INTRODUCTION
TO
THE DIAMOND CARTESIAN SPACE

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DIAMOND CARTESIAN SPACE

- In Diamond Cartesian Space design is based on the 3-D Cartesian Space. The Diamond Cartesian Space has two levels of analysis. Each level of analysis is represented by

Level 1:

$$Y1 = F(X1i)$$

The "i" represent the allocation of each *"X"* under the same level of analysis, in our case Level 1 (or **Y1**). Therefore, the first level has five axes represented by:

$$Y1 = F(X11, X12, X13, X14)$$

The four independent variables are *"X11", "X12", "X13"* and *"X14"* and one dependent variable *"Y1"* respectively.

Level 2:

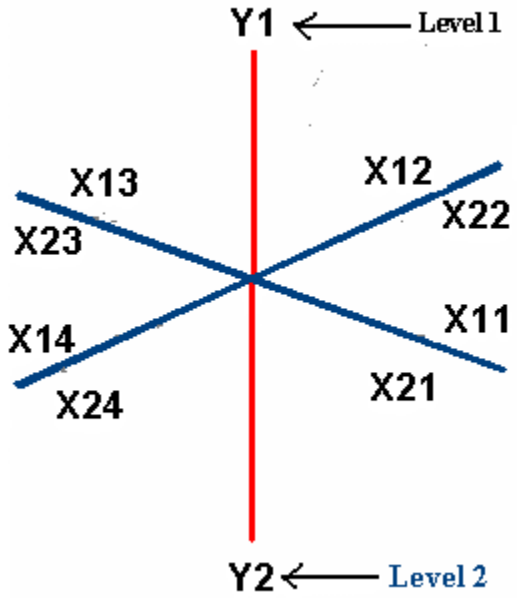
$$Y2 = F(X2i)$$

The "i" represent the allocation of each *"X"* under the same level of analysis, in our case Level 2 (or **Y2**). The second level of analysis is represented by:

$$Y2 = F(X21, X22, X23, X24)$$

The four independent variables are *"X21", "X22", "X23"* and *"X24"* and one dependent variable *"Y2"* respectively under the level 2.

NOTE: We assume that between level one *"Y1"* of analysis and level two *"Y2"* of analysis non-exist inter-dependency, the common issue between these two levels of analysis is that both levels are used the same axes on the *"Xi" level* in the same Cartesian Space.



