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Cash Holdings, Commercial Paper and Liquidity

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Abstract: Managing Liquidity has seldom been being as vital as it has during the Covid-19 era. The financial impact of Covid-19 has left many firms on the brink of liquidation. This paper explores the effect cash holdings has had on Profitability of the firm and how it compares with commercial paper between the pre-Covid-19 era and the Covid-19 era. This paper employs and compares the ordinary least square regression between these eras. I find that firms are less liquid during the Covid-19 period compared to the pre-covid period. More importantly, I find that Liquidity has been more critical to a firm's Profitability during Covid-19 era compared to pre-covid 19 periods.

Furthermore, Cash holdings represent a significant chunk of Liquidity. However, these Cash holdings dropped by a little in the covid-19 era. Finally, I find that both commercial paper and cash holdings are used as complements. However, this result is weakly supported during the pre-covid period.

I. INTRODUCTION

To say the recent Covid-19 pandemic has had an impact on firms will be merely an understatement. Since the break-out of this pandemic, the U.S. Economic activities has slowly deepened as more firms are finding it quite challenging to adjust and remain stable. Firms are now experiencing or anticipating financial constraints and are being proactive to that challenge. The pandemic has even caused several employers to take drastic measures by reviewing and adjusting wage structures. For instance, According to Miller, S. (2020), General motors furloughed 6,500 employees who would receive 76 per cent of their base pay. Even executives will take up to 10 per cent pay cut, plus, would defer 20 per cent of their salaries. The same stringent measures have been taken at Creative Noggin company which cut short wages by up to 30%. Also, bankruptcy filing has been at an all-time high during the economic shutdown. Big names like Chuck E Cheese, hertz corporation, Latam airlines, and frontier corporation have filed for bankruptcy. Shen, L. (2020) quoted the CEO of New Generation Research, "the magnitude of bankruptcies this year has already surpassed that of 2008".

One may reason for this bankruptcy has been as a result of the inefficiency in liquidity management. For instance, Hertz company has had to sell off a significant portion of its fleet in a bid to meet demands from creditors Shen, L. (2020). To investigate the impact of Liquidity, we are going to focus on cash holdings as a proxy. The reason being that many researchers relied on financial data to study corporate cash holdings as a proxy for corporate Liquidity (Lins, K., Servaes, H., & Tufano, P. (2009). It is essential to know here that cash holdings are not the only liquidity source. The credit line has been a popular source for corporate Liquidity for some years now. Firms utilize credit lines more than any other bank instrument (Sufi, A. 2005). Due to the reason of unavailability of access to data and time, given that to examine credit lines would be to explore every firms' 10k and 10Q annual report, this paper does not investigate lines of credits available to the firms.

In this paper few theoretical predictions in regards to the effect of Liquidity, commercial paper, cash holdings on Profitability during an era that has one of the highest bankruptcy filings in the history of the U.S. economy relative to the pre-Covid period, including the extent to which both liquidity sources are viewed as complements rather than substitutes by financial managers. This paper contributes to research by providing new evidence about corporate Liquidity, especially how there has been a substantial reliance on using complementary liquidity sources since the pandemic.

II. LITERATURE

Previous literature has shown that Liquidity promotes economic benefits. Maksimovic (1990), provided proof on how credit line reduces expansionary costs. This has an indirect influence on Profitability. The same intuition applies to commercial paper and cash holdings. There are direct costs to each of these liquidity sources. To quote Lins, K., Servaes, H., & Tufano, P. (2009), "For holding cash, the direct costs include the cost-of-carry (i.e., cash earns less than the cost of debt used to fund it, while in perfect capital markets, both interest costs would be equal) and the tax expense on the interest income [Gamba and Triantis (2008) and Riddick and Whited (2009)]". The direct cost of Commercial paper is the implicit fixed interest rate on the form, while commitment fees are associated with credit lines (Shockley and Thakor, 1997).

