In an article titled “Six Sigma Pricing” recently published in the Harvard Business Review, ManMohan S. Sodhi and Navdeep S. Sodhi successfully illustrate how a global manufacturer of industrial equipment applied Six Sigma rigor to a pricing process. In addition, they also explain correctly the Six Sigma concepts and their applications.

On the other hand, their article does not address the most important process related to pricing management: creating a pricing strategy. In fact, they solve a transaction price-setting process, i.e. they improve the process the company uses to handle its exceptions.

Ideally, an effective and successful pricing strategy avoids completely any dealing with pricing exceptions. Hence, an even better approach to using Six Sigma tools would have been to develop the organization’s pricing strategies and price policy setting.

Furthermore, as the authors selected only one product to track results, they created an opportunity for the sales force to go around the new approval process. By complying with the rules of the product being examined and offering higher discounts on other products that did not have to follow the new process, they could easily negotiate with customers to pay full price on one product while receiving a larger discount on other items not covered in the project.

In fact, the authors state in the article they were able to capture the full value of the price increase of the product they selected to track, but were unable to do the same with the rest of the product line. This confirms that once we start to enforce pricing policies in just one product in a multi-product company, sales easily find alternatives to negotiate better prices with customers if they are allowed to, especially if they are not measured or rewarded by profitability.

Hence, in this article, I will describe how Six Sigma concepts can be applied in a broader sense, including an organization’s “all customers” (more than 5,000) and “all products” (more than 1,000 SKUs) in a division of a global health-care industry company, which I will call SUTCO Inc.

This project was a Black Belt Project developed in 2002 and fully implemented in 2003. It is still commanding price improvements and bottom-line impact. With the ability to better manage prices, it avoids time-consuming, non-value-added price negotiations and, consequently, price erosion.

### The Issue

SUTCO has been the market leader in this medical-device industry. Given the number of competitors in the market and new substitutes with higher technologies, the product line of this division is in its mature stage of the product lifecycle. Its products are widely used in hospitals across the country.

Prices vary according to different characteristics of the components of the products, as well as according to their use by healthcare professionals. The product portfolio is very broad, with more than 1,000 SKUs, and list prices ranging from US$50 per box for an undifferentiated product to US$1,500 per box for a very exclusive and differentiated one.

Claiming 65% market share, SUTCO was the undisputed leader in quality, service and price until 2001. Competitors were, in general, followers in both quality and price policies. Usually, competition played the pricing game; that is, whatever SUTCO quoted, they would go 20%, 30% and up to 50% lower just to get the deal.

With this type of price pressure and with a market share mentality, top management allowed prices to be freely negotiated at the sales-rep level up to 65% off list price. Sales managers had additional discretion to go up to 80% discount. The sales force manipulated prices in a maverick way, always focusing on sustaining share. Higher-discount orders were held for approval by Marketing, which sometimes astonished with discounts up to 91%. The average discount levels for SUTCO at the end of 2001 were 67% off list prices.

At the end of 2001, Group Purchase Organizations began to analyze the prices paid for the same product code for different customers within the same organization. During this period, more
A project team was formed that included the regional marketing manager of that business unit, the regional controller, two experienced sales managers, a finance manager, a supply-chain person and a customer-service individual. The project was led by the regional marketing manager, who developed it as a Six Sigma Black Belt project supported by a corporate Master Black Belt (Six Sigma expert).

As in any Six Sigma project, the team started with the definition of goals and boundaries based on current knowledge of the business, customer needs and the process that needs improvement.

Our defect was defined as the unexplained price variability for any given code to any SUTCO customer segment. That is, we aimed to redefine the pricing discount policies, segment our customer base and define price bands for each code for any given customer segment, yet allowing a very small range (band) for negotiation. In short, a new pricing menu was going to be established.

The team decided to focus on total gross profit rather than top-line revenues to show we were willing to lose some market share and sales if we could improve our bottom line during the journey. Furthermore, the most important goal on the non-financial side was to change the culture of the organization from a market share-, sales force-driven mentality to a profitability and pricing-management culture.

Before collecting any data, the team drew a Suppliers, Inputs, Process, Outcomes and Customers graph (Graph 2 for more details).

The next step was to conduct a stakeholder analysis with all customers. As more customers started to communicate to one another the prices paid to SUTCO.

In March 2002, top management were called for two meetings with the most important GPOs to explain a price variability of more than 500% for the same product, with the same package and same code for similar customers. That product was SUTCO’s biggest-selling code, with market prices ranging from US$12.79 (84% discount) per box to US$80.00 per box (list price).

