

Megabox Inc manufactures color television sets and video cassette recorders (VCRs). It exports to the blooming market in Zumburu, one of the largest Middle Eastern markets. The company has a problem finding space in cargo airlines serving Zumburu.

There are a number of shipping services that company distribution manger is considering to solve the problem of not enough space available. Scheduled air cargo flights leave three times a week and could carry 3000 ft³ per week. Another 12-month air transportation contract is being offered to the company that would provide the extra needed space at 10% discount but requires a commitment of at least 4000 ft³ per week during the contract period.

By sea the weekly conference container vessel offers all needed space but he is limited to shipping in 40 foot equivalent unit (FEU) container loads (CL) or in less than container load (LCL). A ship operator who is out of the conference offered a semi-monthly container service to Zumburu using 20 FEU containers at a 15% discount over the conference freight rates.

Estimates for next year sales are prepared by marketing department that is discounted by 10% and used make predictions for transportation costs. It is found that average Shipping Volume of all products per week is 7077 ft³. This is higher than the minimum required in the twelve month contract. It is concluded that twelve-month contract limitation of 4000 ft³ is not a problem unless the government of Zumburu imply limitations on imports. Given that the government of Zumburu is a member of the World Treaty Organization (WTO) it is not expected that it will apply any limitations on its imports in accordance to GATT agreement on free trade. It is concluded that there is no damage to the company under the 4000 ft³ of minimum volume per week restriction.

Transportation cost is determined by volume and weight of shipment. It is found that transportation costs of Conference Containers (CL) are cheapest costs at \$34,678 which is 47% of transportation costs of Scheduled Air of \$74310. Other costs and discounts are included in transportation cost that varies for each transportation method. It is found that other costs and discounts are cheaper for scheduled air and the twelve-month air contract at \$2,933. However other costs and discount on sea transported products only account 3% of total shipping costs by air. Thus other costs and discounts is not considered significant in determining the best shipment method to utilize. Storage costs which are dependent on days of storage at destination port are most expensive for scheduled air method at \$12,837 and cheapest for sea conference container ships at \$1,497.

Total Shipping costs are also estimated on marketing sales forecasts discounted at 10%. Cheapest costs are for sea conference containers (CL) at a weekly cost of \$46,145.

Highest total shipping costs per week are for scheduled air at a cost of \$90,079. The twelve-month deal provides total shipment costs of \$82,648.

It is concluded that sea conference containers CL 40 FEU are the most cost effective method to transport products of Megabox, Inc. The 15% discounted out of conference LCL 20 FEU containers are more expensive than sea conference containers at a total value of transportation costs of \$59,477. The time for the shipment to arrive to its destination by Conference Containers (CL) is the longest time to arrive its destination. This could be adjusted by early shipment of products in anticipation of expected sales of Megabox Inc. Other than the total costs of shipment, the twelve-month contract is not selected due to the concerns about erratic changes in demand and possible government action in the government of Zumburu.

The following four methods of shipping are compared: Scheduled Air, Sea Conference 40 Foot Equivalent Unit (FEU) container loads (CL), non-conference 20 FEU less than container load (LCL), and the twelve-month Air contract. By comparing the shipping costs for each method it is found that

Table 1: Number of Units Forecasted to sell in Quarters 1, 2, 3, & 4

	TV1	TV2	TV3	VCR
Sale Forecast Q1	3,000	2,200	1,200	6,300
Adjusted Sale Forecast Q1	2,700	1,980	1,080	5,670
Sale Forecast Q2	5,200	3,200	2,400	11,100
Adjusted Sale Forecast Q2	4,680	2,880	2,160	9,990
Sale Forecast Q3	2,200	1,800	1,400	6,500
Adjusted Sale Forecast Q3	1,980	1,620	1,260	5,850
Sale Forecast Q4	2,800	2,000	1,200	7,200
Adjusted Sale Forecast Q4	2,520	1,800	1,080	6,480
Sale Forecast Total	13,200	9,200	6,200	31,100
Adjust Sale Forecast Total	11,880	8,280	5,580	27,990

