

A Case Study on Selecting Location based on Transportation Operations

LUMSKOLA is new start up with the mission to revolutionize the beverage space by introducing new soda line. The formula essentially capitalizes on healthy fruit sugar present in special nuts cultivated in African countries (Kenya, Tanzania, Botswana and Nigeria). LUMSKOLA claim that their KOLA has upto 80% less sugar than any of their competition in the market. They claim that their Kola is healthiest Soda on the shelf.

Their magical recipe is essentially a mix of NUTs' based sugar, natural colors, caffeine, phosphoric acid, a mixture of essential oils such as orange, lime, lemon, and lavender. They import the mixture in shape of Syrup (KOLA Syrup) from their suppliers in African countries. This Syrup is then mixed with carbonated water with the proportion known only to their three top executives to make final LUMS KOLA products in their plants in Northern Punjab. LUMS KOLA comes in three flavors.

LUMSKOLA is heavily investing in R&D to cultivate the African NUTS in Pakistan to cut the cost on international shipping and their initial experiments have shown promising results but the issue is with scale. Besides, they have to import caffeine extract anyway to comply to their secret recipe.

Local Manufacturing

LUMSKOLA has identified two locations for their plants in Northern Punjab i.e., Faisalabad (FP) & Hafizabad (HP) Plants. They have different capacities, operational fixed costs and variable costs. The details are mentioned as follow

Plant Cost & Capacity:

per Lit		Var Cost	Fixed Cost	Capacity (Liters)
	HP	14	9,000,000	6,000,000
	FP	23	18,000,000	4,000,000

Distribution Network

LUMSKOLA Products are manufactured in their plants, they are then packed and transported to Local distribution centers (DCs). The Company is considering four candidate DCs for their transshipments to retailers. The details of these DCs is as follow

DC Cost & Capacity:

per Lit		Var Cost	Fixed Cost	Capacity (Liters)
	Lahore	1.5	8,100,000	3,000,000
	Gujranwala	0.9	7,200,000	3,500,000
	Wazirabad	1.43	7,110,000	1,500,000
	Sialkot	1.76	7,335,000	1,400,000

Demand at Retailers.

LUMSKOLA Products have been received with enthusiasm in the market. The market has responded well and in their first 6 months of operation, LUMSKOLA could see the potential to expand their presence throughout country at first before they go international. At this point in time, they are fulfilling demand using their fulfillment centers in 11 cities. The Demand Planning Team has done their work well and have provided us with the Demand of each city, The demand of each city is tabulated as follow.

Retailer Demand:

Liters	City	Demand (Liters)
	Kasur	415000
	Lahore	985000
	Gujrat	385000
	Sheikhupura	289000
	Gujranwala	658000
	Kamoki	311000
	Muridke	412000
	Wazirabad	345000
	Daska	216000
	Sialkot	587000
	Narowal	412000

Linehaul Transportation.

Transportation manager along his team have calculated the cost per Lit for transporting the final product from Plant to DCs and then DCs to Retail centers. The costs are given as follow.

Inbound Transportation Cost:
(Plants to DCs)

Rs/Lit
 (0.3)

	Faisalabad	Hafizabad
	FP	HP
Lahore	45	30
Gujranwala	53	17
Wazirabad	57	21
Sialkot	68	32

Outbound Transportation Cost:**(Dcs to RtCs)**

Rs/ Liters

(0.45)

	Kasur	Lahore	Gujrat	Sheikhupura	Gujranwala	Kamoki	Muridke	Wazirabad	Daska	Sialkot	Narowal
Lahore	23	2	63	23	36	26	17	55	51	59	54
Gujranwala	63	36	22	38	2	11	22	14	12	23	37
Wazirabad	77	55	9	53	14	25	32	1	14	18	46
Sialkot	79	59	22	56	23	34	40	18	12	2	27

They have based these costs on following Distance Matrix

Distance Matrix:

Kms

	Faisalabad	Hafizabad	Kasur	Lahore	Gujrat	Sheikhupura	Gujranwala	Kamoki	Muridke	Wazirabad	Daska	Sialkot	Narowal
Hafizabad	102	0	164	101	87	64	58	63	103	71	82	107	140
Faisalabad	0	102	205	150	205	95	175	161	139	189	210	226	217
Kasur	205	164	0	50	187	112	141	120	98	170	160	176	167
Lahore	150	101	50	0	140	51	81	58	37	123	114	130	120
Gujrat	205	87	187	140	0	120	49	71	95	20	58	49	122
Sheikhupura	95	64	112	51	120	0	85	58	36	118	109	125	115
Gujranwala	175	58	141	81	49	85	0	25	49	31	26	52	83
Kamoki	161	63	120	58	71	58	25	0	24	55	51	75	76
Muridke	139	103	98	37	95	36	49	24	0	72	73	89	79
Wazirabad	189	71	170	123	20	118	31	55	72	0	30	40	102
Daska	210	82	160	114	58	109	26	51	73	30	0	26	61
Sialkot	226	107	176	130	49	125	52	75	89	40	26	0	60
Narowal	217	140	167	120	122	115	83	76	79	102	61	60	0

Costing Model

LUMSKOLA is selling their KOLA at very competitive price of Rs. 100/L. Their Costing Model Considers 3% G&A, net 24% Taxes effect, 8% Corp OH & 3% Marketing expenses of the total operating cost for calculation of total Business Cost.

Current Situation

LUMSKOLA has a DC in Gujranwala and all the products flow from that DC. They are producing 3 million Liters of their product in HP and the rest is being produced in FP. Their ROI is -13%.

Task

Can you accept this challenge and help them design their network and make this endeavor financially profitable?

Data Sheet and Working Sheets are attached with this Case