III - COST OF QUALITY AND NON QUALITY REDUCTION THROUGH A PROGRAMME OF TOTAL QUALITY

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Primarily, Quality Control is a means of doing business and, thereafter, a technical problem.

As long as the management of companies fail to understand this reality, they shall not gain from its advantages.

When we say that it is a means of doing business we mean that it is one of the most important strategies which a company has for making profits. This is proved and demonstrated by two kinds of tests. One, through the studies carried out in various USA and English centres, in search of the strategic factors which produce greater company profits where Quality occupies second place.

The first, very much connected to the former, is the selection of the market in which we wish to sell our products.

Another point of view, and this time not a study, consists in showing that in the case of companies and countries that have emerged or are emerging from the economic crisis which we are going through, the basis of every case has been quality.

But I believe that we must clear up the concept of quality, just as we must understand it for the purpose of this exposition.

We have said that, in many cases, management has not assumed its role or its participation in the subject of quality and this could be that it really does not know the role it should adopt.

In a company there are two functions to consider in relation to the subject of quality:

a) Management functions, and

b) Technicals functions.

The first include the activities necessary in order to know what the market wants and needs and the definition of what product the company should produce and bring into the market in order to capture the greatest volume of sales. This is a management function and it is an art since, as we have already stated at the beginning, the characteristics of the product must be directed towards obtaining the best market acceptation of the product and the best profits through increased sales. This forms part of the art of management.

It must not be forgotten by management that the customer purchases the services which our products provide him every time, which means that the dynamic aspect of quality should also be considered, that is to say, as the product which may be the most profitable today but which, if a change of the users' needs takes place or of new products are offered by the competition, could cause the demand for ours to drop if we prove incapable of evolving more rapidly than the market itself.

In our types of companies we have seen, in recent years, the introduction of materials with new characteristics, changing production technology. The characteristics of the products have been changed - weight, colour, resistance, etc. All of this is allowing much that was previously effected in artisan fashion to be carried out through automated operations, achieving greater product uniformity and a significant increase in productivity.

This is due to the energy of manufacturers who are constantly trying to improve their products.

We can see, therefore, that management has, first of all, responsibility for product design and, later on, that of providing the means necessary for obtaining the planned qualities by means of the most suitable technology.

Without these conditions it is very difficult for our products to prove their competitiveness in the market.

What we have said confirms the definition given at the beginning that Quality first a means to do business and later is a technical problem. One has to know how to find the product quality which the market demands, as well as the price it is willing to pay for it.

It happens, as it has happened in the majority of my professional experiences, that management does not consider this function in its true dimension and goes on to the production stage without being technologically prepared for its launching and even without a clear idea of what market reaction will be. They are used to believing in the results from a crystal ball.

Many directors do not consider quality control to be a part of the management of the company in their charge when, in fact, it is just as important as financial, commercial or human resources management.

The second half of the phrase "and afterwards a technical question" mean, consequently, achieving that the products which we have programmed to produce are correctly turned out, homogeneously, at lowest cost, with the least number of rejects, claims, etc., which is to say, to manage to

do it well the first time, and this is the responsibility of the team of technicians making up the company and which will have to achieve this object through production planning (suppliers, processes, testing, etc.) to provide the ideal product at minimum cost.

It has to be again insisted that the error is committed when production of perfectly programmed products is commenced with defective planning. The faulty manufacturing of products which are delivered to customers at sub-specification level only pushes costs up.

There are a series of conceptual errors which it is important to clarify. The idea exists that corrections effected during production improve product quality and this is just not so. What happens during production is an attempt to adjust ourselves to the characteristics of quality we have offered and which we must deliver. However, in reality, it happens that we don't improve their characteristics, only managing to bring them up to the level which we had promised, which is to say that we have not improved quality. These activities which we consider as improvements on the majority of occasions only mean a saving of expenses which should be avoided and which make the product dearer.

It may be argued and demonstrated that it is cheaper to make the things correctly first time although, really, the idea prevails in factories that to work a plano is very expensive. But, what is not talked about is the divorce between knowledge of the characteristics of the product and the capacity of the productive processes employed to achieve them.

This lack of knowledge of the capacity of the processes is what produces bad quality and increased costs because of rejects, items returned, etc.

In the industries in which we are engaged, it is very convenient to attribute it to the great number of non-automated operations to be carried out but even were it so, neither are there, in these cases, an abundance of instructions or written processes which permit the homogenisation of activities, in registers, which would assure us of the results.

There are a lot of activities or tasks carried out by specialists who are trusted for their experience but nobody can assure us that their work is totally correctly carried out.

