

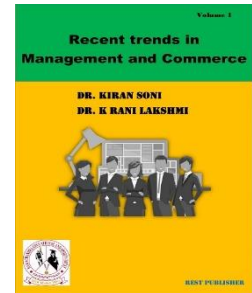


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Efficiency And Productivity of Commercial Banks Covid-19 Using TOPSIS Method

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Abstract

The hurdles to the classical lending business model that pre-existed the COVID-19 crisis, such as revenue strain, low profit margins (due to low equity rates and increasing wealth requisites), tighter regulatory (following the latest the prior finance crisis), and growing competition from ghost banks and new economic institutions, will all be made worse by it. financial institutions. Research significance: Globally, "the COVID-19" has had a big effect on the business, as well as on social issues and general health. Significant revenue declines, an increase in the unemployment rate, and delays in the communication, leisure, and manufacturing sectors are some of the main consequences of the global disease aggravation. Your life may appear out of your grasp and you may not know what to do as a result of an overabundance of media, gossip, and misleading information. You might feel worried about the "COVID-19" pandemic, dreadful, depressed, and alone. Moreover, behavioral health conditions like tension and depression can get worse. Methodology: E1: Equity/(Market, Economic Risk, and Credit Based) Total liabilities / total holdings (E2) E3: Loan Costs and Income E4: Total Assets / Net Investment Earnings E5: Total Assets/Loans Collected E6: Total Loans / Non-Performing Loans. P1: Net Income (Loss) Pre-Taxes/Total Assets P2: Equity/Net Profit (Loss) P3: Total Branches/Loans and Receipts P4: Total Funds / Net Fees and Affiliate Incomes P5: The ratio of total property to personnel P6: Operating Profit (Loss) Before Taxes/Total Assets Result: shows According to the criteria set for the results, B1 received the top rank while B10 received the lowest rank. Conclusion: The dataset's score for Performance and Economy of Commercial Banks COVID-19 in TOPSIS Method (Similar for the best solution). By option order technique shows its results in B1 and top ranking

Keywords: Equity, Loans Received, Net fees and Commission Incomes, Loans Received.

Introduction

In a closed society, including trading of current assets as well as the issuance of longer-term obligations may cause a discrepancy between lending and savings. Deposits can also be transferred from national to international citizens or exchanged from sterling to foreign currencies in an open country like the United Kingdom. While foreign currency deposits and deposits from foreign citizens are not always included in a world's money supply, these operations do not generate gold per se. [1] The pandemic's much higher rates of complex appendix can be attributed to a number of variables. The most significant ones are the general delayed manifestation of young children and the increased frequency of NOM during pandemics. Minor considerations that could be considered include socioeconomic status and the delay caused by epidemic protocols between the time of admission and the surgery. The risk of rupture and other problems rises linearly with sickness duration, particularly with or before delay more so than with admitting children, as was already indicated. The conceptual of studies found varying amounts of time between the beginning of symptoms and referral to the emergency room. [2] To minimise the burden on the hospitals and public healthcare systems, non-invasive preparatory examinations may also be postponed following the continuing COVID-19 pandemic as well as procedures that are not scheduled. Presurgical diagnostics for physicians undergoing a surgery that cannot be delayed should be carried out in an inpatient setting before the hospital stay, either at a medical facility close to the physician 's home or at the facility where the surgery method is to be executed. [3] Although there appears to be a trend favoring a little increase, official statistics on meat consumption are inconsistent. In contrast, consumption of eggs and pulses appeared to have slightly increased, possibly due to Unlike fish or meat, they are more easily affordable and have a long market life. The fashion trends for trash are also controversial. food intake, which has reportedly increased among younger people. The likelihood of food delivery to homes during this time may encourage this habit. Last but not least, there was a general decline in alcohol intake, perhaps as a result of less "social drinking" or simply less time spent with others. [4] By gathering data on objective cellphone usage and objective physically activity, This study assessed the effects of house separation during "the COVID-19" outbreak on sleep patterns, smartphone use, physical exercise, and sedentary behaviour. During the seclusion, the respondents' behaviours altered as