Lins, K., Servaes, H., & Tufano, P. (2009) investigated the relationship between Liquidity and credit line. The authors argued that liquidity sources are substitutes because of the conditional liquidity relationship between sources of Liquidity. From their findings, they found that cash reserves provide unconditional Liquidity, while credit lines provided dependent Liquidity, so as a result, they are perfect substitutes. This study contradicts that finding because of the reason that firms hold different sources of Liquidity for various purposes. My finding shows that firms who utilize commercial paper also hold Cash. However, the findings on commercial paper being less used during the covid period are as a result of the increase in the interest rate on commercial papers during the covid period.

The obvious next question is what influences the choices of the liquidity sources. Acharya, Almeida and Campello (2013) provides an explanation on a factor influencing firm choices between the liquidity sources. In their paper, they showed that aggregate risk affects firms' choice between cash and credit lines. To explain further, In equilibrium, firms with the highest aggregate risk shift from credit lines to cash holdings. Hurley (1982) explained what influences the choice in favour of Commercial paper to be as a result of growth in letters of credit. To quote Hurley (1982), “"One factor that has facilitated growth in paper issuance by nonfinancial firms has been the increasing use of letters of credit and related devices to assure payment at maturity ... dealers began to interest new issuers, particularly lower-rated firms, in letters of credit”.

Moreover, high credit quality influences commercial paper. Since high credit quality is a requirement for entry into the retail paper market (Calomiris, Himmelberg, Wachtel, 1995). Shrestha, B. (2012) noticed a sizeable smooth trend of Profitability with Liquidity. My result is consistent with this finding that liquidity management can indeed increase Profitability.

A. Liquidity, Short Term Debt and Profitability

Much research has been done on the impact of Liquidity on Profitability, where they used liquidity ratio and profitability ration as proxies to Liquidity and Profitability, and many have reported a significant positive relationship. For instance, Madushanka, K., and Jathurika, M. (2018) found that “Liquidity ratios (Quick ratio) are positive and significantly related to the firm profitability among the listed manufacturing companies”. This paper would only relate working capital to Net income of firms, as a form of verification to that finding. The result would act as a solid foundation for the understanding of the liquidity source effects during the covid period and before that. The pandemic has forced firms and clients alike to go into survival mode. Hence, the basic premise of this study is to investigate how well firms can recover their short-term debt. Many firms, to survive, has revised their short term targets to stay afloat, which is why this paper examines the effectiveness of two of the most widely used short term sources of funds (commercial paper and cash reserves) in covering short term debt.

The pandemic has had a severe effect on the financial statements. In one of Forbes' issues, Jim Deloach (2020), CFO of Protiviti, indicated that business growth has started to fall, and business risk has severely increased. He went on further to state that losses in his firm have begun to amount because "liquidity had taken a hit". This is a direct impact of Covid-19. However, not all effects are direct. Lack of investment is an indirect impact. Due to the increased volatility, firms are becoming too cautious than usual to invest in the market. They prefer to hold on to their liquidity sources and this impales on firm operations.