Table 2: Adjusted Forecasted Volume, Weight and Price for Quarters 1, 2, 3, & 4

Forecast Shipping Volume Q1	43,200	19,800	2,160	17,010
Forecast Weight Q1	48,600	29,700	4,320	39,690
Forecast Selling Price Q1	972,000	455,400	129,600	1,701,000
Forecast Shipping Volume Q2	74,880	28,800	4,320	29,970
Forecast Weight Q2	84,240	43,200	8,640	69,930
Forecast Selling Price Q2	1,684,800	662,400	259,200	2,997,000
Forecast Shipping Volume Q3	31,680	16,200	2,520	17,550
Forecast Weight Q3	35,640	24,300	5,040	40,950
Forecast Selling Price Q3	712,800	372,600	151,200	1,755,000
Forecast Shipping Volume Q4	40,320	18,000	2,160	19,440
Forecast Weight Q4	45,360	27,000	4,320	45,360
Forecast Selling Price Q4	907,200	414,000	129,600	1,944,000

Table 3: Adjusted Forecasted Volume, Weight and Price for One Year

	TV1	TV2	TV3	VCR	Total
Forecasted Shipping Volume	190,080	82,800	11,160	83,970	368,010
Forecasted Weight	213,840	124,200	22,320	195,930	556,290
Forecasted Selling Price	4,276,800	1,904,400	669,600	8,397,000	15,247,800

**Table 4: Adjusted Forecasted Volume, Weight and Price per week
for Quarters 1, 2, 3, & 4**

	TV1	TV2	TV3	VCR	All Products
Forecast Shipping Volume Q1	3,323	1,523	166	1,308	6,321
Forecast Weight Q1	3,738	2,285	332	3,053	
Forecast Selling Price Q1	74,769	35,031	9,969	130,846	
Forecast Shipping Volume Q2	5,760	2,215	332	2,305	10,613
Forecast Weight Q2	6,480	3,323	665	5,379	
Forecast Selling Price Q2	129,600	50,954	19,938	230,538	
Forecast Shipping Volume Q3	2,437	1,246	194	1,350	5,227
Forecast Weight Q3	2,742	1,869	388	3,150	
Forecast Selling Price Q3	54,831	28,662	11,631	135,000	
Forecast Shipping Volume Q4	3,102	1,385	166	1,495	6,148
Forecast Weight Q4	3,489	2,077	332	3,489	
Forecast Selling Price Q4	69,785	31,846	9,969	149,538	

Table 5: Adjusted Forecasted Volume, Weight and Price per Week

Weekly Average	TV1	TV2	TV3	VCR	All Products
Forecasted Shipping Volume	3,655	1,592	215	1,615	7,077
Forecasted Weight	4,112	2,388	429	3,768	10,698
Forecasted Selling Price	82,246	36,623	12,877	161,481	293,227

**Table 6: Transportation Costs per Week for
Scheduled Air, CL, LCL, 12-month air deal**

	Scheduled Air	Conference Container (CL)	Non Conference Container (LCL)	12 month Air Deal
Transport to Packer		1	1	
Packing		2	2	
Transport to port	1	0	0	
Freight	10	2	2	
Unpacking			1	
Transport to consignee	0	0	0	
Total Shipping Costs / Volume	11	5	7	9
Shipping Cost per week	74,310	34,678	46,567	66,879

Table 7: Total Transportation Costs per year for shipping methods: Scheduled Air, CL, LCL, 12-month deal

	Air	CL	LCL	12 month deal
	\$	\$	\$	\$
Transportation Costs Per Week	74,309.71	34,677.87	46,567.42	66,878.74
Percentage of Total Cost	82%	75%	78%	81%
other costs and discounts in one week	\$ 2,932.27	\$ 9,969.72	\$ 10,556.17	\$ 2,932.27
Percentage of Total Cost	3%	22%	18%	4%
storage cost in one week	\$ 12,837.46	\$ 1,497.70	\$ 2,353.53	\$ 12,837.46
Percentage of Total Cost	14%	3%	4%	16%
Totals	\$ 90,079.44	\$ 46,145.28	\$ 59,477.12	\$ 82,648.47