DIAMOND CARTESIAN SPACE

- However, level one *"Y1"* of analysis cannot affect the level two *"Y2"* of analysis. And level two *"Y2"* of analysis also cannot affect the level one *"Y1"* of analysis. If we draw both different level of analysis in the Cartesian Space then we can compare two different scenarios in the same Cartesian Space to visualize two different scenarios at the same time. Something important to mention is that the fifth and sixth axis *(Y1 and Y2)* is positioned in the center of the Cartesian Space (among the other four *"Xi"*). We assume that both *"Y"* or *(Y1,Y2)* use only positive values. The final result, if we join the two levels of analysis, then we can observe a figure represented by a diamond. The Functions to be applied in the Diamond Cartesian Space, there are:
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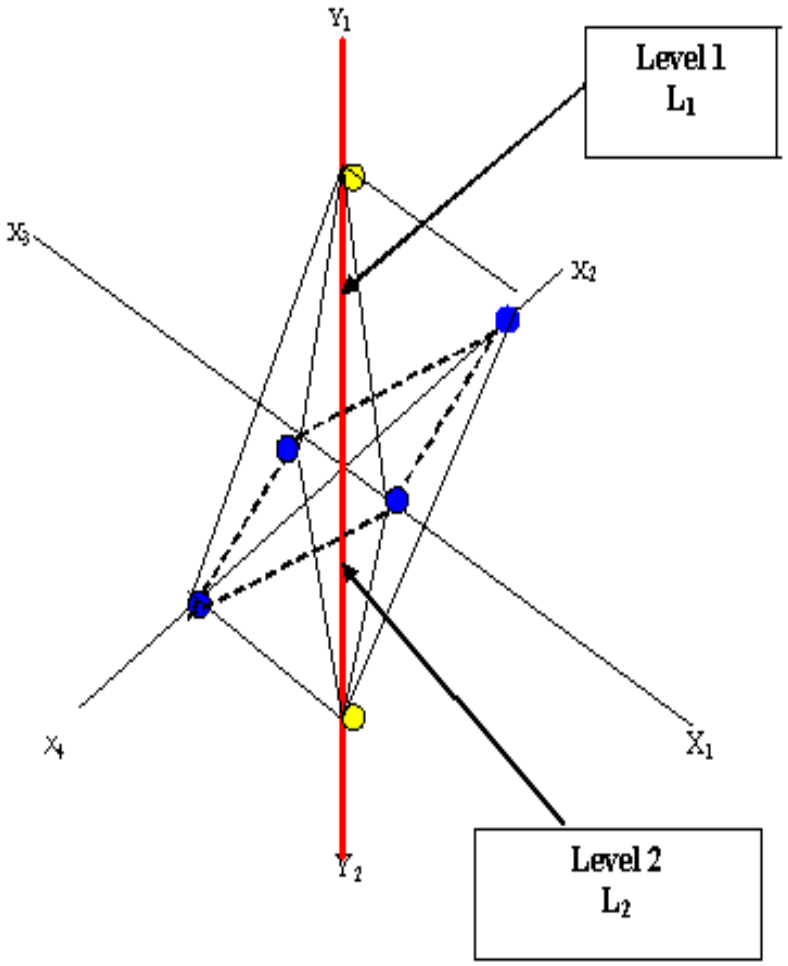
$$Y1 = f(X11, X12, X13, X14)$$
$$Y2 = f(X21, X22, X23, X24)$$



CASE STUDY

Multi-Dimensional Inventory Control

By

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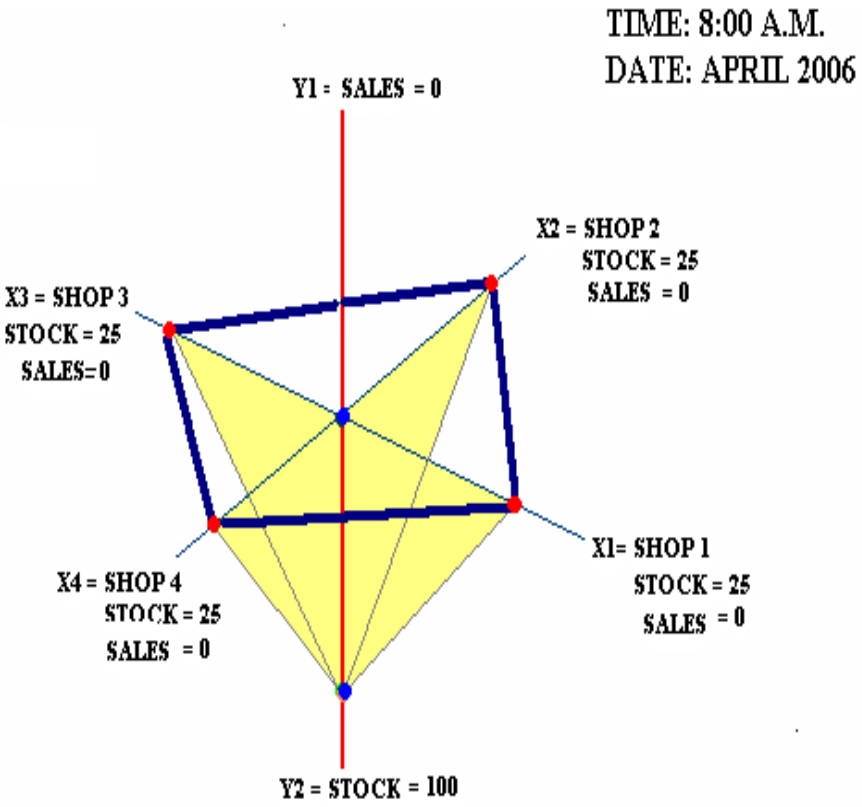
MULTI-DIMENSIONAL INVENTORY CONTROL