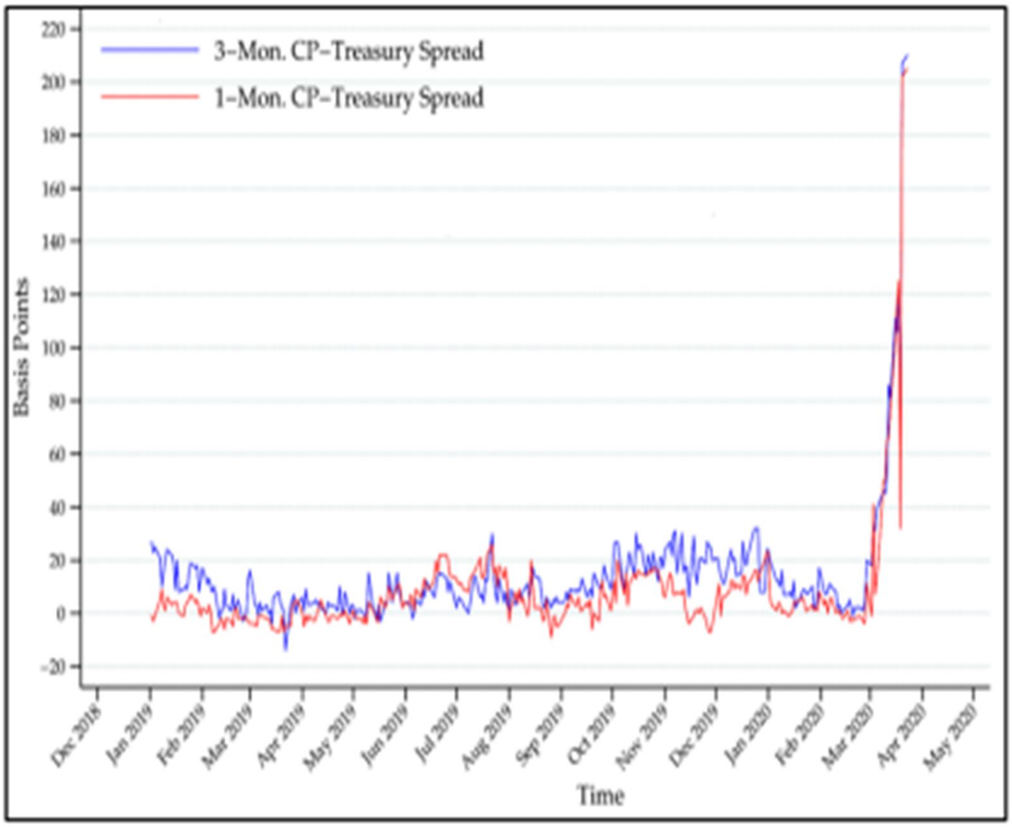
B. Commercial Paper

The Commercial paper is just one of the many sources of short-term funds. Its maturity is at most 270 days. Usually unsecured, the commercial paper requires the borrower to have a good credit rating. Commercial Papers are highly rated because they carry the bank's rating, since the guarantor banks have impeccable financial credentials (Nayar and Rozeff 1994). According to Calomiris, C., Himmelberg, C., and Wachtel, P, “Commercial paper accounts for a large and growing fraction of short-term corporate finance in the United States”. The authors argued that in a downturn, there is no evidence of commercial paper issuance. It is what pointing out that bank loans is also a viable liquidity source. However, access to data on these bank loans for short term purpose was hard to come by. However, Commercial Paper is viewed as a viable alternative, for instance, in making payroll or providing short term funding needs (Insight, 2020). The commercial paper market is also backed by assets which makes it attractive. Insight (2020) posited that The CP market provides credit to customers via short-term asset-backed commercial paper for financing customer loans.

According to Conventional Research Service, the total C.P. market in the United States was $1.092 trillion as of the end of March 2020, which is a significantly a high number regardless of other liquidity sources in the market. The Commercial paper is always associated by the rollover risk which is mostly caused by credit risk. The COVID-19 has caused financial strains in the credit market and has resulted in the increased borrowing rates for firms. Thus, borrowing costs directly increases along with it. Insight (2020) reported a 200-basis point spike in Commercial paper at the beginning of March, the date in which Covid-19 was confirmed.

Due to these concerns, the Federal Reserve intervened on March 17 by creating a Commercial Paper Funding Facility, backed by Economic Stabilization Fund, as a relief avenue for firms to take advantage of. Figure 1 shows the spike in March 2020. It shows how the Commercial paper has increased by a significant result.

Figure 1. Spreads Between 1-Month and 3-Month AA-rated Financial Commercial Paper and 3-Month Constant Maturity Treasury Rates



Source: CRS, based on data obtained from the Federal Reserve Bank of St. Louis FRED website.

