Increase Profits through Six Sigma Customer Analysis

Lean Six Sigma for Sales & Marketing

Mitch Millstein, CFPIM, C.P.M., CQM, CQE
Supply Velocity, Inc.
mitch@supplyvelocity.com
(314) 406-4962

April 2010

Abstract

Six Sigma is a powerful tool to analyze and solve business problems. A significant problem many companies have, even if they don't realize it, is customer profitability. This paper will show how one company analyzed their customers using Six Sigma. They discovered tremendous opportunities to reduce costs and increase profits while delivering great customer service.

Understanding Customer Profitability

The company used in this case study is a distributor of liquids used in their customers operations. These liquids are shipped by the bottle, 5 gallon bucket, 50 gallon barrel and in bulk trailers filling up on-site bulk tanks.

All distributors focus on gross profit as defined by sales-price minus purchased cost of the item.

Distributor Gross Profit $ = Selling Price – Purchased Cost

This distributor transports all of its products to customers via their truck. They charge for this service, to cover fuel and other vehicle costs. The farther away the customer is from the warehouse, the greater the charge.

What is hidden from the normal financial view of customer service are the non-chargeable, variable order-processing costs. Every order, no matter large or small, costs this company to process. In addition, these costs are all variable. As the number of orders increases the number of people required to do this work will also grow. These costs include:

- Order entry / processing personnel
- Invoicing personnel
- Warehouse labor

While this was not an accounting project, we were trying to understand which customers were profitable and why. We took all of these costs for a 12 month period and divided it by the total number of orders we processed.

Per-Order Processing Cost =
Total Variable Order Processing Labor Costs / Total # of Customer Orders

Per-Order Processing Costs = $105

The actual calculation resulted in the per-order costs equaling $105. This means every time a customer placed an order it costs the company $105 in overhead labor to process. This does not include the actual delivery expense, which is covered by the delivery charge.

Using this “Per-Order Cost” we can now calculate overall customer profitability.

Customer Net Profit $ = Gross Profit $ – (# of Orders x Per Order Cost)

For every customer we can calculate the net profit dollars they contribute. Management accountants may find fault with our cost-allocation method. Therefore, use whatever allocation method you want. As we will see, the purpose of this analysis is to show that some customers are wildly profitable and others are money-losers.

Do Your Best Sales Reps have Your Worst Customers

We decided to do this analysis by Sales Representative. Any improvement ideas would have to be implemented by the Sales Force so we focused all analyses on customer profitability for each Sales Rep.

On the following pages are the two important graphs. First is a Pareto Chart of total sales by Sales Rep. These results were not surprising. KT is clearly the best Sales Rep as measured by Sales $. Everyone knew that. On the right side of the graph is “cumulative percentage”. KT generates 25% of Sales $.

However, Sales $ is not what we are measuring. Therefore, this Pareto Chart really hides the important issue, customer profitability. By totaling Sales $ for each Sales Rep, we hide how each customer is doing. Instead, we want to look at individual customer profitability.

