

School of , Liberty University

BIOPHARMA



Author Note

I have no known conflict of interest to disclose.

Correspondence concerning this article should be addressed to . Emai:

Abstract

Bio Pharma should continue its operation in these countries, especially for India. However, a high quantity of domestic sales has been observed for Mexico regarding the quantity shipped to the U.S. as the volume obtained is 11. Exchange rates help in comparing foreign currencies with the local currencies. This can allow the organisation to identify the areas or regions with a profit in the market. This can help in meeting the organisational objectives and at the same time can help in developing the revenue streams in the organisation.

Keywords: Highcal solution, Relaxed data, Exchange rates, Fixed cost, Import duties, Industrial Revolution 4.0



1. “How should BioPharma have used its production network in 2013? Should any of the plants have been idled? What is the annual cost of your proposal, including import duties?”

From the Excel files, it has been witnessed that the organisation has prepared a highcal solution and a relaxed data set for the effective data set. In this section, the data sets will be included in tabular format for a detailed understanding of the process.

Highcal Quantity Shipped From / To						
From / To	Latin America	Europe	Asia w/o Japan	Japan	Mexico	U.S.
Brazil	0.0	0.0	0.0	0.0	0.0	0.0
Germany	0.0	0.0	0.0	0.0	0.0	0.0
India	0.0	6.0	5.0	7.0	0.0	0.0
Japan	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	7.0	9.0	0.0	0.0	3.0	11.0
U.S.	0.0	0.0	0.0	0.0	0.0	7.0

Figure 1: Highcal Quantity Shipped

(Source: Provided)

From the figure above, it has been seen that the value for highcal amount of the quantity shipped during the period is majorly observed for India, Mexico, and the U.S. Based on this, the organisation Bio Pharma should continue its operation in these countries, especially for India. However, a high quantity of domestic sales has been observed for Mexico regarding the quantity shipped to the U.S. as the volume obtained is 11. Based on this, it can be stated that the Brazil, Germany and japan need to shut down the production process as there is no production in the highcal phase.

Relax Quantity Shipped From / To						
From / To	Latin America	Europe	Asia w/o Japan	Japan	Mexico	U.S.
Brazil	0.0	0.0	0.0	0.0	0.0	0.0
Germany	7.0	12.0	3.0	8.0	3.0	2.0
India	0.0	0.0	0.0	0.0	0.0	0.0
Japan	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	0.0	0.0	0.0	0.0	0.0	0.0
U.S.	0.0	0.0	0.0	0.0	0.0	15.0

Figure 2: Relax Quantity Shipped

(Source: Provided)

From this phase, it can be seen that a high rate of production or supply has been observed for Germany. This states that Germany has supplied hugely during the relaxation phase.

From / To	Latin America	Europe	Asia w/o Japan	Japan	Mexico	U.S.
Brazil	8.9	9.2	9.2	9.2	9.1	9.2
Germany	10.4	10.1	10.3	10.3	10.2	10.2
India	8.6	8.5	8.3	8.4	8.6	8.6
Japan	10.4	10.3	10.2	10.0	10.4	10.4
Mexico	9.0	8.9	9.1	9.1	8.8	8.9
U.S.	9.1	8.9	9.1	9.1	8.9	8.8

Figure 3: Total Variable Cost Including Duties for Highcal

(Source: Provided)

From / To	Latin America	Europe	Asia w/o Japan	Japan	Mexico	U.S.
Brazil	11.4	11.7	11.7	11.7	11.6	11.7
Germany	12.5	12.2	12.4	12.4	12.3	12.3
India	11.0	10.9	10.7	10.8	11.0	11.0
Japan	12.6	12.5	12.4	12.2	12.6	12.6
Mexico	11.5	11.4	11.6	11.6	11.3	11.4
U.S.	11.5	11.3	11.5	11.5	11.3	11.2

Figure 4: Total Variable Cost Including Duties for Relax

(Source: Provided)

From the figures above, it has been seen that the organisation has included the organisation segregated the total cost into the highcal costs and the cost involved during the relaxation phase. From the words of Mishan & Quah (2020), analysis of cost helps in measuring the level of benefits or profits made from the business. This can help in better decision-making.

2. “How should Landgraf structure his global production network? Assume that the past is a reasonable indicator of the future in terms of exchange rates.”

In this case, the organisation needs to ensure that the exchange rates of the currencies are followed. According to Hofmann et al. (2021), exchange rates help in comparing foreign currencies with the local currencies. This can allow the organisation to identify the areas or regions with a profitable market. This can help in meeting the organisational objectives and at the same time can help in developing the revenue streams in the organisation.