- This is a simple example can show how the Diamond Cartesian Space can be applied on the Inventory control. This new type of Cartesian space enables a better visualization and control of stocks and sales at the same time. It can help companies and industries to improve the control of inventories.

MULTI-DIMENSIONAL INVENTORY CONTROL

FIRST REPORT

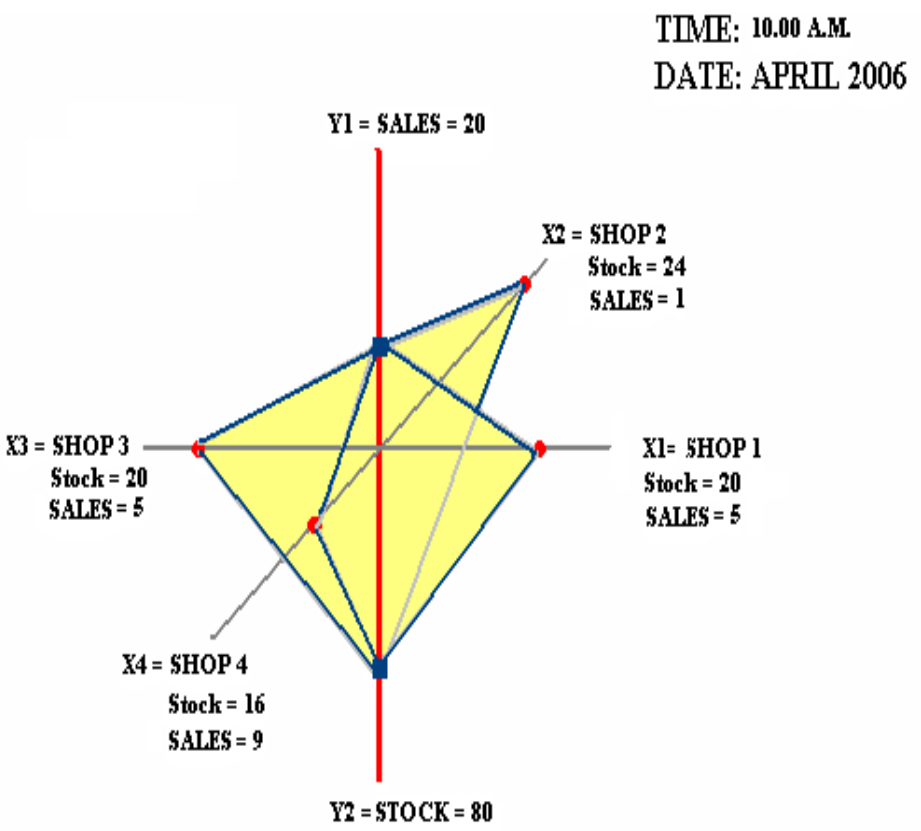
- We have four shops in different places.
- Each shop has a stock limit of 25 units.
- Total sales volume at initial stage was 0 units.
- Total stock is 100 Units.



MULTI-DIMENSIONAL INVENTORY CONTROL

SECOND REPORT

- Up to 10:00 a.m. the total sales volume is 20 units, and we keep in stock 80 units.
- Shop 4 has the best sales volume of 9 units, followed by Shop 1 (5 units) and shop 3 (5 units).

