Surgikos, S.A. de C.V. (A)

“You know, Cruz, I’m not sure that Ciudad Juarez is the best location for Johnson & Johnson’s fifth surgical gown manufacturing plant. It has become a lot more difficult to find suitable sites for maquiladora plants in the city. That’s why property prices are so high, labour turnover is on the increase, personnel costs have risen, and quality has deteriorated. Also, I don’t think the traditional assembly line system of production is right for us. But, as you’ve found, any attempt to change it meets fierce opposition.”

Ron Schott, Vice President of Operations of Johnson & Johnson Medical Inc., was talking to Cruz Huerta, General Manager of one of the four maquiladora plants producing surgical apparel and sheets in Ciudad Juarez, a Mexican city in the state of Chihuahua on the U.S.-Mexican border, close to El Paso, Texas. Already the utilized capacity of the four existing plants was insufficient to cover the growing demand of the North American and European markets.

After two years’ experience (1988-1990) planning, starting up and managing the fourth maquiladora plant in Ciudad Juarez, Cruz was commissioned to set up a fifth plant that would offer better overall operating conditions than the existing plants in the city. (Exhibit 1 provides some economic data on Ciudad Juarez.) As he set about preparing this assignment, Cruz reconsidered Johnson & Johnson’s old-established Credo in an effort to sort out the numerous doubts that came crowding into his mind.

The Johnson & Johnson Credo

Robert Wood Johnson, who guided Johnson & Johnson from a small family-owned business to a worldwide enterprise, had a very perceptive view of a corporation’s responsibilities beyond the manufacturing and marketing of products.

As early as 1935, in a pamphlet titled “Try Reality”, he urged his fellow industrialists to embrace what he termed “a new industrial philosophy”. Johnson defined this as the corporation’s responsibility to customers, employees, the community and shareholders. But it was not until 1943 that he wrote and first published the Johnson & Johnson Credo, a one-page document outlining these responsibilities in greater detail.

Case prepared by Engineer Miguel Angel Llano Irusta, of Instituto Panamericano de Alta Dirección de Empresa (IPADE), with the collaboration of Engineer Cruz Huerta Arneros, of the MEDEX MTY, 1995-1997 promotion.
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The Corporation has drawn heavily on the strength of the Credo for guidance through the years, and at no time was this more evident than during the Tylenol® crises of 1982 and 1986, when the company’s product was adulterated with cyanide and used as a murder weapon. With Johnson & Johnson’s good name and reputation at stake, company managers and employees made countless decisions that were inspired by the philosophy embodied in the Credo. The company’s reputation was preserved and the Tylenol® acetaminophen business was regained.

When Robert Wood Johnson wrote and then institutionalized the Credo (see Exhibit 2) within Johnson & Johnson, he never suggested that it guaranteed perfection. But its principles have become a constant goal, as well as a source of inspiration, for all who are a part of the Johnson & Johnson family of companies.

The maquiladora industry in Mexico

The Mexican maquiladoras are assembly or manufacturing operations that may be up to 100% foreign owned. Traditionally, they have always made intensive use of cheap Mexican labour to assemble, process or manufacture goods, importing most of the components and raw materials from the United States. Mexican law allows this type of company to bring the necessary foreign equipment and machinery into the country. Unlike other multinationals operating in Mexico, maquiladoras are often managed entirely by foreigners. Most are located along the U.S.-Mexican border.

Under Mexican law maquiladoras are allowed to produce a wide range of goods. Exceptions include oil and petrochemical products, firearms, and articles containing radioactive elements. No import duty is paid on components brought into Mexico to be processed by the maquiladoras before being re-exported. Instead of paying tariffs, the operators of the maquiladoras must provide Mexican customs with guarantees that the components and raw materials will be re-exported out of Mexico within a period of six months. Guarantees must also be provided that fixed assets and machinery will be returned to the operator’s country of origin when it ceases operations in Mexico.

The regulations governing maquiladoras allow the operator to bring to Mexico as many foreign employees as necessary, with the exception of pieceworkers. All workers doing piecework must be Mexicans. The Mexican Government is keen to stimulate the growth of the maquila industry.

Large North American manufacturers have taken advantage of the abundance of cheap labour in Mexico to reduce manufacturing costs by locating twin plants either side of the U.S.-Mexican border and conducting an import-export business. The North American plant carries out the first stage of the production process and then sends the inventory of goods in progress to the plant on the Mexican side of the border. The Mexican plant carries out the most labour-intensive part of the production process, in which most value is added to the product. The resulting product is sent back to the U.S. mirror plant, which takes care of the finishing operation (usually packaging) and ships the product to the main distribution centres.