As the GPOs analyzed the prices their associates were paying to SUTCO, they realized that the bigger, more loyal customers were paying higher prices than the smaller, less loyal customers (see Graph 1 for an illustration). Two large GPOs requested to start buying all their volume for the lowest price given to any of their associates.

When SUTCO’s Six Sigma team mapped one of the company’s codes, it confirmed that prices were established with no criteria and that large, loyal customers could be paying more than smaller, nonloyal customers.

**THE PROJECT**

**Definition**

Hidden, customized prices had served SUTCO well up to that point, but now a change was going to be necessary. SUTCO needed an immediate change in price-setting policies, enforcement and culture.
customers listed in the SIPOC. As we started the interviews, even high-profile sales managers were afraid of losing power on pricing decisions with the implementation of the project.

From Voice of the Customer interviews, we transformed all the comments, ideas and concerns into what is called a Critical to Quality Tree. This is another Six Sigma tool that permits the team to drill down from the desired outcome into clearly defined metrics and requirements (see Graph 3 for an example from one CTQ of this project).

Finally, the team drew the full process that would be analyzed.

**Measure**

With all the steps listed on the previous phase, the group used another Six Sigma tool called Prioritization Matrix to identify the most important steps that would have to be taken to reach the project goals.

The Prioritization Matrix identified three key issues: definition of pricing policies (pricing menus), product segmentation and customer segmentation.

In addition, the team created a cause-and-effect chart of the current process, including all the steps involved, from determining price lists to price invoiced to customers, once again identifying the three priority issues to be addressed.

**Analysis**

The first tool used was a Pareto Chart to identify where most of the sales were coming from: 40% of the sales were from distributors, 30% from private customers, 15% from public customers, 12% from key accounts (contracted customers) and 3% from other types. All customers should be segmented reflecting factors other than the traditional type of customer.

The team agreed on the factors that should be influencing pricing decisions for the sales force: type of customer (private, public, key account, not-for-profit, etc.), payment terms (30 days net, 60 days net, 90 days net, delayed payments, etc.), sales rep territory (customer location) and total purchase volume (size of purchase). We then selected a few codes and ran regression analyses, where the actual price invoiced should be explained by those factors (variables).

The biggest surprise: The most important factor was the sales representative. That is, regardless of the type of customer, the volume purchased or payment terms, if it was located in a given region (that is, belonged to a certain rep) the prices were going to be closer to each other.

The second most important variable (factor) was size of the order. In general, the larger the order, the lower the price. This second discovery was a relief because we believe it makes sense to reward customers on their order size. However, very few of the prices could be explained by the regression analysis equations.

The third analytical tool used was sample t-tests. We used these
analyses to see if order date influenced pricing decisions. This was necessary because there was a common perception that as we got closer to the end of the quarter, prices eroded to make deals and get the sale. However, what the team saw was that prices stayed statistically unchanged (the averages were indeed lower, but not by a statistically significant amount).

Another analysis was conducted using Anova. In this step, the team wanted to better understand what type of customer influenced prices. Here, another surprise came up: Distributors received a statistically significant lower level of discounts than other types of customers.

Upon further investigation, we found this was happening because distributors in this market usually have exclusivity agreements. Hence, every time SUTCO raised its prices, the increases immediately took effect for distributors. But for other direct customers, a negotiation process either delayed or avoided the price-list increases altogether.

Other statistical tools were used during this phase to unravel opportunities SUTCO might have with its pricing policies. Many investigations and analyses also helped to confirm with hard data some of the gut feelings managers had regarding pricing issues.

Finally, we used a tool called Capability Analysis to understand at how much discount every code of the organization was being sold. This allowed the team to identify the most price-sensitive codes, as well as visualize what should be the ideal range (band) that the product should be set to capture the most volume, yet reduce variability.

**Innovative Improvement**

After the analyses were completed and with all the CTQs in mind, the team felt ready to develop, evaluate and implement solutions targeted at the verified causes that were affecting the process.

The goal in this phase was to demonstrate with data that the proposed solutions would solve the problem and lead to improvement in the process. Indeed, based on everything we had learned during the project, the team decided that the solution would include:

1. New customer segmentation
2. New product segmentation
3. Creation of a price menu respecting both customer and product segmentation
4. Train the sales force on value-based pricing
5. Demonstrate to the organization the expected payoffs
6. Explain the market rationale behind the new pricing menu
7. Reward the sales force on profitability rather than market share/volume
8. Support the sales force with tools to facilitate the implementation
9. Keep pricing control and monitor implementation

The solution started with a vision that we should have customers segmented on how they perceive our products and services value. To do so, we developed a segmentation of our customer database, taking into consideration the following factors: total current sales (addressing size of the customer), mix of products (addressing strategic components and offering a better product mix mean more complex procedures, more need for quality, higher value in our products) and type of customer (addressing behavior and convenience of purchases).

