Memo

To: Matt Ford

From: Travis Garrett, Jon Meiners, Jason Parnes

Date: 10/29/2007

Re: DC Location

Introduction

As requested, we have conducted a detailed analysis for the location of the proposed Distribution Center. The goal of our study was to find the best possible location relative to our current maquiladoras. Our goal is to minimize cost of transportation per unit of volume to the Distribution Center.

Conclusion

Location The co-ordinates for the suggested location of the Distribution Center are (230,285). This is the best possible location due to the transportation costs, volume of fabric shipped weekly and distance from an arbitrary point (0,0) on Graph's 1 and 2.

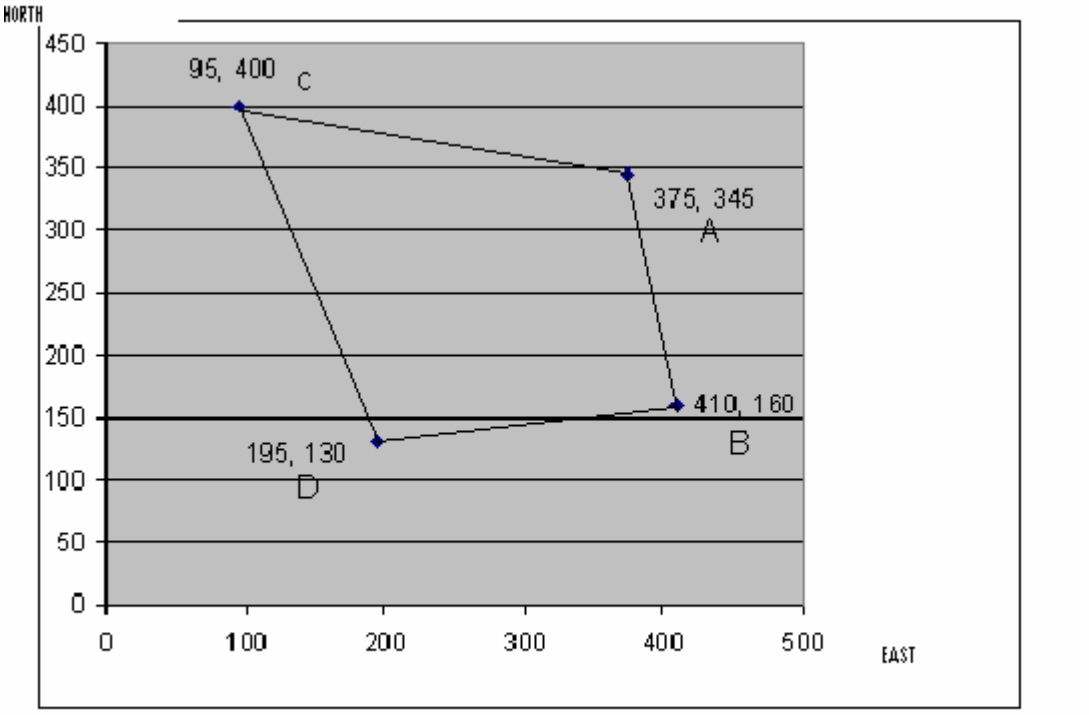
Stability We are unsure of the financial stability of operating in Mexico in recent years, due to the increased cost of the maquiladoras. A total of 350 plants have closed down since 2001. Another 40% of 71 companies were closing down or thinking about closing down assembly operations in Mexico, according to a recent Business week article. Wages and taxes are up in the last five years and increasing value in the Peso will only aid the increase.

Manufacturing We think it may be a wise choice to explore other opportunities for factories before we invest in a Distribution Center. The cost of manufacturing in Asia particularly is much cheaper and less risky than the current conditions in Mexico.

Analysis

We have done analysis using a technique called the Center of Gravity Method in order to determine the best possible location of the Distribution Center. Graph 1 shows the position of each maquiladora with the outline illustrating that the Distribution Center should be located somewhere within the lines. The Center of Gravity Method then determines what position in those lines would be most suitable in terms of volume, cost and time. The Center of Gravity is a proven method in determining the best possible location (Stevenson)[i]. We also used outside resources to examine the stability of the maquiladoras in Mexico to determine if our company should build in Mexico or consider another country.