The impact of the maquila industry on the Mexican economy is reflected in the country’s macroeconomic figures. Together with oil, it is the main source of foreign exchange. An additional benefit is the jobs created by the maquiladoras and their suppliers.

J & J Surgikos

At the beginning of the 1970s Johnson & Johnson decided to extend the operations of one of its many divisions, Johnson & Johnson Medical Inc., specializing in the manufacture of disposable sheets and
surgical gowns, by setting up a maquiladora in Ciudad Juarez. The twin plant and corporate headquarters were established in the U.S. city of El Paso, Texas. The Ciudad Juarez plant was registered under the name of Surgikos, S.A. de C.V., and the El Paso plant as Surgikos, Inc. Surgikos, S.A. was 100% owned by Surgikos, Inc. The original plan envisaged hiring around 5,000 employees for the two plants if the venture proved as successful as those set up by other North American companies.

Soon after the first plant went into operation, Johnson & Johnson realised the full extent of the savings to be obtained from maquila manufacturing. Five years later it already had three plants in Ciudad Juarez, a U.S. mirror plant (which carried out only the cutting operation), and a sterilizing plant, the latter two located in El Paso. By the mid-eighties this group of plants had more than 4,000 direct employees.

Owing to the worldwide growth in demand for disposable hospital products, Johnson & Johnson needed to increase its installed capacity. In February 1987 the company’s Operations Director approved the opening of a fourth plant in Ciudad Juarez. This project was assigned to the Industrial Engineering department, headed by Cruz Huerta Armenia, himself an engineer. This department (11 engineers plus the director) had the task of designing the work systems and physical layout of the new plant, adopting a radically different approach from the traditional batch production, assembly line concept of the other three plants.

In October 1988 the new plant went into operation under the supervision of Cruz Huerta, who had been appointed General Manager. He had the backing of corporate headquarters in selecting from among the employees of the other three plants the personnel he considered most suitable.

From the very start the people chosen to implement the new operating system resisted the change, as they had worked efficiently with the old system for several years. This, together with the strong opposition of the other three plants and the support departments (Quality, Personnel, Maintenance, etc.), made it almost impossible to implement the new operating system, as people were afraid of having to change their current systems and processes. Much to his disappointment, Cruz had to carry on working for another two years with the traditional production system.

In 1990 Surgikos decided to expand its installed capacity yet again by setting up a fifth plant that would specialize in the production of surgical gowns. Ron Schott, Vice President of Operations of J & J Medical, had recently been assigned by corporate headquarters to supervise the operations of all of J & J Medical’s plants. He was very keen on modern manufacturing methods and was looking for a manager capable of setting up and running a model plant. This model plant would also serve as a showcase for sales, as deals were usually closed when groups of hospital visitors (doctors, nurses, buyers, managers, etc.) came to the plants to inspect the quality of their products.

When Ron heard about Cruz’s failure in his attempt to implement a new operating concept in the fourth plant and his recent start-up experience, he decided to put him in charge of the new project. Unlike previous projects, this new one was different as not only the location but also the way the plant should be started up and operated was still undecided.

The product

In its plants on Mexico’s northern border Johnson & Johnson Medical manufactured various sterile disposable surgical products such as surgical gowns, shoe covers, caps, special sheets for different types of surgery, pre-operative apparel (trousers and coat), masks and latex gloves.
Plant 4 specialized in surgical sheets and gowns. Surgical sheets consisted of a piece of fabric that was placed on the operating table to protect the patient from direct contact with the table and at the same time prevent infection. Besides this undersheet the doctors also used a sheet to cover the patient, with an incision in the fabric in the place where the patient was to be operated.

A surgical gown was a simple garment whose purpose was to isolate the doctor from the liquids generated in the different types of surgery and so protect her from infections.

The gown covered all parts of the doctor’s body that were not covered by other items of surgical apparel such as gloves, cap, face mask, shoe covers, etc. Both the sheets and the gowns were made from a polypropylene-based material that was totally impermeable.

Competitors

At the beginning of the 1990s the cake was divided up at a global level among three multinationals: Baxter, the industry leader with approximately 40% of the market, followed by J & J with 35%, and Kimberley Clark with approximately 20%. Given customers’ strict specifications, differences between the products of these three competitors were practically non-existent.

Customers

The main customers for these products were hospital chains and wholesale hospital suppliers. A special feature of these customers was that when they decided on one of the existing brands, they did so with the guarantee that they were buying a product that would protect the health of their patients and medical staff.

With the appearance of illnesses such as AIDS, the guarantee that the user would be fully protected became even more important.