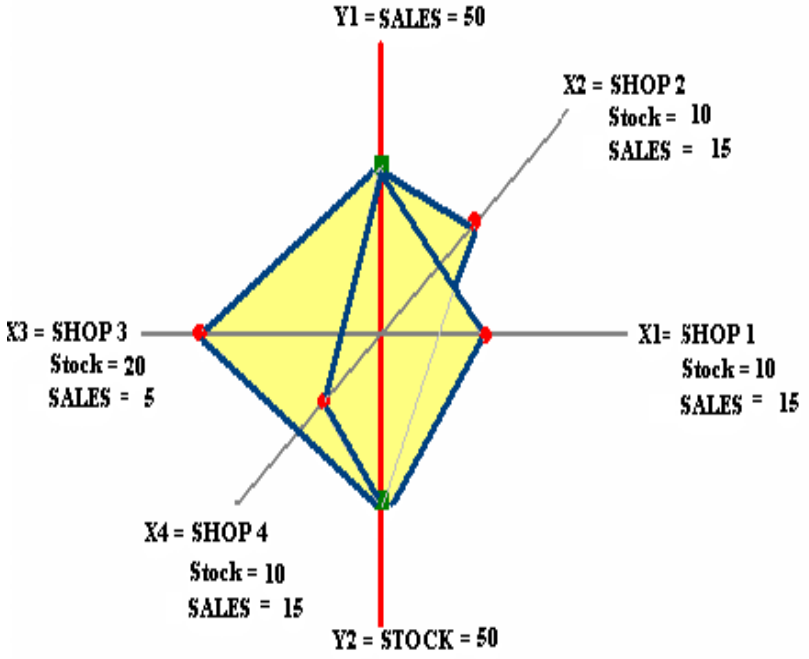


MULTI-DIMENSIONAL INVENTORY CONTROL

THIRD REPORT

- Up to 12:00 p.m. the total sales volume is 50 units, and we keep in stock 50 units.
- Shop 1 (15 units sales), shop 2 (15 units sales) and shop 4 (15 units sales). Shop 3 showed low sales volume of only 5 units.