predicted; they engaged in less strenuous activity and spending more time resting, eating, and used the phone. The results indicate that the COVID-19 may have affected some people's routines. lockdown. The amount of time subjects spent at home increased, which led to a considerable decrease in the number of steps that could be assessed objectively. [5] Yet, none of these pieces specifically focus on the new scenario brought about by the Covid-19 problem. The current study would consequently close this gap and examine the relationships and lead-lag patterns between the price of crude oil, the price of gold, and the S&P 500 index preceding and in the wake of the Covid-19 outbreak. According to our best knowledge, this is the only research to address the interaction between time and frequency among important marketplaces being studied. [6] As a result, it is recommended to maintain a constant production curve after a significant projection method. On the other hand, detractors have asserted that graduates are becoming less desirable because they are unskilled and lack the necessary abilities. They said that trainees are not properly taught, and that their lack of useful skills renders them a financial burden. Graduates' productive interactions would naturally stimulate the economy if they have the necessary skills. Ideal conditions for meeting the needs of the employment market and growing it would be provided by a thriving and diverse economy. So, the key to solving the unemployment situation is graduates' abilities. [7] The current findings demonstrate that not all stillbirths in Mexico are specifically attributable to COVID-19 disease, but rather to unmanaged circumstances during delivery as a result of the lack of readily available treatment. Reduced mobility and social isolation are essential for lowering SARS-CoV-2 propagation. To guarantee safe pregnancies, however, prenatal care is equally crucial. During this epidemic, technology or web-based solutions can supplement in-person medical care by monitoring and detecting any pregnancy- or COVID-19-related complications and assisting in choice, especially appropriate transfer to specialty health facilities. [8] By providing Our approach enables determining if the COVID-19 breakout has substantially impacted the efficiency of the blue and conventional bond markets by providing a more up-to-date view of the mechanisms of pricing effectiveness in both markets. Understanding the effectiveness of pricing bonds is crucial for markets operators and regulators. An investor's ability to make investments that are less influenced by potential overreaction or uncertainty in price to the fresh influx of information is aided by precise understanding of the efficiency level of the green debt market. [9] Our study measures subjective stress, internalizing symptoms, and rage as indicators of distress during and before the pandemic. Pre-pandemic factors that are often linked to such distress, such as social exclusion, victimization, and difficult life events, were also assessed. In order to determine the subjects' pre-epidemic health state, we additionally evaluated low self-rated health. Ostensible stressors during the pandemic were the state of one's own wellness and the fitness of beloved. We also looked at indicators that might be linked to higher emotional distress, such as stressors connected to the pandemic's indirect effects, pessimism, a lack of faith in societal solutions to the epidemic, and continuous news-seeking about COVID-19. [10]

Materials And Method

TOPSIS is an evaluative technique that is frequently applied to MCDM issues. It has a variety of practical uses, including comparing business performance, analysing financial ratio effectiveness within a certain industry, and investing money in modern manufacturing processes, among others. There are certain restrictions, though. The TOPSIS method does, however, have some drawbacks. One of the difficulties that TOPSIS poses is the possibility of the phenomenon known as rank reversal. This tendency causes the priority for the alternative to fluctuate depending on whether an option is added to or withdrawn from the choice issue. The process of adding or removing an option occasionally leads to a phenomenon known as total rank reverse, in which the order of choices is fully inverted and the alternate that was previously deemed to be the best suddenly becomes the worst. Such an occurrence might not be desirable in many cases. In MCDM, numerous options need to be looked at and assessed based on a variety of factors. The goal of MCDM is to assist the decision-maker in making a choice among options. As a result, practical problems are typically described by a variety of conflicting criteria, and it's conceivable that no solution will be able to fulfil all of the criteria at once. The solution is consequently a compromise choice based on

decision matrix X, which displays how various options perform concerning certain criteria, is created.

$$x_{ij} = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix} \quad (1)$$

Step 2: Weights for the criteria are expressed as

$$w_j = [w_1 \cdots w_n], \text{ where } \sum_{j=1}^n (w_1 \cdots w_n) = 1 \quad (2)$$

Step 3: The matrix x_{ij} 's normalized values are computed as

$$n_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^m x_{ij}^2}} \quad (3)$$

Weighted normalized matrix N_{ij} is calculated by the following formula

$$N_{ij} = w_j \times n_{ij} \tag{4}$$

Step 4: We'll start by determining the ideal best and ideal worst values: Here, we must determine whether the influence is "+" or "-." If a column has a "+" impact, the ideal best value for that column is its highest value; if it has a "-" impact, the ideal worst value is its lowest value.