Traditional production process for surgical gowns

The production process started with the cutting of the fabric, which arrived at the El Paso plant in rolls. The fabric was spread out on 70 metre long cutting tables. When hundreds of layers had been piled up, a roll of paper with the predesigned patterns was laid on top. The patterns were cut out by hand and were then ready for shipment to the Mexican plants on the other side of the border.

In the Mexican plant the process started with the loading of batches of bodies and sleeves onto an accessory (popularly known as a “burro”, or donkey) at each workstation. The “burro” was designed to hold bodies and sleeves in such a way that the worker could easily reach and position the pieces on the machine to stitch them together. The workers then sewed cuffs onto the sleeves and stitched the neck of the gown on the bias to strengthen it. They then sewed fasteners to the neck and ribbons to the inside and outside of the gown for fastening. The gown was then ready for inspection, folding and bagging.

This process was carried out by accumulating batches at each workstation and then carting them to the next. Each workstation consisted of a group of machines and workers who all carried out the same operation, and the production of the plant as a whole was balanced in accordance with the rate of production of each workstation.
Operating under this system, the gown area of Plant 4 had the following distribution of workers and workstations:

<table>
<thead>
<tr>
<th>Workstation</th>
<th>Workers</th>
<th>Capacity in Batches x Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixing sleeves to body</td>
<td>100</td>
<td>400</td>
</tr>
<tr>
<td>Fixing cuffs to sleeves</td>
<td>60</td>
<td>380</td>
</tr>
<tr>
<td>Sewing neck</td>
<td>40</td>
<td>350</td>
</tr>
<tr>
<td>Fixing fasteners</td>
<td>60</td>
<td>350</td>
</tr>
<tr>
<td>Fixing ribbons to body</td>
<td>30</td>
<td>320</td>
</tr>
<tr>
<td>Inspection, folding and bagging</td>
<td>10</td>
<td>400</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td></td>
</tr>
</tbody>
</table>

Workers were assigned to the different workstations according to the amount of work in progress accumulated between stations. However, workers who already had some expertise in a particular process often refused to switch to a different workstation, arguing that they would not be able to produce as much. There had to be a system for monitoring production batches at the different workstations, mainly to meet the requirements of the quality department. Work in progress occupied 50% of the available space in the plant, and workers often could not see the person next to them because of the tall piles of half-finished garments. Defective goods detected by quality inspectors at the end of the process were distributed proportionally among the workers of the corresponding workstation for reworking, depending on the type of defect. One out of ten workers was exclusively occupied transporting material between workstations. The batches were of 28 gowns, and some workstations, such as the one for fixing sleeves to bodies, were slower than others, owing to the nature of their job. In Plant 4, average production per direct manufacturing employee was 30 gowns per day. The industry average was 45 gowns per employee per day.

**Surgikos in the early 1990s**

At the beginning of the nineties, the average labour turnover of the maquiladora industry in the area of Ciudad Juarez was 18%. This high rate was attributable to the abundance of work and to the custom among maquilas—a custom dictated by the typical learning curve of a newly hired worker—of establishing certain minimum required production levels for the first three months and then paying bonuses if a worker managed to increase her production to certain set levels. Some workers would leave the company as soon as they obtained these bonuses and join a different one, where the process would be repeated.

There were even travelling bands of workers who behaved like utilitarian nomads, migrating from one company to another once they had earned the productivity bonuses. Far from being able to prevent this, local companies were prohibited from publishing or exchanging blacklists.

One immediate result of the high labour turnover was low product quality. In 1990 Surgikos had to rework between 5% and 7% of its daily output because of quality problems. It also made it impossible for the company to implement ongoing training programmes. At the beginning of the nineties there were a large number of maquiladoras in Ciudad Juarez, and companies looking for a place to set up found it very difficult, both because of the lack of suitable locations and because of the very high costs. The workers of the maquiladoras in Ciudad Juarez resisted any attempt to change the traditional operating systems that had been in use since the 1960s.
Despite these drawbacks, there were obvious advantages in establishing the fifth plant in Ciudad Juarez. Firstly, the geographical location of the corporate headquarters and the mirror plant in El Paso was considered of strategic importance for the company in terms of transport costs and also in terms of having support close at hand. Both the central traffic department and the central department for R&D projects, which operated from El Paso, argued that opening a plant at any great distance from the Juarez-El Paso border would make their life much more difficult and lead to duplication of effort, thus increasing their costs. Another disadvantage of setting up a plant in a new location was having to build new relations with the various bodies that had an interest in the plants and their operations, such as customs authorities, unions, local government agencies, the local community, etc.

