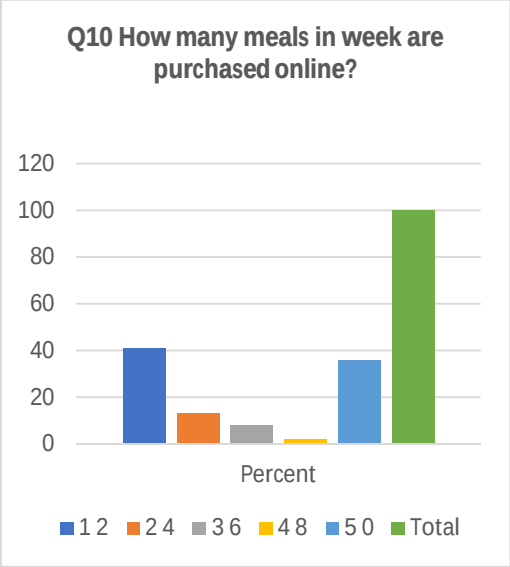

Figure:- 4.5 frequency of Number of meals purchased online in a week.

Table:- 4.46 Crosstab of BMI and the number of meals purchased online by participants.

Crosstab

			BMI (Body Mass Index) For Asians WHO				Total
			Normal :- 18.5 - 22.9	Overweight :- 23 - 24.9	Pre-Obese:- 25 – 29.9	Obese Type 1 (obese) :- 30 – 40	
How many meals in week are purchased online?	2	Count	6	9	20	6	41
		% within BMI (Body Mass Index) For Asians WHO	35.30%	39.10%	39.20%	66.70%	41.00%
	4	Count	1	5	7	0	13
		% within BMI (Body Mass Index) For Asians WHO	5.90%	21.70%	13.70%	0.00%	13.00%
	6	Count	0	2	5	1	8
		% within BMI (Body Mass Index) For Asians WHO	0.00%	8.70%	9.80%	11.10%	8.00%
	8	Count	1	0	1	0	2
		% within BMI (Body Mass Index) For Asians WHO	5.90%	0.00%	2.00%	0.00%	2.00%
	0	Count	9	7	18	2	36
		% within BMI (Body Mass Index) For Asians WHO	52.90%	30.40%	35.30%	22.20%	36.00%
Total		Count	17	23	51	9	100
		% within BMI (Body Mass Index) For Asians WHO	100.00 %	100.00%	100.00 %	100.00 %	100.00 %

When the question was asked on How many meals were purchased online in a week it was observed from figure 4.5 that (41%) participants purchased 2 meals in a week online and (36%) participants did not purchase any meal online in the entire week. Consumption of 2 meals in a week that are purchased online from a restaurant which were usually unhealthy and loaded with fats and salt can be a risk factor for weight gain, obesity and Diabetes. When the BMI was associated with the number of meals purchased online in a week in the table and figure 4.5, it was discovered that the variance between different categories of BMI was not significant (P= .53).

The Body Mass Index of the participants indicated that obesity is on the rise as most of them were in the pre obese category. Because of the convenience, unavailability offline, ease of use, and time efficiency aspect of online purchases of food products along with the tech savvy nature of this age group it is expected that there is high probability of purchasing food products online. People tend to get carried away while shopping online and end up purchasing high amounts of ultra processed food items such as chips, biscuits, frozen food products, ready to eat products etc. the excess consumption of these products can lead to risk factor of multiple diseases such as obesity, diabetes and metabolic syndrome. The ease of getting fast food and restaurant food delivered just by a click the consumption of these food items is also highly seen. These fast food items are loaded with fats, sugars and are calorically dense and should be consumed in moderation. Because of multiple discounts/ reduction in prices the online food purchasing platforms encourage users to order food even when they do not want to. It is also seen that the consumption of excess snacks, energy drinks at night time is getting more common as food is delivered up until 3:00am at night thus the limitation of time is also surpassed in online purchasing.