Step 5: Now we need to calculate the difference between each response from the ideal best,

$$S_i^+ = \sqrt{\sum_{j=1}^n (N_{ij} - A_j^+)^2} \quad \text{for } i \in [1, m] \text{ and } j \in [1, n] \tag{5}$$

Step 6: Now we need to calculate the difference between each response from the ideal worst,

$$S_i^- = \sqrt{\sum_{j=1}^n (N_{ij} - A_j^-)^2} \quad \text{for } i \in [1, m] \text{ and } j \in [1, n] \tag{6}$$

Step 7: Now we need to calculate the Closeness coefficient of i_{th} alternative

$$CC_i = \frac{S_i^-}{S_i^+ + S_i^-} \quad \text{where, } 0 \leq CC_i \leq 1, i \in [1, m] \tag{7}$$

The Closeness Coefficient's value illustrates how superior the alternatives are in comparison. A larger CC_i denotes a substantially better alternative, whereas a smaller CC_i denotes a significantly worse alternative.

Conclusion normalizing the matrix; excellent ideal response and matrices equalization; Ideal solutions that are both positive and bad solution Calculation of separations. An alternative from PIS and NIS. Proximity in descending order to receive replacement [1] The TOPSIS method was originally developed by HWANG et al Introduced by YOON Introduced; it proposed several for solving criterion decision problems. This According to the technique, The best alternative is close the ideal course of action The ideal is where creation and negativity come from. are far away solutions is far away. [2] Order by similarity of best solution (TOPSIS) approach multiple answers using optional technique an attempt was made to improve. This method is of any kind Ability to improve problem and any number they concluded that it had answers. [3] The aim of the present work is Thermal efficiency of Multi criteria and CFWCT To determine a cooling tower's ideal operating circumstances when built in a specific location using the method is operated. Heat and mass in CFWCT Exchange equations were presented and CFWCT's Thermal efficiency was evaluated with fill height. [4] The application of those MCDM techniques are mostly Conservative and approximate or sub-optimal leading to solutions. Therefore, in this thesis, DESIGN OF EXPERIMENTS AND TOPICS METHODS Calculated TOPSIS Along with the marks, two NTM as EDM and WEDM processes Build regression meta-models to search for optimal parameter combinations for processes. [5] The Calculated TOPSIS Along with the marks, two NTM as EDM and WEDM processes Build regression meta-models to search for optimal parameter combinations for processes. [6] Two Probability Using Relative Entropy A comprehensive weight between distributions is calculated. Calculated detailed weights basically, air quality measurement is based on the TOPSIS system is evaluated using [7] has wide Applications and better in models for inter choice One. M substitutes n in this procedure, and each challenge is analysed by characteristics. an n-dimensional space with m points is a geometric system. [8] Applied fuzzy TOPICS and network optimization techniques to solve Choice of stem location in deep multiple or body deposits problem Based on TOPSIS system, highway Superstructure selection in the conceptual design of the bridge They are an optimization-based method for solving presented. [9] Quantifying impacts Water level using TOPSIS methodology and quality and weighting value objective and combined with sets of subjective values. [10].

E1: Equity/(Market, Economic Risk, and Credit Based) Total liabilities / total holdings (E2) E3: Loan Costs and Income E4: Total Assets / Net Investment Earnings E5: Total Assets/Loans Collected E6: Total Loans / Non-Performing Loans

P1: Net Income (Loss) Pre-Taxes/Total Assets P2: Equity/Net Profit (Loss) P3: Total Branches/Loans and Receipts P4: Total Funds / Net Fees and Affiliate Incomes P5: The ratio of total property to personnel P6: Operating Profit (Loss) Before Taxes/Total Assets

Analysis And Discussion

TABLE 1. TOPSIS Efficiency and Productivity of Commercial “Banks COVID-19”

Banks	DATA SET					
	E1	E2	E3	E4	E5	E6
B1	17.02	64.92	2.833	68.946	162.82	2.907
B2	14.332	68.04	5.149	67.654	129.38	1.294
B3	16.614	62.27	5.928	69.641	144.79	1.133
B4	20.973	56.64	7.289	56.542	183.6	2.208

B5	17.865	64.99	5.991	64.479	179.44	2.464
B6	16.948	56.81	6.529	61.796	185.66	3.732
B7	17.814	55.06	7.6	62.056	170.61	1.539
B8	17.685	55.37	10.449	67.614	161.96	1.206
B9	20.415	44.96	4.027	50.271	185.72	1.792
B10	18.635	23.13	1.847	49.959	143.02	0.844
B11	15.732	59.78	6.955	65.484	170.4	3.218
B12	19.567	58.52	6.887	64.212	192.11	1.341