C. Cash Holdings

A factor for firm's needs to hold Cash is the fear of systematic risk. According to Acharya, Almeida and Campello (2013), "Firms' exposure to systematic risks increases the demand for cash". Fear of challenges and uncertainties that affects business cash reserves and cash flows. It is interesting to see how the pandemic has affected these two subgroups during the pandemic. An argument can be made that the use of digital currencies during lockdown has allowed more Cash to be reserved. Another viewpoint is the pandemic has had a negative impact on Profitability- and to an extreme loss; and this could negatively affect cash reserves. Therefore, reducing the Cash and thus, Liquidity. Whatever argument that is made, one thing is certain - Management of Cash and cash flows is paramount to the firm's ability to make profit.

While there are some experts that stated that the pandemic has caused business to move away from Cash during the pandemic due to the riskiness of cards and wallets in terms of security issues, there are also those who believe that there has not been that much difference. To quote Neeson, J. (2020) "… many experts feel the consumer trends away from cash pre-pandemic and the spending/behavioral changes post-pandemic can't easily be separated". The popular phrase "Cash is King" is as important as ever during the pandemic. With the possibility of uncertainty, recession looms, threatening several businesses and in broad, the financial market. This has caused financial there to be a financial stress. As can be seen, Figure 2 by Famiglietti & Leibovici (2020), shows the financial stress at the initial stage of the pandemic is similar to that experienced in the early months following the Financial Crisis of 2008. Some experts believe that should this continue, the United States economy could have another Great Recession on its hands.

Figure 2
Financial Stress

SOURCE: The Financial Stress Index is a measure of the Office of Financial Research, an independent bureau within the U.S. Department of the Treasury. The index takes into account current credit conditions, equity valuations, access to funding, value of safe assets, and market volatility.

III. FORMULATING HYPOTHESIS

In formulating the hypothesis, First, I consider the relationship between Liquidity and Profitability. Liquidity is the ability of a company to meet its financial obligations when due. That is, how quickly a company can convert to Cash. Profitability is simply the ability of a company to make profit. At first, to measure Profitability I considered Return on Assets and Return on Equity. But a lot of research has found a positive correlation between those profitability ratios to Liquidity. Bourke (1989) was said to be the first to consider net income being the greatest profitability indicator. Thus, this study borrows from that intuition by employing net income margin as a proxy for Profitability. Due to the extent of intensive research in this area, I only limit the investigation to relate a liquidity ration rarely used in networking capital ration with net income margin. For instance, Karani, R., M. (2013), found a positive relationship between Profitability and liquidity management after using the common metrics (ROA and ROE) as a proxy for Profitability. Another way this research defers is that it compares the extent of the relationship between Liquidity and Profitability in different periods that separates a pandemic effect. Therefore, the first hypothesis is a simple one really;

1) *H1:* Is there a stronger relationship between Profitability and Liquidity during Covid period than in pre-Covid period?

After deriving the result in hypothesis 1, I sought to find out which liquidity source is used the most between commercial paper and Cash. The Asset-Backed Commercial Paper Money created as a result of the events during the financial crisis has allowed indirect and direct access to funds during crisis such as this. So, it is interesting to investigate whether commercial paper would be utilized greater than cash holdings, considering one of the motives for holding non-operational Cash is primarily cover the risk of future cash shortfalls. This leads to Hypothesis 2. To investigate this, I ratioed commercial paper to short term debt, as well as ratio cash to short term debt and calculated the mean. The idea is to examine how much commercial paper and Cash has been effective in covering short term debts, given both liquidity sources are short term market sources.

2) *H2:* Is Cash used more than commercial paper to settle debts during the Covid-19 period?

Finally, it is important to figure out if Liquidity is used as a complement or substitute given that firms are financially constrained during the Covid-19 period. The intuition here is that if firm's Profitability may be impaired during the pandemic, and this might have a negative impact on the ability of these firms to obtain credit which negatively affects the use of commercial paper as a liquidity source, since firms will not feel motivated to obtain commercial paper due to fears of lack of repayment. Another argument for being substitutes is that both commercial paper and Cash are used for different purposes. First, commercial paper is safer than Cash, and while this may seem unimportant, it is important to consider that the financial market during the pandemic is highly volatile, thus, safety is essential to many firms. Commercial paper can be used for "essential" large work operations like paying payroll. Firms will prefer to use commercial papers for payroll than Cash. An argument for both liquidity sources being complements is n the criteria for commercial paper. Commercial papers are rare because firms must have an excellent credit rating to be eligible. This implies that there is nothing restricting high credit rating firms from utilizing both commercial paper and Cash as complements in order to survive during this pandemic. This leads to Hypothesis 3.