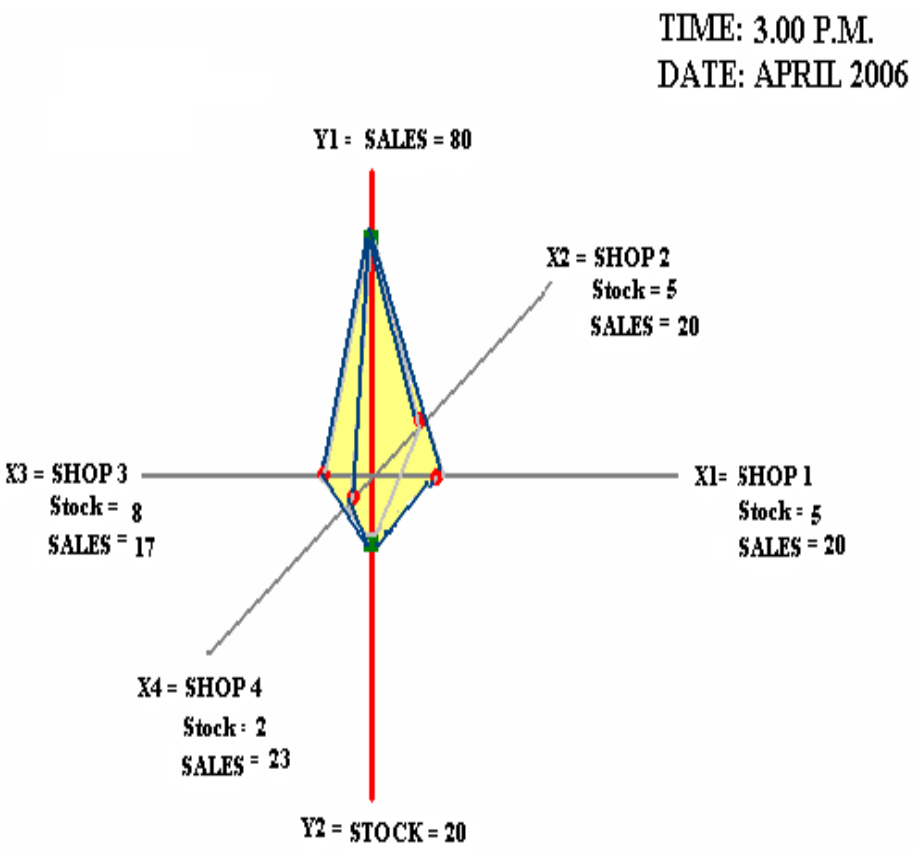
TIME: 12.00 P.M.
DATE: APRIL 2006



MULTI-DIMENSIONAL INVENTORY CONTROL

FOUR REPORT

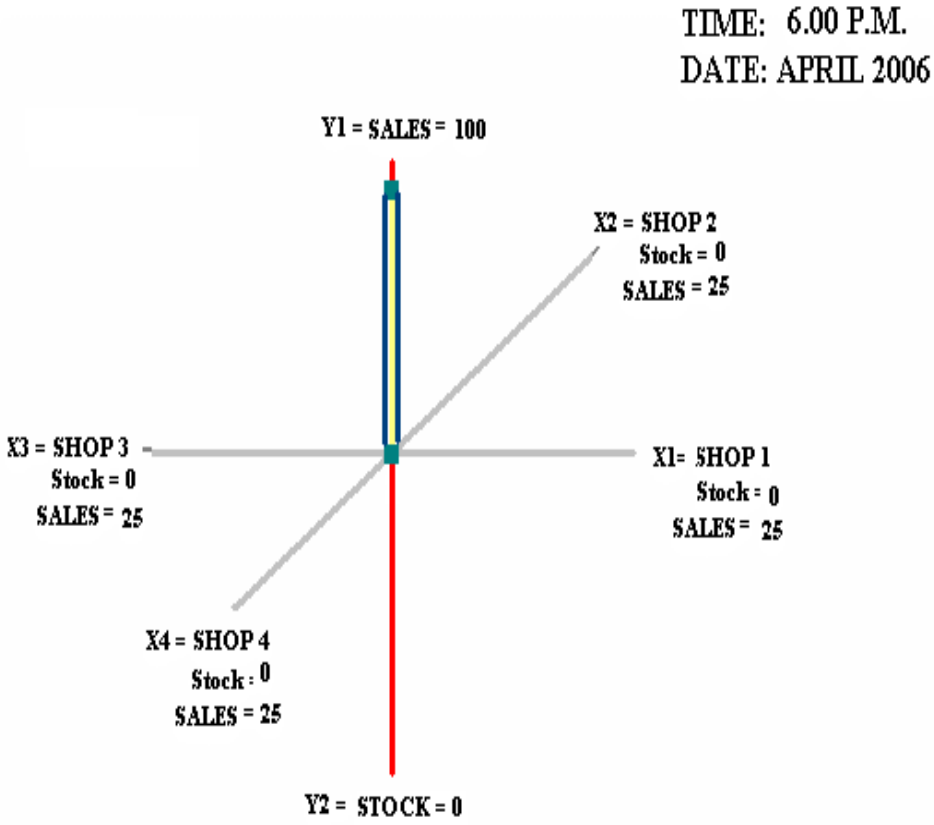
- Up to 3:00 p.m. the total sales volume is 80 units, and we keep in stock 20 units.
- Shop 4 has the best sales volume of 23 units, followed by Shop 1 (20 units) and Shop 2 (20 units).
- Shop 3 showed poor performance with only 17 units sales.



MULTI-DIMENSIONAL INVENTORY CONTROL

FIFTH REPORT

- We assume that the four shops close at the same time.
- Each shop's total sales are 25 units.
- Total sales for the four shops are 100 units.
- Total stock for the four shops is 0 units.



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