IV. CONCLUSIONS

It was concluded that Due to the convenience and impulsive nature of online shopping it was observed that participants Purchased food products in excess and consumed it which led to the increase in weight status thus the BMI of the participants showed that most of them were obese. The consumption of Ultra processed and packaged food was also more which are loaded with additives and sodium. Due to the pandemic (Covid 19) there has been an increase in the purchase of groceries and other fast food items online as offline Availability was reduced and because people were bored at home thus chose to purchase more food online. The convenience of having fast food and restaurant cuisine delivered with just a click has increased the consumption of these foods. These fast food items are high in fats, carbohydrates, and calories, thus they should be eaten in moderation. Users are encouraged to order food even if they do not desire it because of multiple discounts/price reductions offered by online food ordering platforms. It has also been observed that the consumption of excess snacks and energy drinks late at night is becoming more popular, as meals can be delivered until 3:00 a.m., so overcoming the time constraint in online purchasing.

V. ACKNOWLEDGMENT

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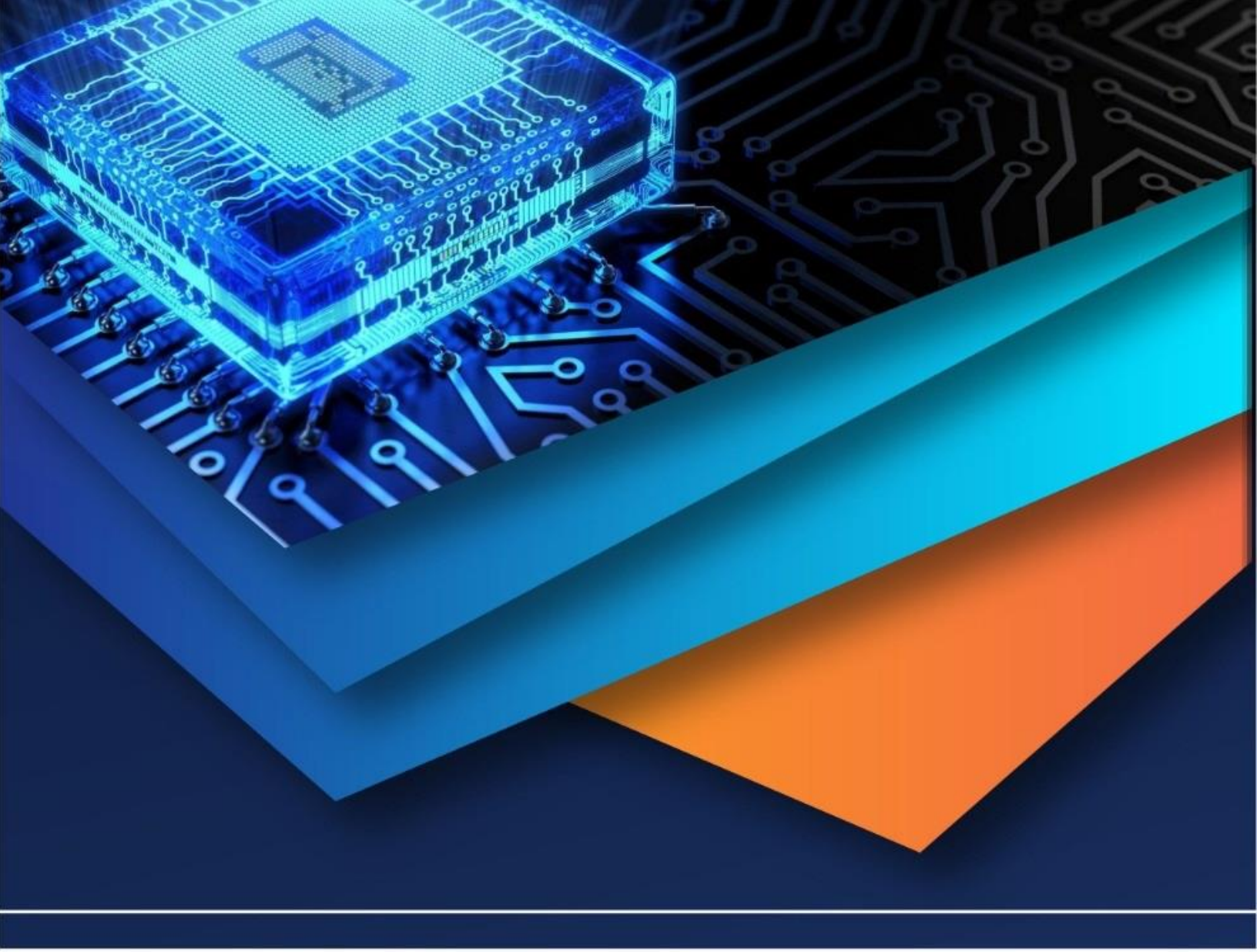

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