

BIA-674 SUPPLY CHAIN ANALYTICS

Procurement Analysis

1. Problem Statement

VP Operations at MediCrystals needs expertise around 3 critical areas her team has identified. The manager of the Procurement and Sourcing team has heard from the CPO that some of the **critical suppliers** are **facing operational challenges** due to the pandemic.

The requirements are as follows:

- Develop a **high-level risk scoring methodology** or rationale to score the suppliers and review mitigation activities currently in place.
- Based on the supplier data available, the Risk Compliance Manager has currently identified two risk domains, finance and regulatory. As part of the regulatory risk domain, **score each supplier based on the risk factors**: labor unrests and environmental incidents. Identify other risk domains and factors contributing to the risk domains based on the available supplier data,
- Develop a **comprehensive risk scoring methodology** and **identify suppliers that pose the most risk**.

2. Methodology

Risk factors in supply chain include and the supplier data we have under each risk,

- Financial Risk (Revenue, Cash from Operations, Credit Rating)
- Operations Risk (S-OTD, Single Source)
- Data Management Risk (IP Protection, Data Security)
- Environmental Risk (Labour Unrests, Environmental Incidents)

Supplier Name	Location	Revenue in millions	Cash from Operations	Credit Rating	S-OTD	Single Source	IP Protection	Data security	Labour Unrests	Environmental Incidents
Plaxian	US	16.0131499	8.858858859	60	91	0	0	90	0	100
GutesGlas	Germany	21.9862669	22.63836111	60	85	100	0	80	100	100
Boavidro	Brazil	24.6215435	9.106606607	60	63	100	0	80	100	100
Saanch	India	8.34327527	10.90990991	40	90	100	0	90	100	100
RealGlass	China	100	100	20	82	0	100	100	0	0
Optikiet	China	0.29958376	0.583333333	80	88	0	100	70	100	100
BestOGlass	US	14.2607174	0.598098098	40	78	0	0	100	100	100
MedicMetric	Philippines	0.02651184	0.237737738	80	94	0	100	70	100	100
Shale	Saudi Arabia	6.4450277	7.736111111	60	86	100	0	80	100	0
Opticful	Italy	0.25186246	0.15954955	60	92	100	0	50	100	100
basicPharm	US	1.04721758	0.225225225	100	88	0	100	70	100	100
PharmyLeaf	India	3.79384395	8.517717718	40	79	100	0	80	100	100

Figure 1

The data above is presented, such that max value is 100 for each column. For Boolean columns like labour unrests and Environmental unrests, 1 is 100 and 0 is 0. The higher the column value

implies the less risk. For instance, Supplier RealGlass has higher revenue and MedicMetric has higher S-OTD.

Based on the computed values from Figure 1, calculated weighted score with different weights and without weightage to understand the sensitivity of data as seen in Figure 2. We have also ranked based on their score. The higher the score implies the less risk it imposes.

Weighted Score (40%,10%,10%,40%)	Rank	Weighted Score (35%,15%,15%,35%)	Rank	Score	Rank
40.37	12	37.02	11	40.65	12
67.20	1	60.17	1	63.29	1
64.65	3	56.90	5	59.64	6
61.90	6	54.85	7	59.92	4
43.43	10	55.10	6	55.78	9
63.68	5	57.08	4	59.88	5
56.21	9	53.87	8	48.10	11
63.90	4	57.25	3	60.47	3
43.19	11	34.14	12	48.91	10
60.15	7	50.18	10	55.82	8
66.40	2	58.15	2	62.14	2
59.92	8	52.41	9	56.81	7

Figure 2

As we can see from the chart below, we have split the weight of risks into 40%, 10%, 10%, 40% for Financial Risk, Operational Risk, Data Management risk, Regulatory Risk respectively. We can understand less the score implies the higher the risk. Here, Plaxian from the US is at highest risk and GutesGlas from Germany is at less risk.