It has to be taken into account that the great amount of variables in every process makes it so that, to modify any parameter of the process, the fullest information possible concerning how the product will develop is needed.

This is the greatest error we have observed. In many cases we start production of a series of products with some processes which we do not have under control and, when a fault in the product is detected, running repairs are carried out on the process which lead us to the most unexpected of results, if the repercussions have not been proved in other characteristics of the product.

There is not sufficient wisdom around to give the study of the process sufficient time for us to get to know it and dominate it before putting it into production, after which we pay in time and money for what, at the beginning, we thought was a saving.

It happens that in these types of companies it is usual to classify production by differing quality levels and sales are at prices favouring the poorer categories.

Company technicians must plan quality knowing, before using any process, the percentage of defective pieces that it may produce, which really should be zero, although their existence must be admitted, but always in the confidence of knowing what is going to happen when the process is used and it functions correctly. As a result, we are in condition to correct it when it goes out of control.

The production cost is the same for correctly made products as for defective ones. The better the percentage of correct production, the greater the amount we can market at a higher price.

We can see, therefore, that the profits through quality may be generated by means of two activities:

Choosing the ideal product and the quality level which will afford us maximum sales and the elimination of needless costs occurring during production, which only make the product dearer.

We are going to influence the form of action in a company in order to be able to reduce and limit known costs as bad quality and which gathers up all those produced as a consequence of bad production.

We have not spoken of the value which these bad quality costs to companies and which are not comparable between companies as a result of the way each may be calculated, but experience, studies, reports, etc., may allow it to be established that it is between 12% and 18% of company billings.

This amount, by itself, speak of the sources of income they represent for every firm.

I believe that the management of every company is in a position to make a rapid calculation of what the depreciation of manufactured products and of those which cannot be availed of mean to it in order to consider the importance attached to being able to reduce these situations.

But, in addition, we have seen that these costs include another series of expenses at times not accounted for and which exceed the real value of the defective material. (Inspection staff,delays in installment payments, energy expenses, increased management, etc.).

Now we are going to ascertain what it is that successful companies have done, that is, those betting on quality and who are the market leaders.

In general all companies have a Quality Control system, of one kind or another, to try to assure the quality of the products they produce.

There are seven different levels into which we could group the Quality Control systems. It is significant that the first three only contain 40%, as a maximum, of western companies, which in some way justifies the tardiness of western industry in relation to Quality Control, compared with the Japanese and Orientals who have exceeded this level.

Returning to our reasoning, if we analyze the third state we will see that in it the Quality Control system is considered to include the participation of all the functional departments of the company, that is to say, total control of quality is defines which is not total quality.

At this level a system of Quality Control, is designed by a small group which must be put into practise by all of the component elements of the company and technicians are needed to help to achieve this through motivation. It has to be recalled that, in addition, Quality is a management function and in order to be able to insist on quality, management has to adhere to certain rules of the game which are absolutely necessary. These are, in addition to materials, plant, means, processes, etc., the non-material conditions in order to tell the workers what they should do, of what they are doing, with the power to correct it if they see it to be incorrect.

But, as everyone knows, this will be useless if the workers do not utilise the means and knowledge correctly. It is necessary that they should wish to use them and it will only be achieved if they are mentally aware of the importance of Quality in preserving their jobs.

Until now we have considered that motivation was a very important part of the economic aspect and it is so but, at present, the training and the level of many of our workers requires a great amount of consideration of their personal position and knowledge.

In a word, it is necessary to motivate in order to achieve general participation in the work of

quality control and all that it implies. One must succeed in getting all to offer their ideas about work. After all, doing it every day, they know more than anybody about it.

This pooling of knowledge will enrich the results and the workers will feel appreciated, stimulated and will try to come up with new ideas for improvements.

One theory why many quality improvement programmes have foundered has been that responsibility for starting it up has been passed to management and calls for its implementation by all concerned without a prior joint training programme by all the directors involved. That is to say, that neither enough time has been dedicated nor the necessary information provided to second level staff in relation to Quality who, being sceptical, ensure the failure of the plan.

In order to achieve better company profitability, the various structures are planned so as to get all to participate with all they know and replan the challenge of how to overcome the situation impeding the successful application of company improvement programmes.

In some way, we all know that knowledge of Quality costs alone is not a sufficient motive for reducing them. I know a great number of companies which, after calculating these costs, have failed in their attempt to reduce or eliminate them although, on many occasions, apparently correct action had been planned but failed to have the hoped-for success when applied.

This has made us reflect and search for the way to avoid these situations and, as an immediate consequence, the conclusion has been reached that it was fundamental to count on and take into consideration the human aspect of the persons working in the company and convince them of the need for quality.