The customer segmentation began with types of customers, followed by the development of a matrix for each type of customer. In Graph 4, we illustrate the matrix for the private customers segmentation.

This matrix shows that a private customer with a very high volume and buying highly differentiated products is considered an A customer for SUTCO Inc. That, however, would not guarantee the lowest prices — if the A customer needed differentiated products (some of which only SUTCO could supply), better customer service or faster delivery of slow-moving items, they tended to be more loyal and less price-sensitive than others.

In addition, best services would be guaranteed for A customers, usually with online orders, same-day shipments and sales-force support, among other perks. Hence, second-best prices were offered to them. In fact, the best prices would be guaranteed only for the large accounts with undifferentiated needs. For those accounts, which we call B customers, SUTCO would offer the least-expensive prices, justified by a lower cost to serve with longer delivery cycle times, less support from sales force, no dedicated inventory, etc.

In short, we decided that our prices should be different for each customer segment. In addition, they should respect a hierarchy where B customers have the lowest price, then A customers, followed by C customers.

We also created a D customer segment for customers being served...
would calm them down a little since they had long been in a cul-

The customer segmentation side of the equation was solved; how-
ever, the team was still missing the product segmentation side. This was even more complex given the number of SKUs (more than 1,000) and the different use of each of those products.

The solution was to develop a conjoint analysis with the rele-

vant attributes of the products and conduct a survey with the

end-users’ key opinion leaders (note that we did not survey the

economic buyers). This was done to fully understand the value

of each feature of the product to the end-user only.

From the analysis, we developed indices for each of the products’

attributes and created a database where we entered the features

of the product and it suggested the targeted average price for

that product.

With the new-targeted average-selling price, we developed

a new suggested list price reflecting value-based concepts

from the end-users. This new price list brought price increases

in excess of 300% for one specific code that was highly

valuable to our customers and was under priced. However, it

also gave some price reductions, including up to 20% on

one code that had no differentiation at all and had been

cannibalized by competitors’ offerings. The net impact of the new price list compared with the old one was an increase of 8.5%.

With the price list reflecting the new product segmentation and

applying the developed customer segmentation, the team started

to establish the discounts for each product in each segment. Here

again, we used the Capability Analysis Control Charts to help

determine the right level of discount for each segment. On aver-

age, we brought discounts from 67% to 55%. Hence, we were

expecting a pricing gain in two areas: higher list prices and lower

average discount.

With both product and customer segmentation done, the team

combined both to create the price menu. As we developed the

final price menu, a flexibility component was added where the

sales representative could either reduce or increase the targeted

discount by 3%. In fact, targeted prices across segments had a

differential of exactly 3%. This was done to guarantee that the

worst price offered to an A customer would not be higher than

the best price offered to a B customer.

These fences were later very useful when explaining and justifying

the new pricing policies to customers. In addition, we believed

that allowing the sales force to negotiate a small range of discounts

would calm them down a little since they had long been in a cul-
ture in which negotiating prices was highly supported.

To make this change easier to the sales representatives, we de-

veloped a training program on value-based pricing and negotiation

skills. To help them analyze the situation on a customer-by-cus-
tomer basis, the rep could input a few characteristics of her cus-
tomer into a spreadsheet, which would show the discount rates

for that particular customer segment.

Inputting the product code would produce the targeted price with

the correct discount for that segment. In addition, if this were a

returning customer, traditional discounts and prices would appear

in a column showing the price change for that specific code

in that specific customer segment.

One of the final steps of the solution, before going live with the

project, was to develop a scenario analysis. We first did a simu-

lation showing how much volume was at risk if we implemented

the new segmentation at current price levels.

We calculated the worst-case scenario: a maximum volume loss of approximately 17% if we could not convince any customers that were underpaying to pay more. Note that 17% of the total volume was 100% of the volume that had been priced below the bands created with the new customer and product seg-

mentation.

In addition, we asked the sales managers how much volume they would lose by customer

segment if they had to increase prices to the new proposed seg-

mentation. By their managerial judgment, this would be approxi-

mately 9% of volume. The project team thought this estimate

was very pessimistic, especially because the sales managers were

assuming we would lose a significant portion of the volume be-

low the band for A customers.

However, we were able to demonstrate that if we were to lose 9% on volume, given the enhancement in margins with the new prod-

uct and customer segmentations, we would break even. That is,

no effect on the bottom line. Of course, this was not the desired

result, but we used this information to demonstrate a small risk

on the net impact of the project, even if we lose all 9% of the

volume estimated by the sales managers.