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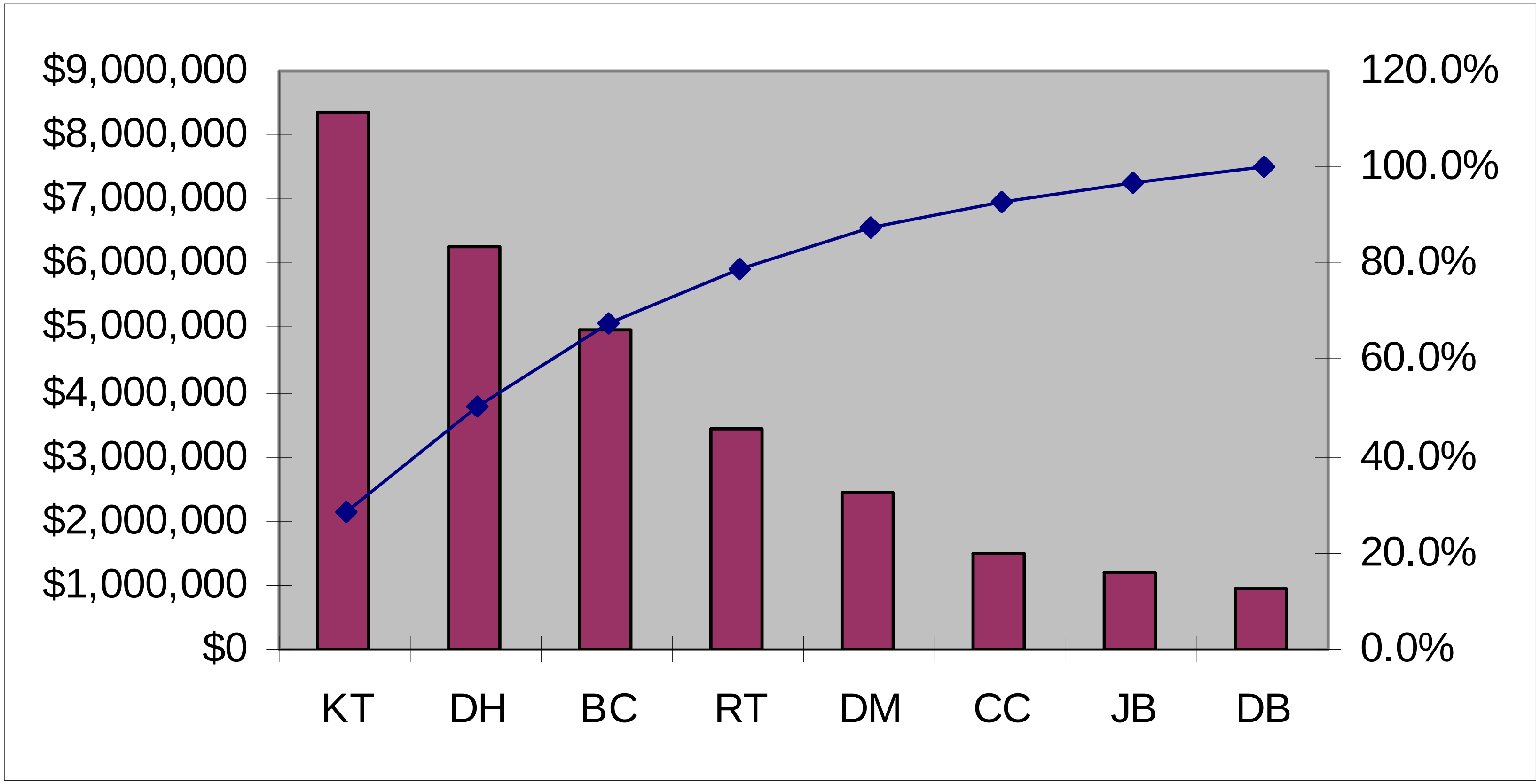
Pareto Chart – Sales $ by Sales Representative



Median – The Middle Value or 50th Percentile

To better understand customer-profitability we will use an often misunderstood statistic, the median. If you sort customers by profitability from most profitable to least, the number right in the middle would be the median. 50% of the customers would be more profitable and 50% would be less profitable. This is why the median is often called the 50th percentile.

We also have the 25th and 75th percentile. At the 25th percentile (also-known-as the 1st Quartile) 25% of the customers are less profitable and 75% are more profitable.

By analyzing the data in this way, we find shocking results. Even KT our highest Sales $ Sales Rep has half of the customers he calls on earning less than negative $30! DH, while lower in Sales $, has more customers in positive profit territory.

Of course some Sales Reps are much worse. From this data table and graph we can see that even very good Sales Reps have many unprofitable customers. In fact, the best Sales Reps “hide” their bad customers because they have some very good customers.

The graph below is a Box-Line chart. It shows the same data that is in the table in a different format.