We have made many mistakes, perhaps the legacy of obsolete working systems where only lip-service was paid to quality control and neither the actions of management nor workers justified it.

This situation has been borne in mind by a certain kind of company which has considered that if quality is to be improved that each and every one must participate.

An initial activity aimed at participation was the first "Zero Defects" programmes applied in order to achieve a certain contract without error, something impossible to continue indefinitely or the promotion of participation through the creation of "Circles of Quality", the philosophy of which was mistaken by many because the aim was to get the workers to participate in production activities and the improvements obtained were the consequences.

There is no doubt that new ideas are needed when the need is felt, as nowadays, to produce goods which are increasingly more approximate to the demands of the user and, at present, it is being shown that the programmes which have included everyone are those that have been successful.

Now, it must be asked how this participation can be achieved. How can one be motivated to achieve it?

Re-analyzing what other companies have done it is so that they have achieved this participation and, studyig the possible contributions which they present, a new system is required, and it is called Total Control.

Total Quality is not a company department. It is a form of working which represents the natural way of acting every day and which, in our country with different working traditions, is much more difficult, but not impossible, to achieve.

What have we to do? Let's see how we must understand the concept of quality.

- Applying the concept of quality to the activities we all carry out, in all functions and at all company levels.

- Considering the existence within the company of internal customers.

- Estimating that these activities have as their object the satisfying of customers' needs in the wide sense - quality, cost, delivery.

- If, in addition, we have acquired the habit of permanent improvement, then we are applying Total Quality.

This new work planning calls for the carrying out of some basic changes which, in resume, are as follows:

a) New attitudes towards work.

b) A change towards permanent improvement within the work ambient requiring communication, sincerity and confidence.

c) Collaboration and team-work manifested in participation.

This new system must start with an implicit commitment by the management of the company to the planning of the new Quality policy and the achieving of targets.

The promotion of a Total Quality programme implies four sequential conditions and that no step may be started until the aims of the previous step have been fully reached. These are:

1st. A state of mind.

2nd. Training.

3rd. Self-diagnosis.

4th. Action leading to permanent improvements.

The first gathers together the activities of management to animate all, including itself, having put its money on Quality as the essential condition in the search for market leadership for their products.

It is necessary to know how to transmit this idea forcibly as an inescapable necessity and hope for the survival of the company.

This state of mind should be complemented by massive training in two aspects: One of these, technological training about the work being done, developed by the corresponding superiors and which goes to the enrichment of all the company workers in any specific type of work and, on the other hand, a basic education on quality techniques to allow the workers to reach conclusions in relation to the decisions which must be made.

Training must reach all of the components of the company.

The third stage establishes that when one is trained and in the right state of mind, one is approaching the level of self-diagnosis which, through analysis of the market, the quality system itself, bad-quality costs and the measure the acceptation of our products by the market,permits the establishment of an order of priorities for the solution of problems.

Finally, in the fourth stage, the procedure for establishing the improvement activities through working groups is consolidated and which, in principle may be of two types which we call structural and improvement. The first are for the evaluation of problems restricted to a single department and the second is when staff from various departments participate in the solution of the problem.

There are other groups, called pilot, the object of which is to inform middle management of the activities being developed and in which staff are taking part on their orders.

The structure requires a Management Committee and a Programme Committee, presided over by a coordinator who decides on the problems to be solved. He has the approval of the Board which provides the means of work.

The Programme Committee chooses the staff to take part in each job and the objectives which it is hoped to reach, thereafter following-up and analyzing the results.

Finally, recognition of the work carried out by each group charged with the solution of a problem is necessary.

The Circles of Quality might be relied on as well, but the philosophy of their functioning is substantially different.

This structure allows different working groups to be created, the object of which is that they should manage to encompass all the components of the factory, with the object of winning their participation and channelling this participation into themes which may be the more interesting for improving quality and cutting costs.

As may be seen, the system recycles and is renewed as the true goal sought is the permanent improvement. It is not content with the mere achievement of goals.

This plan allows the creation, in companies of campaigns of a general character as, for example, for eliminating superfluous jobs, structured in the activities of the various working groups.

As a consequence, the results have not to be waited for. The reduction of costs is not alone effective but, in addition,it is possible to improve the quality system and the global quality of the products.

The say, when will we start? The answer is now. There's no waiting for the right moment. It will never be found.

We should adopt as our own the stimulus expressed in the following lines by Maragall:

Strive at your task
as if on every hammer blow you give,
on every furrow that you plough,
on every line that you write,
or on every piece that you make,
depends the salvation of mankind,
because it depends of it. Believe it.