However, to harvest significant benefits and reach the project
goal, we would have to minimize volume loss to no more than
6%. With more hard data analysis, going customer by custom-
er to measure impact and the likelihood of losing the account,
we determined that the most-likely scenario would reduce our
volume 4.5%. It also would bring more than enough profits to
compensate for the drop in units, increasing both revenues and
gross profit in excess of what we were originally expecting when
we developed the project charter.
The implementation of the new pricing approach began with a communication strategy for customers about the new price list and the new customer segmentation the company was creating. In August 2002, the new price list was sent to the market with a letter from top management explaining the major price policy changes that were going to take effect in January 2003.

In October 2002, the spreadsheet with the new segmentation policies was sent to the sales reps with a customer-by-customer comparison of the impact of the new prices. In some cases, the average increase surpassed 40% on the total amount paid by the hospital if volume and mix of products were to remain unchanged.

The training program on value-based pricing and a complete explanation of how the new spreadsheet (called Pricing Determination Tool – PDT) worked also were conducted for the entire sales team. At this point, reps had a lot of resistance, especially when they were informed that their range of price negotiations would decrease from 0%-80% discount to something like 52%-58% discount.

The biggest concern was regarding the revenue loss that this new pricing scheme would bring since some customers who were paying full price would suddenly see their prices being reduced. That is, they were accepting higher prices before, so why should we lower them?

The other issue was with small but tough customers who were paying very low prices. In this case, we would run the risk of losing volume as they see their prices increasing. The explanation was based on hard data, and during both segmentations (customer and product) we kept an eye on average selling price, raising it enough to compensate for those potential losses. We took advantage of the opportunity to modify the pricing policy of the company and raised average list prices as well as reduced trade discounts.

A very important part of the project was to establish the implementation strategy of these new prices with customers. We had to be prepared to sell the new approach to customers. The strategy we decided to use was based on price transparency and price fairness.

Finally, the sales team compensation was changed to reflect how well each one of them could implement the new pricing structure. Up to 20% of their income would now come from profit targets and from reducing the number of pricing exceptions.

**The Final Outcome**

This project went live in October 2002. After three years, SUTCO saw this division’s revenues grow more than 40% and gross profit soaring more than 80%. Most of this impact was due to this pricing initiative being fully deployed and enhanced over time. The first six months of 2003 saw a considerable drop — approximately 10% — in units. Many customers that had their prices increased did not accept it at first, tried alternatives products or negotiated time to implement the new prices. However, after six months, the market adjusted to the new strategy, competitors followed and some customers started to come back after unhappy experiences with competition. Indeed, the overall total volume drop accounted for only 3.5% if we compare units sold YTD in 2005 with units sold by September 2002. Given the stage of this product line’s lifecycle, which is fairly mature and moving into decline, the results were considered outstanding.

In addition, strategic pricing decisions are now made at headquarters. The sales force has a small discretion to negotiate; hence their ability to damage product positioning has been completely neutralized because the system does not even allow receiving orders with discounts below targets. The sales representatives can tell customers that nobody can be priced lower than the targeted price, and they have the ability to give the maximum discount allowed (targeted discount plus 3%).

Furthermore, the sales department has changed dramatically. Specific skills are mandatory for the success of the new pricing approach. Rather than the deal makers we use to have, we look for more strategic, technical, service-oriented people that can explain and justify price premiums for customers.

Another change happened with sales managers and marketing managers who no longer lost valuable hours in haggling with the sales force about prices. In fact, they better use their time on other value-added activities. Indeed, the culture of the organization has changed. Now, the entire division understands the strategic importance of proactively managing prices.

**Conclusions**

A project like this one brings opportunities that SUTCO and any other learning organization can apply with very low investment and great potential for returns. As in any process change of this magnitude, many lessons can be learned.

The first one is that Six Sigma projects can and should be applied to processes other than manufacturing and supply chain.

Second, during the critical implementation phase, we learned that customers will not complain too much about price increases if they know they are paying the same price as their competitors within the same segment.

Third, there are many decisions that a company can make to improve its average selling prices and profits without being perceived as a monopolist or too aggressive.

Fourth, communicate your intentions to the market; it is critical to give plenty of time for adjustments and acceptance. In fact, SUTCO competitors were able to understand in a couple of months the new strategy and they also came up with similar arrangements following SUTCO’s lead.

Finally, SUTCO also changed its compensation system to reward sales representatives not only on volume, but also on profit. Sales can be convinced only by example and rewards.

As we implemented the project and some of the reps started to implement the new segmentation successfully, we used those examples to enhance the quality of the new strategy and the great outcome it would bring to the company.

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