This Table 1 TOPSIS of “Efficiency and Productivity of Commercial Banks COVID-19”. Evaluation Preference: B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12. Alternative: E1, E2, E3, E4, E5, E6. E1 the B4 it is seen that is showing the highest value for B2 is showing the lowest value. E2 it is seen that B2 is showing the highest value for B10 is showing the lowest value. E3 it is seen that B8 is showing the highest value for B10 is showing the lowest value. E4 and it is seen that B3 is showing the highest value for B10 is showing the lowest value. E5 it is seen that B12 is showing the highest value for B2 is showing the lowest value. E6 and it is seen that B6 is showing the highest value for B10 is showing the lowest value.

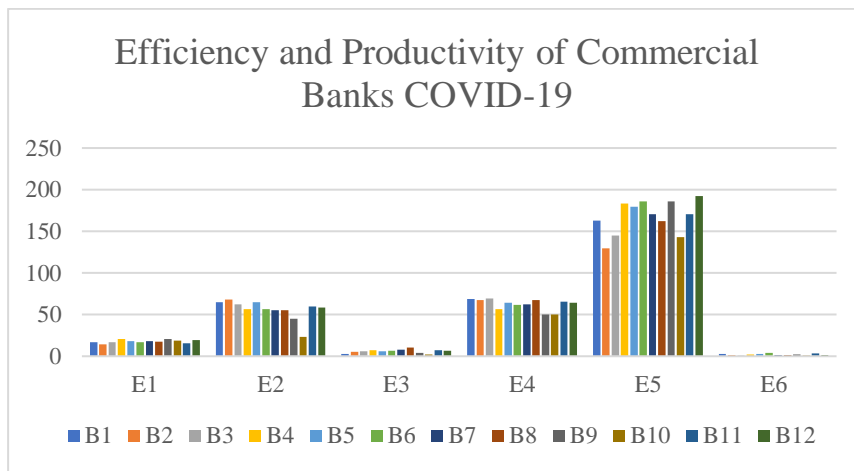


FIGURE 1. Efficiency and Productivity of Commercial Banks COVID-19

This figure 1 TOPSIS of “Efficiency and Productivity of Commercial Banks COVID-19”. Evaluation Preference: B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12. Alternative: E1, E2, E3, E4, E5, E6.

TABLE 2. Squire Rate of matrix

289.6804	4213.9572	8.025889	4753.551	26511.65498	8.45065
205.4062	4628.8973	26.5122	4577.064	16739.44316	1.67444
276.025	3877.6774	35.14118	4849.869	20962.69623	1.28369
439.8667	3207.6365	53.12952	3196.998	33708.96	4.87526
319.1582	4223.7001	35.89208	4157.541	32197.99584	6.0713
287.2347	3227.8306	42.62784	3818.746	34470.37824	13.9278
317.3386	3031.3834	57.76	3850.947	29106.06603	2.36852
312.7592	3065.6154	109.1816	4571.653	26231.36552	1.45444
416.7722	2021.3117	16.21673	2527.173	34490.80409	3.21126
347.2632	534.95064	3.411409	2495.902	20455.00644	0.71234
247.4958	3573.8875	48.37203	4288.154	29034.45603	10.3555
382.8675	3424.3563	47.43077	4123.181	36905.86788	1.79828

Table 2 shows the Squire Rate of matrix value.

TABLE 3. Efficiency and Productivity of Commercial Banks COVID-19 in Normalized Data

Normalized Data					
E1	E2	E3	E4	E5	E6
0.435	1.66	0.225	0.47	1.11	0.02
0.366	1.739	0.409	0.461	0.882	0.009
0.425	1.592	0.471	0.475	0.987	0.008
0.536	1.448	0.579	0.385	1.251	0.015
0.457	1.661	0.476	0.439	1.223	0.017
0.433	1.452	0.518	0.421	1.265	0.025
0.455	1.408	0.603	0.423	1.163	0.01
0.452	1.415	0.829	0.461	1.104	0.008
0.522	1.149	0.32	0.343	1.266	0.012
0.476	0.591	0.147	0.34	0.975	0.006
0.402	1.528	0.552	0.446	1.161	0.022

0.5	1.496	0.547	0.438	1.309	0.009
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Table 3 Normalized Data shows the informational set for the E1, E2, E3, E4, E5, E6 The Normalized data is calculated from the data set value is divided by the sum of the square root of the column value.