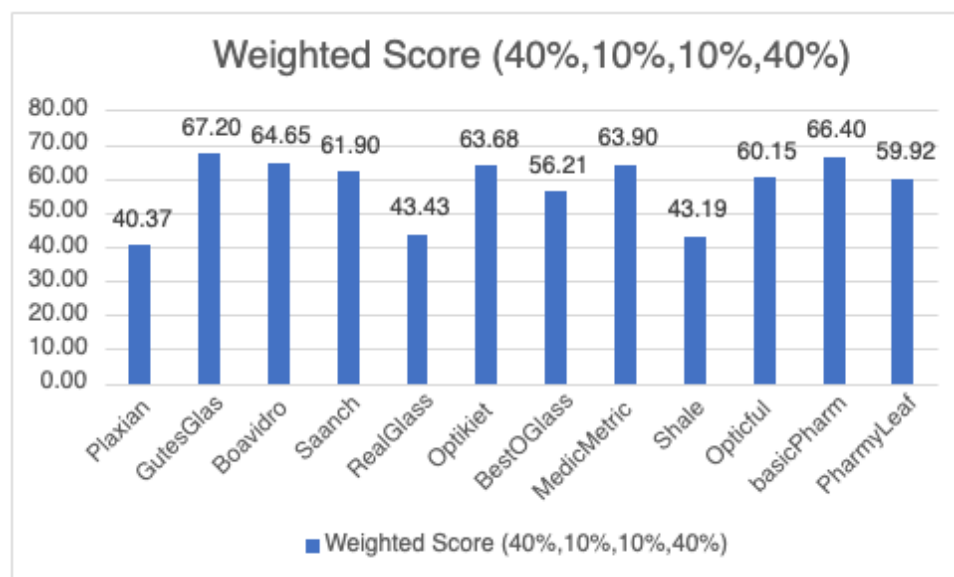


Figure 3

In the chart below, we have split the weight of risks into 35%, 15%, 15%, 35% for Financial Risk, Operational Risk, Data Management risk, Regulatory Risk respectively. Here, Shale from Saudi Arabia is at highest risk and GutesGlas from Germany is at less risk.

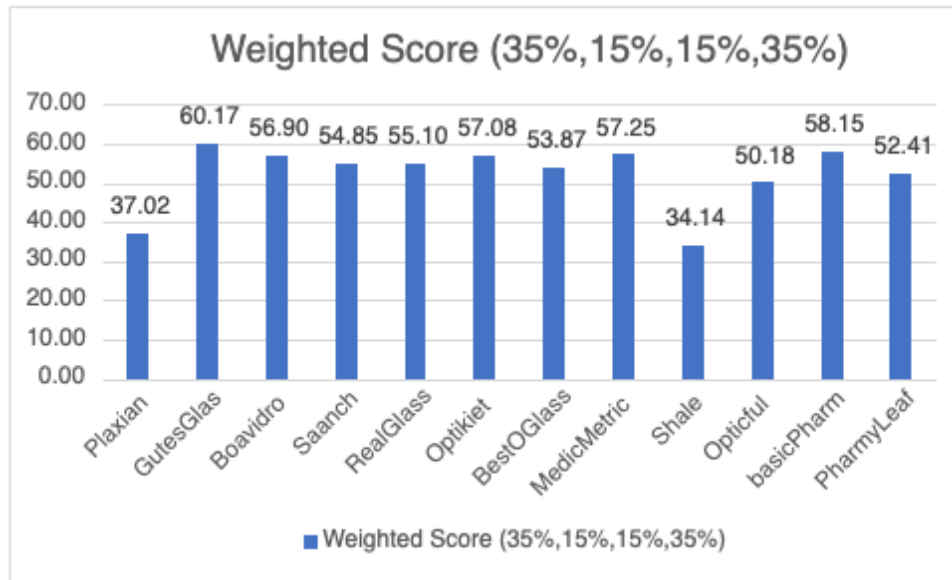


Figure 4

At last, we averaged the score without weightage. Here, Shale from Saudi Arabia is at highest risk and GutesGlas from Germany is at less risk.

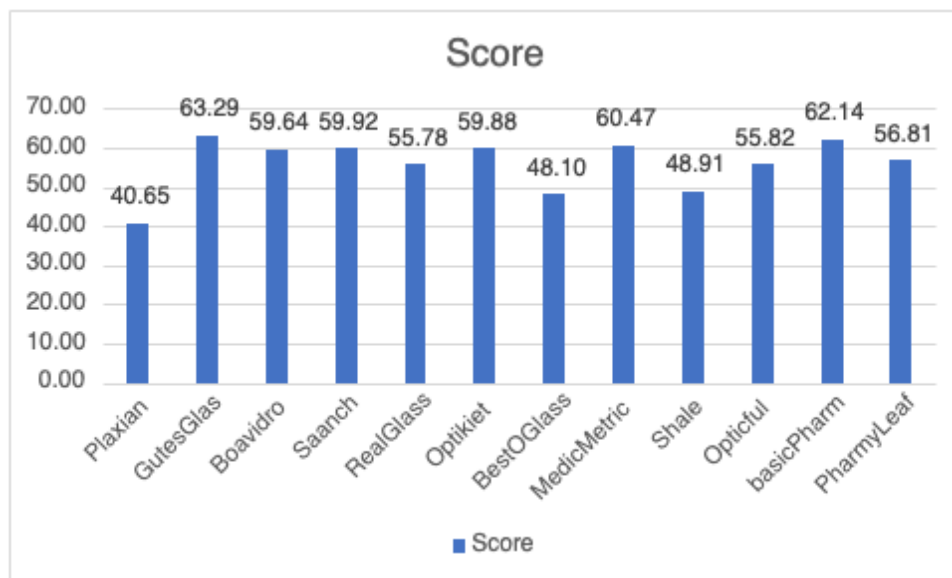


Figure 5

3. Conclusion

From the above analysis, we understand that data sensitivity exists as the values change in each of the scores including weighted and normal scoring). In overall, Plaxian is at most risk and Shale is at second most risk. In other hand, GutesGlass is the supplier with least risk regardless of the weightage.