When rumours that the fifth plant might be built elsewhere leaked out, one veteran Surgikos worker commented: “Why not carry on growing here? Setting up the plant somewhere else, apart from being illogical seeing that we have the Americans right close by, will also affect morale.”

Cruz had to make some decisions, and various forecasts based on the decisions he made. In what areas of the company should he innovate? Where should the new plant be located and why? What investments would be required and what risks would be involved in locating the plant in one place or another? How should the plant be run, and how should the risks of changing or not changing the production system be handled? Etc...
Exhibit 1  Ciudad Juárez, Chihuahua, México

Economic Impact on Ciudad Juárez

<table>
<thead>
<tr>
<th></th>
<th>December 1990</th>
<th>December 1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of plants</td>
<td>281</td>
<td>255</td>
</tr>
<tr>
<td>Number of workers</td>
<td>126,452</td>
<td>123,514</td>
</tr>
<tr>
<td>Added value (millions)</td>
<td>939</td>
<td>1,041</td>
</tr>
</tbody>
</table>

For every direct job created by the “maquiladoras” operations, two indirect jobs are created in support services.

Population Employed by Major Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Total</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Absolute</td>
<td>Relative</td>
<td>Absolute</td>
</tr>
<tr>
<td>Total</td>
<td>283,182</td>
<td>100.0</td>
<td>196,491</td>
</tr>
<tr>
<td>Primary</td>
<td>3,894</td>
<td>1.4</td>
<td>3,767</td>
</tr>
<tr>
<td>Secondary</td>
<td>139,816</td>
<td>49.4</td>
<td>96,267</td>
</tr>
<tr>
<td>Tertiary</td>
<td>127,212</td>
<td>44.9</td>
<td>88,472</td>
</tr>
<tr>
<td>Non Specified</td>
<td>12,260</td>
<td>4.3</td>
<td>7,985</td>
</tr>
</tbody>
</table>

Population of Ciudad Juárez

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>131,308</td>
</tr>
<tr>
<td>1960</td>
<td>276,995</td>
</tr>
<tr>
<td>1970</td>
<td>424,135</td>
</tr>
<tr>
<td>1980</td>
<td>567,365</td>
</tr>
<tr>
<td>1990</td>
<td>798,499</td>
</tr>
</tbody>
</table>

Non-Native Population of Ciudad Juárez, by Place of Birth

<table>
<thead>
<tr>
<th>Place of Birth</th>
<th>Population</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>244,811</td>
<td>100.00</td>
</tr>
<tr>
<td>Durango</td>
<td>78,031</td>
<td>31.86</td>
</tr>
<tr>
<td>Coahuila</td>
<td>45,013</td>
<td>18.38</td>
</tr>
<tr>
<td>Zacatecas</td>
<td>36,000</td>
<td>14.70</td>
</tr>
<tr>
<td>Distrito Federal</td>
<td>13,716</td>
<td>5.60</td>
</tr>
<tr>
<td>Jalisco</td>
<td>7,696</td>
<td>3.14</td>
</tr>
<tr>
<td>Other States</td>
<td>48,049</td>
<td>19.62</td>
</tr>
<tr>
<td>Other countries</td>
<td>16,376</td>
<td>6.69</td>
</tr>
</tbody>
</table>
Exhibit 2  The Johnson & Johnson Credo

We believe our first responsibility is to the doctors, nurses and patients,
to mothers and fathers and all others who use our products and services.
In meeting their needs everything we do must be of high quality.
We must constantly strive to reduce our costs
in order to maintain reasonable prices.
Customers’ orders must be serviced promptly and accurately.
Our suppliers and distributors must have an opportunity
to make a fair profit.

We are responsible to our employees,
the men and women who work with us throughout the world.
Everyone must be considered as an individual.
We must respect their dignity and recognize their merit.
They must have a sense of security in their jobs.
Compensation must be fair and adequate,
and working conditions clean, orderly and safe.
We must be mindful of ways to help our employees fulfill
their family responsibilities.
Employees must feel free to make suggestions and complaints.
There must be equal opportunity for employment, development
and advancement for those qualified.
We must provide competent management,
and their actions must be just and ethical.

We are responsible to the communities in which we live and work
and to the world community as well.
We must be good citizens – support good works and charities
and bear our fair share of taxes.
We must encourage civic improvements and better health and education.
We must maintain in good order
the property we are privileged to use,
protecting the environment and natural resources.

Our final responsibility is to our stockholders.
Business must make a sound profit.
We must experiment with new ideas.
Research must be carried on, innovative programs developed
and mistakes paid for.
New equipment must be purchased, new facilities provided
and new products launched.
Reserves must be created to provide for adverse times.
When we operate according to these principles,
the stockholders should realize a fair return.