Hypothesis 3: Are commercial paper and Cash complements or substitutes?

IV. OVERVIEW OF RATIOS

A. Net Income Margin

Net income margin is the ratio that compares Profitability to revenue. According to Small Business, "It measures how effectively a company operates". This is the justification for the choice in this ratio. I want to investigate how firms' Liquidity during the pandemic has affected the effectiveness of the operations of the company.

Net income Margin = Net Income/ Sales

B. Net Working Capital Ratio

In my opinion, there is no better way to measure Liquidity than the networking capital ratio. This is because it includes all elements that makes up the working capital for a firm. This ratio is an indication to firms on whether they have net funds available in the short-term to remain in operation. It provides a general overview of Liquidity in a business. Thus, the choice of the liquidity ratio.

Net Working Capital Ratio = Current Assets – Current Liabilities

V. DATA AND METHODOLOGY

This paper sourced data from Compustat. I sourced data for all firms in Compustat. The sample period is from July 2019 through to October, 2020. News report from the MNS lifestyle indicated that although the virus really began to spread by Late January or early February, but by March, the virus had caused several foreclosures for businesses in United State. Hence, we compare the effects between two equal different time periods (July, 2019 through February 2020 for pre covid period and March, 2020 through to October 2020 during covid). To explain the relationship between Liquidity and Profitability, I use a descriptive research design as well as regression.

The economic models include regression $Y = \beta 0 + \beta X + \text{Industry} + \text{Year} + \varepsilon$

Where Y is the dependent variable that equals Profitability. And Liquidity is the independent variable. Industry and year fixed effects are also controlled for.

To establish the liquidity source that is being utilized the most, I divided each liquidity sources by short term debt and found the mean.

Step 1: Liquidity source/Short term debt.

Step 2; X= sum of the liquidity sources divided by the total frequency.

Finally, to derive whether both have been used as complements or substitutes, I perform a logit regression. The dependent variable is Cash, while Commercial paper is the dummy variable that results to one if a company used commercial paper within each period (pre covid-19 and during covid).

VI. RESULTS AND FINDINGS

Table indicates statistical significance at the 1% level.

Table 1

Net Working Capital Ratio

Regression	Panel A		
		Covid	Pre-Covid
Net Income Margin	Coef.	1.224	0.698
	Standard D	0.039	0.02
	R -squared	0.5653	0.1806
	Adj R squared	0.5647	0.1804
	Root MSE	3305.9	2411.4
	Number of Observation	749	5366
	Industry Effects	Yes	Yes
	Year Effects	Yes	Yes

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Panel B

		Covid	Obs	Pre-Covid	Obs
Cash	Mean	4257.802	845	1032.712	7496
Commercial Paper (CP)		6192.198	25	173.9306	467
Cash/short term debt	Mean	1.767368		2.011729	
CP/ Short term debt		0.00823		0.002937	

	Panel C	Cash	
		Covid	Pre-Covid
Ln Commercial Paper	Coef.	0.150233	0.051304
	Standard D	0.000131	0.008216
	R -squared	1	0.0774
	Adj R squared	1	0.0754
	Root MSE	53.234	1303.3
	Number of Observation	18	466
	Industry Effects	Yes	Yes
	Year Effects	Yes	Yes