Graph 1- Current Locations



Location The Center of Gravity Method uses this formula (shown below) to determine the exact co-ordinates within the lines shown in Graph 1. The location is calculated by using each co-ordinate separately in terms of miles east and miles north. These two calculations will then determine a final location for the Distribution Center.

$$\frac{\sum T_i V_i Z_i}{\sum T_i V_i}$$

T_i = *Transportation cost per unit of volume per mile for each location i*
V_i = *Volume to be transported to (from) each location i*
Z_i = *Distance from any arbitrary origin to each location i*
i = *number of customers (destinations)*

Location East (x-coordinate) =

$$\frac{(5*4500*375) + (9*3800*410) + (7*9000*95) + (4*7000*195)}{(5*4500) + (9*3800) + (7*9000) + (4*7000)}$$

Location East = 229.55

Location North (y-coordinate) =

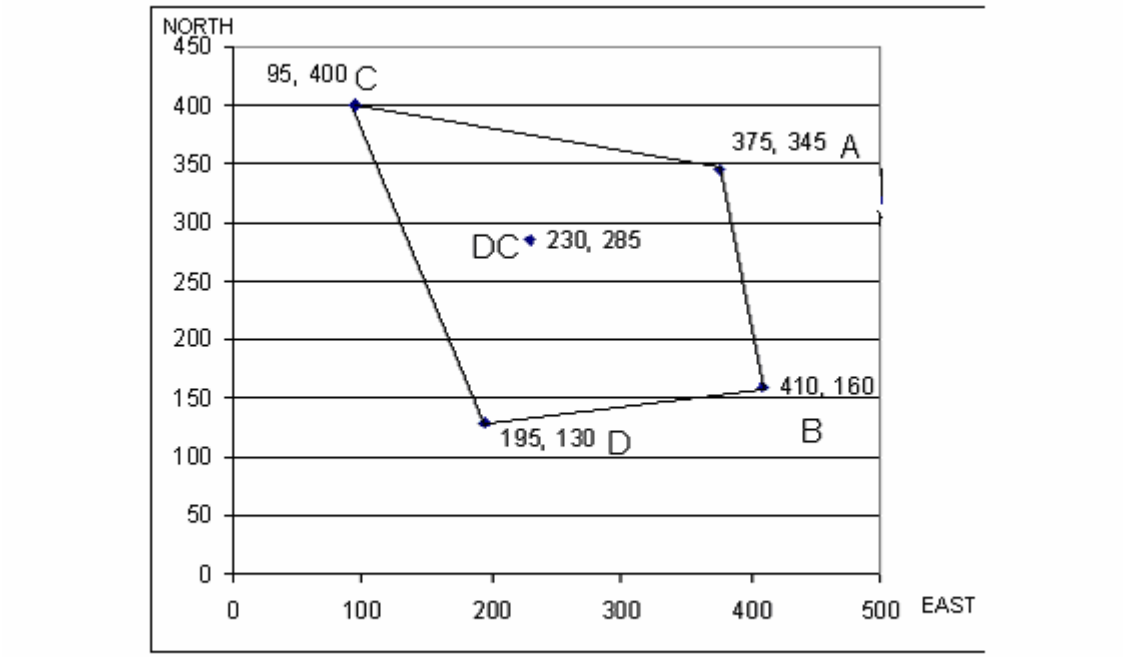
$$\frac{(5*4500*345) + (9*3800*160) + (7*9000*400) + (4*7000*130)}{(5*4500) + (9*3800) + (7*9000) + (4*7000)}$$

Location North = 284.86

Suggested Location for Distribution Center (rounded to the nearest mile): (230,285)

After calculating the suggested locations' co-ordinates, Graph 2 shows where the Distribution Center should be located with regards to the maquiladoras.

Graph 2- Suggested Location



Stability and Manufacturing Many companies are leaving Mexico in favor of other countries because the maquiladoras have lost many of their tax and tariff exemptions. The duty free status was ended by an agreement with NAFTA in 2001, raising the tariff on imported goods immensely. Wages increased nearly 125% in the past five years. The Mexican Government is also increasing taxes on maquiladoras and dampening their commitment to them, trying to more advanced factories. "Growth in output, which ran in the double digits through the late 1990s, has stalled--for several reasons"[ii].

This information shows a very unstable supply chain for the industry our company is in. If we had to close down one of our assembly plants our Distribution Center found using the Center of Gravity method would no longer be in the right location. We need to get a stronger commitment from management that we are planning to continue our Mexican operations into the extended future. We should also do a review of all of our maquiladoras before committing to the DC. With over 300 companies leaving Mexico for other foreign opportunities we need to do an extensive review of the cost associated with the maquiladoras.

Stability If we decide it is still worthwhile to operate in Mexico it may be wise to reduce some of the risks involved in our DC location. At this point we our maximizing the location of the DC according to time, volume, and cost. We may wan to optimize our selection of the DC location. We could eliminate one of the maquiladoras in our Center of Gravity Method and find the optimal DC assuming this plant shut down. We could follow this method for the remaining three maquiladoras assuming only the selected plant shut down. We then would have four additional DC on our graph. There is a lot of analysis we could do with this updated graph. If we know which plant is most likely to shut down we can move our DC to equate for this to our predetermined point. If we have no way to determine which plant may shut down we could pick an optimal DC inside the four additional DC.

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[i] Stevenson, William. *Operations Management 9th ed*ition. McGraw-Hill, 2007

[ii] Using Information from a Business Week article April 29, 2002
http://www.businessweek.com/magazine/content/02_17/b3780078.htm