TABLE 4. Weight

Weight					
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25	0.25	0.25

Table 4 Weight shows the informational set for the weight all same value 0.25.

TABLE 5. "Efficiency and Productivity of Commercial Banks COVID-19" in Weighted normalized result matrix

Weighted normalized decision matrix					
0.1088	0.414878	0.0562208	0.117456	0.27738678	0.004952
0.0916	0.434824	0.1021817	0.115255	0.22041332	0.002204
0.1062	0.39798	0.117641	0.11864	0.24665556	0.00193
0.134	0.361966	0.14465	0.096325	0.31278075	0.003762
0.1142	0.415357	0.1188912	0.109846	0.30569037	0.004198
0.1083	0.363103	0.1295678	0.105276	0.31629357	0.006358
0.1139	0.351881	0.1508217	0.105719	0.29064248	0.002622
0.113	0.353862	0.20736	0.115187	0.27591658	0.002055
0.1305	0.287337	0.0799157	0.085642	0.31638727	0.003053
0.1191	0.14782	0.0366537	0.08511	0.24365041	0.001438
0.1005	0.382072	0.1380217	0.111558	0.29028473	0.005482
0.1251	0.373994	0.1366723	0.109391	0.32727667	0.002285

Table 3 Normalized Data shows the informational set for the E1, E2, E3, E4, E5, E6. The Normalized data is calculated from the data set value is divided by the sum of the square root of the column value.

TABLE 6. "Efficiency and Productivity of Commercial Banks COVID-19" in Positive Matrix

Positive Matrix					
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
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0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837
0.13404	0.434824	0.036654	0.0851101	0.22041332	0.001437837

Table 6 Positive Matrix shows the informational set for the value E1 = 0.13404, E2 = 0.434824, E3 = 0.036654, E4 = 0.0851101, E5 = 0.22041332, E6 = 0.001437837.

TABLE 7. Efficiency and Productivity of Commercial Banks COVID-19 in Negative matrix

Negative matrix					
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831

0.091597	0.147819513	0.207360044	0.1186403	0.32727667	0.006357831
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Table 7 Positive Matrix shows the informational set for the value E1= 0.091597, E2= 0.147819513, E3 = 0.207360044, E4= 0.1186403, E5 = 0.32727667, E6 = 0.006357831.

TABLE 8. Efficiency and Productivity of Commercial Banks COVID-19 in Si Positive & Si Negative & Ci

	SI Plus	Si Negative	Ci
B1	0.049651652	0.307343	0.8609176
B2	0.083690431	0.305689	0.785067
B3	0.099080055	0.266162	0.7287278
B4	0.13075673	0.228234	0.6357653
B5	0.090268643	0.282825	0.7580539
B6	0.121841241	0.229906	0.6536117
B7	0.144035787	0.213307	0.596925
B8	0.192462419	0.207182	0.5184164
B9	0.153743522	0.195723	0.5600624
B10	0.287393374	0.176128	0.3799788
B11	0.121982564	0.244566	0.6672127
B12	0.119893261	0.239492	0.6663936

Table 8 Si Positive & Si Negative & Ci shows the graphical representation

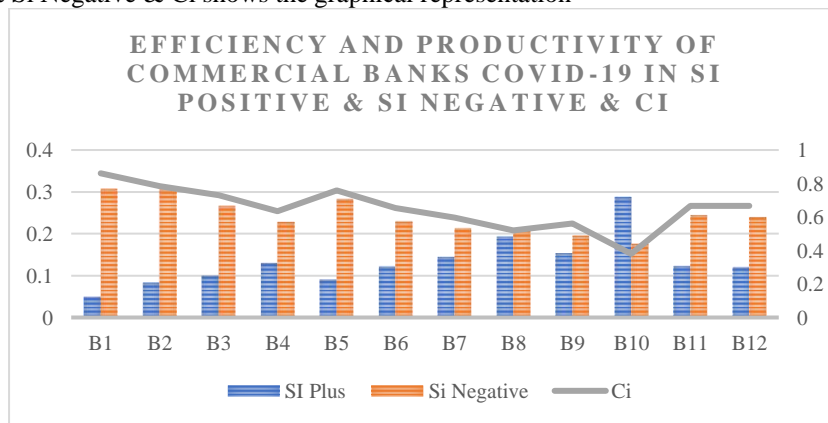


FIGURE 2. “Efficiency and Productivity of Commercial Banks COVID-19” in Si Positive & Si Negative & Ci