Panel A shows a positive significance between net-working capital ratio (a proxy for Liquidity) and net income margin (a proxy for Profitability). However, the relationship is stronger during Covid relative to pre covid period. Furthermore, the use of the liquidity sources has reduced significantly compared to before Covid as seen in Panel B. This indicates that Liquidity, albeit a small portion, has been highly responsible for firms' profit during covid era. A reason for this might have to do with the fact that while Liquidity is always important, it has had less of an impact in the pre-covid era. In the pre-covid era, other factors like market share, competition, brand image, costs of production, and so on, play a major role in a firm's Profitability. Another reason may also be that firms during covid era are not investing sufficiently, thereby, holding more liquid assets, which is understandable considering that market during Covid has been highly volatile. For instance, Camarena, A. (2020) stated that the pandemic effects had extended globally, and demand volatility management has become harder than ever. This might offer a possible reason as to why many managers, especially, the risk-averse managers would prefer to avoid the market risk and instead, hold Cash.

Next, what liquidity (commercial paper and cash holdings) in question has been used mostly. In Panel B, the results with a mean of 1.76 and 2.01 for during covid and before covid respectively shows that Cash holding has continued to be the go-to liquidity source for firms. The finding on C.P./Short term debt in Panel B, that is, for the increase in commercial paper shows that the revival of the commercial paper facility by the U.S. government in April, 2020 has attracted firms, probably due to the low risk involved.

Finally, Panel C showed the logit regression to have a positive and significant relationship between Ln commercial paper and Cash for both periods. However, there is a stronger relationship during the covid period. This suggests that the usage of the two as complements has increased greatly during covid era. It is also consistent with previous literature that commercial paper and Cash are used for different purposes, and thereby not substitutes.

VII. IMPLICATION

The implication of this study is to provide more evidence on the significance of Liquidity and how it can go a long way in reducing the number of bankruptcies filings during Covid. Many firms have had huge revenue declines but that has not deterred firms from incurring "necessary" costs. While there have been just a few policies that has helped provide Liquidity to firms, (One of which is the Commercial Paper Facility discussed in this paper), there is still high bankruptcies, which suggests that there is more room for more policies that might help these financially constrained firms. Famiglietti and Leibovici (2020) stated that the pandemic will impact firms into the future as it has a transitory effect and this effect will be more significant into the future if more policies are not created to provide more Liquidity to firms.

Another is the Cares Act Fund that has limited access. Although while the Cares Act has been helpful, Khullar, Bond, and Schpero (2020) indicated that access should be granted to the Cares Ac, especially for hospitals and called for more policies to provide financial funding to hospitals in need of it. Liquidity, as seen in this study, has been used the most during covid compared to pre-covid. This shows the importance of Liquidity during a crisis. Therefore, just like many policies being established following the financial crisis that had a significant effect, there should be more policies to ensure Liquidity of these firms.

VIII. FURTHER RESEARCH

There have been many discussions on how the asset-backed commercial paper has been an especially useful risk-free assets during financial crisis. In fact, the commercial paper funding facility was first established in October 2008 following the financial crisis. A new commercial paper funding facility was established in 2020 to alleviate liquidity concerns due to Covid. However, the facilities differ in terms of treasury support, Fed's authority, Program size, Borrower, Price and Eligibility (Lanman, S. 2020). This creates an opportunity for further studies to examine how effective the commercial paper funding facility has been to providing Liquidity and how it compares to the effectiveness in 2008. Furthermore, since this study did not take into account line of credit which is deemed to be the most popular of liquidity sources, one might want to consider how often firms have used credit lines in relative to crash holdings during covid.

IX. CONCLUSION

I study the liquidity relationship with Profitability during the pandemic crisis and prior to it. I also investigate which Liquidity is mostly used after the establishment of the Commercial Paper Credit facility, and whether commercial paper and Cash are used as complements or substitutes. I utilized regression, ratio analysis, logistic regressions, and mean to derive my results. I document my suspicion that there is a positive and significant relationship between Liquidity and Profitability since more money will be invested towards the firm operations. I also document my finding that Cash holdings is being used more than Commercial paper in both periods but the usage for commercial paper had increased, while Cash had decreased between pre-Covid period and Covid period.