- The top line represents the most profitable customer for each Sales Rep that is not an outlier
- The top of the box represents the 75th percentile profitable customer for each Sales Rep (25% of customers are more profitable and 75% are less profitable)
- The thick line in the middle of the box is the median profitable customer
- The bottom of the box represents the 25th percentile profitable customer
- The bottom line represents the least profitable customer for each Sales Rep

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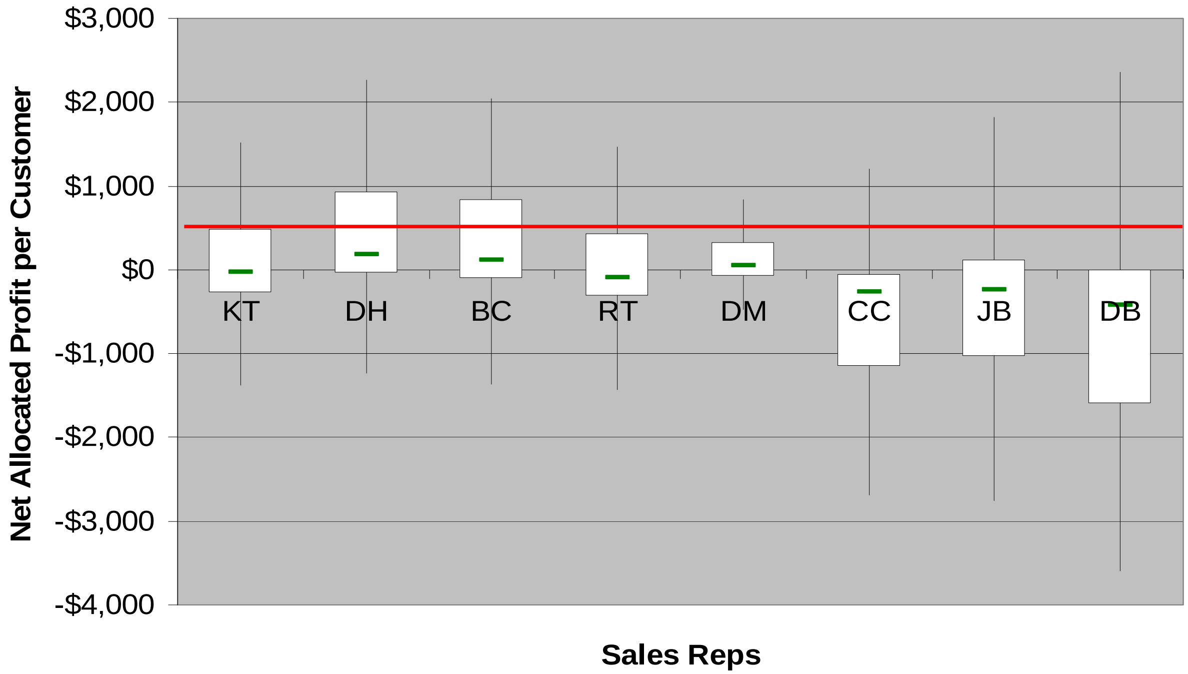
Box-Line Table & Chart – Net Profit $ of Customers grouped by Sales Rep

Max (outlier)	$57,736	$13,334	$18,903	$22,300	$45,394	$36,116	$8,814	$10,270
Max	$1,519	$2,260	$2,047	$1,470	$834	$1,204	$1,825	$2,355
Q3	$479	$924	$833	$427	$320	-$53	$110	$1
Median	-$30	$186	$119	-$91	$51	-$269	-$237	-$416
Q1	-$271	-$41	-$105	-$319	-$76	-$1,157	-$1,034	-$1,597
Min	-$1,377	-$1,237	-$1,363	-$1,434	-$480	-$2,687	-$2,751	-$3,589

Note: To make the chart below more useful, it does not include outliers



Improvement Action Items

From this data we learned that all Sales Reps have work to do. Everyone has unprofitable customers.

If you go back to the formula that we used to calculate profitability, you can understand what the Sales Reps had to do. The driver for these problems is the number of orders. This company's customers place orders too frequently. Instead of ordering a bulk delivery once a month, they have customers ordering barrels two-times a week. The Sales Reps had to go back to their customers and work together to understand the benefit to both companies of reducing order frequency. (If it costs us $105 to process an order, it also costs the customers to process purchase orders and invoices.)

This change has allowed the business to grow, adding customers and volume, while reducing the number of people working in order processing.

(They are also working on reducing order-processing labor costs through Lean and information technology.)