Figure 2 Si Positive & Si Negative & Ci shows the graphical representation

TABLE 9. Efficiency and Productivity of Commercial Banks COVID-19 in Rank

	Rank
B1	1
B2	2
B3	4
B4	8
B5	3
B6	7
B7	9
B8	11
B9	10
B10	12
B11	5
B12	6

Table 9 Rank shows the informational set for “the result it is seen that B1 is got the first rank where as is the B10 is having the lowest rank”.

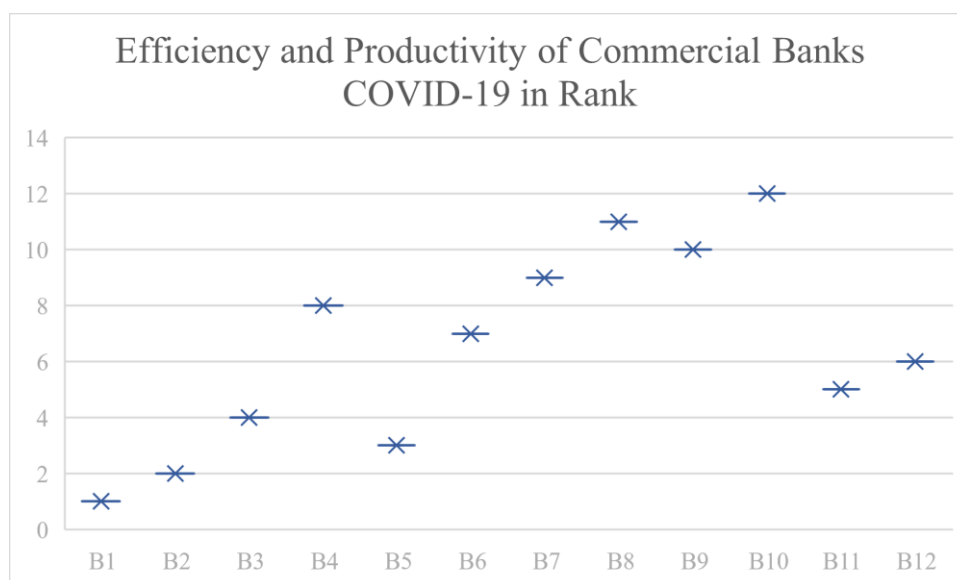


FIGURE 3. Efficiency and Productivity of Commercial Banks COVID-19 in Rank

Figure 3 shows the informational set for “the result it is seen that B1 is got the first rank where as is the B10 is having the lowest rank”.

Conclusion

Restrictions associated with the lockdown appeared to have moderated the self-imposed behavior rules that emerged as important descriptive variables for anticipated PA before to the confinement. As anticipated, there was little change in the amount of variation in unplanned PA that could be attributed to conduct laws before and after lockdown. The variability in mental health under lockdown was explained by intended PA, sedentary lifestyle, and other factors, and this shows that there is some correlation between our physical activity habits and our general stability. Due to social separation laws, the COVID-19 epidemic has significantly disrupted clinic. Yet, our center's care was not interrupted thanks to the modification of clinical practice and the incorporation of modeled clinical scenarios using a dedicated online platform. Also, the majority of the students enrolled in the third year of the medicine and surgical course said the education system worked well and lived up to aspirations. In order to assess the likelihood of low oil and equity returns during pandemic, a panel logit models is used. The power spectrum functions indicate that the likelihood of deleterious oil and supply returns is higher in the which was before timespan than in the comment period. It has seemed that the latter period's negative returns may have been sparked by panic or uncertainty in the corresponding markets. The study's main policy conclusion is that governments everywhere should take steps to lessen financial market uncertainty. This can be done by avoiding policy tensions and enhancing coordination between monetary and fiscal policies, which ensures that the pandemic's effects on the world economy are as minimal as possible. They include separate parental leave rights and increased financial assistance for limited and unskilled parents. Balancing employment by schooling or caring after children, and engaging in good quality social dwelling. Our findings also indicate a rise in the amount of money spent on family-friendly, scientific proof therapies for children's mental health.

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