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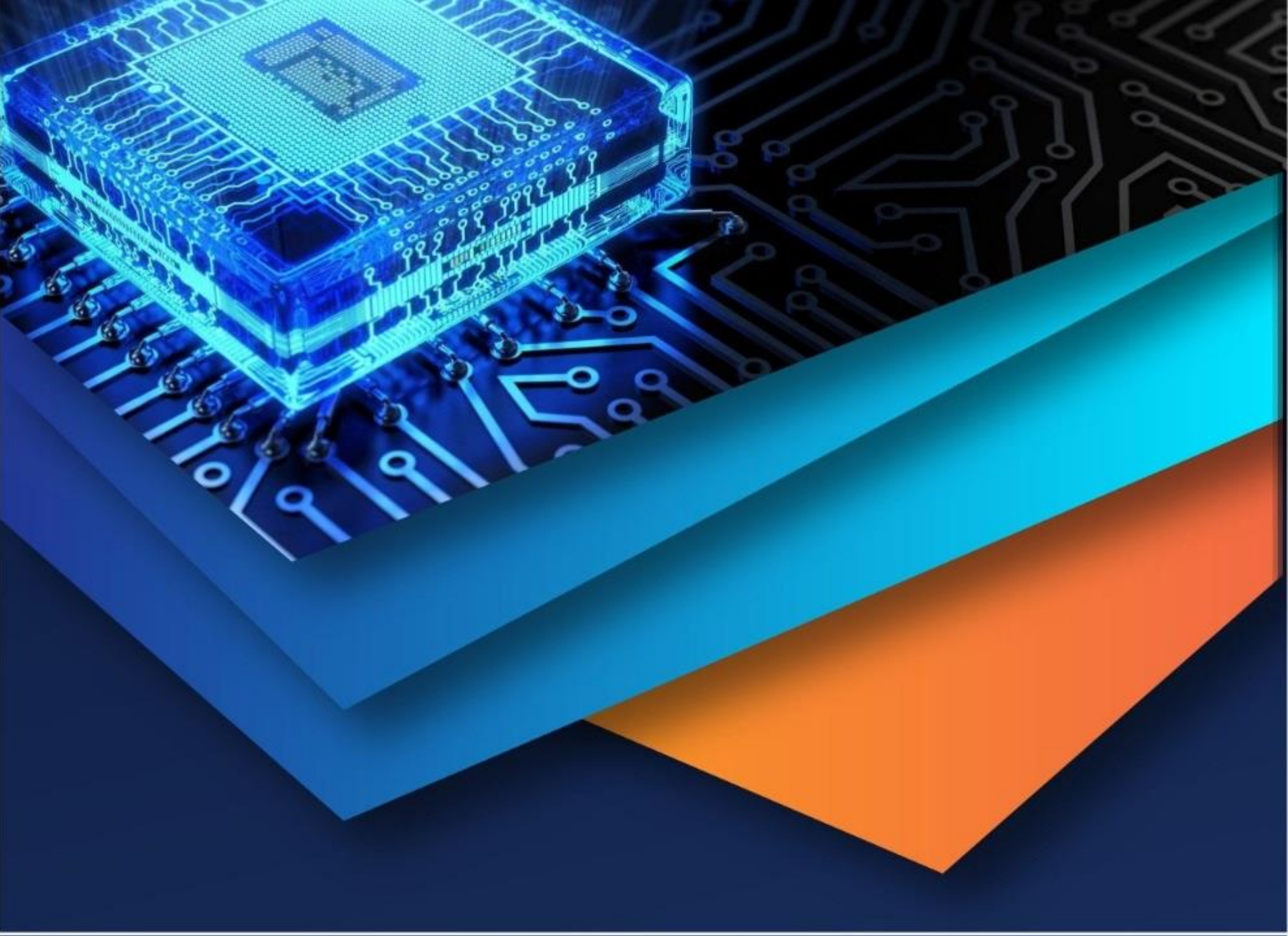

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