Plant	Plant Fixed Cost (Million \$)	Highcal Fixed Cost (Million \$)	Relax Fixed Cost (Million \$)	Highcal Raw Material Cost (\$/kg)	Highcal Production Cost (\$/kg)	Relax Raw Material Cost (\$/kg)	Relax Production Cost (\$/kg)
Brazil	20.0	5.0	5.0	3.6	5.1	4.6	6.6
Germany	45.0	13.0	13.0	3.9	6.0	5.0	7.0
India	14.0	3.0	3.0	3.6	4.5	4.5	6.0
Japan	13.0	4.0	4.0	3.9	6.0	5.1	7.0
Mexico	30.0	6.0	6.0	3.6	5.0	4.6	6.5
U.S.	23.0	5.0	5.0	3.6	5.0	4.5	6.5

Figure 5: Fixed and Variable Costs at Current Exchange Rates

(Source: Provided)

From the figure above, it can be seen that the fixed and variable costs for the various regions have been estimated and this can help in developing an idea regarding the effective use of the currencies and the markets which need to be focused.

3. “Is there any plant for which it may be worth adding a million kilograms of additional capacity at a fixed cost of \$3 million/year?”

Based on Figure 3, it has been seen that all of the production units or plants have a fixed cost greater than the estimated cost and thus, an additional incur of the fixed cost will be a burden on the organisation. From the words of Thunström et al. (2020), cost analysis helps in evaluating the current costs and the effectiveness of the profits. For example, the fixed costs for Brazil are estimated at \$1,266,331,000 [*Refer to Case Study of Bio Pharma*]. An additional cost of + \$3,000,000 will result in a total fixed cost of \$1,269,331,000 which is greater than \$1,267,179,000 and thus this is not worthy. Similarly, the total cost for India, Mexico and the U.S. has been observed at \$1,268,483,000, \$1,269,074,000 and \$1,268,670,000 respectively. Thus, these are not worthy options and this might result in an additional financial burden on the organisation.

4. “How are your recommendations affected by the reduction of duties?”

The basic recommendations which need to be included are lowering the import duties to zero and this can help in developing the production levels. High import duties result in increasing

the costs for the organisation (Sandkamp, 2020). On the other hand, to increase the cost involved in transportation and lower the fixed cost which is considered as facility costs.

5. “The analysis has assumed that each plant has a 100 per cent yield (percentage output of acceptable quality). How would you modify your analysis to account for yield differences across the plant”

From the case study, it has been seen that production in Japan is continuously low. In this context, the case study of BioPharma states that this organisation is using multiple technologies by considering the regulatory factors and the environmental factors. As per the views of Lu et al. (2020), the inclusion of technology helps in developing the management theory. Based on this, it is expected that this inclusion of technology can be beneficial for the development of the production process or yield rate in the business.

6. “What other factors should be accounted for when making any recommendation?”

As mentioned the basic recommendations which need to be included are lowering the import duties to zero and this can help in developing the production levels. The Industrial Revolution 4.0 is considered an important factor in developing the traditional business practice (Kayikci et al. 2022). In this context, developing the existing technological stances and including recent and latest technological stances in the business can help in developing the current production norms in the business of BioPharma.

Conclusion

The fixed and variable costs for the various regions have been estimated and this can help in developing an idea regarding the effective use of the currencies and the markets which need to be focused. The production units or plants have a fixed cost greater than the estimated cost and thus, an additional incur of the fixed cost will be a burden on the organisation.



References

- Hofmann, B., Shim, I., & Shin, H. S. (2021). Emerging market economy exchange rates and local currency bond markets amid the Covid-19 pandemic. *Available at SSRN 3761875*.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3761875
- Lu, Y., Xu, X., & Wang, L. (2020). Smart manufacturing process and system automation—a critical review of the standards and envisioned scenarios. *Journal of Manufacturing Systems*, 56, 312-325. https://www.researchgate.net/profile/Yuqian-Lu-5/publication/342693197_Smart_manufacturing_process_and_system_automation_-_A_critical_review_of_the_standards_and_envisioned_scenarios/links/5f00ed1092851c52d618031d/Smart-manufacturing-process-and-system-automation-A-critical-review-of-the-standards-and-envisioned-scenarios.pdf
- Mishan, E. J., & Quah, E. (2020). *Cost-benefit analysis*. Routledge.
- Sandkamp, A. (2020). The trade effects of antidumping duties: Evidence from the 2004 EU enlargement. *Journal of International Economics*, 123, 103307.
<https://www.econstor.eu/bitstream/10419/191266/1/wp-2018-261-sandkamp-antidumping-duties-eu.pdf>
- Thunström, L., Newbold, S. C., Finnoff, D., Ashworth, M., & Shogren, J. F. (2020). The benefits and costs of using social distancing to flatten the curve for COVID-19. *Journal of Benefit-Cost Analysis*, 11(2), 179-195. <https://www.cambridge.org/core/services/aop-cambridge->

core/content/view/204BD93C135EC727FAEFC62E3BE72C3B/S2194588820000123a.pdf/the-benefits-and-costs-of-using-social-distancing-to-flatten-the-curve-for-covid-19.pdf

