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**Jacobo Moises Neuman Praes**

1995

**TOTAL QUALITY MANAGEMENT STRATEGIC  
OPERATIONS SYSTEM AND CONSUMER-USER NEEDS  
EVALUATION WORKSHOP: AN HOLISTIC APPROACH TO  
NEEDS ASSESSMENT FOR TOTAL CUSTOMER  
SATISFACTION**

**by**

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## Preface

"Redesigning the Future" one of the books most liked by me, starts with the following line: "If you read newspapers and are still satisfied with the state of the world, put this book down; it is not for you" (Ackoff, 1974). I think, the same idea still applies for this dissertation.

The next paragraphs are included here with all due respect to the Lord and His vast knowledge and immense good intentions. Also, wishing thoughtful reflections by the many lovers of the "Status Quo," that still wander around without clear objectives in their minds, and, passively or apathetically are "subsisting," day in and day out in their boring jobs.

It is ironic to think that quality problems might have begun since the very moment of creation. In creating the world, its future users maybe were not even asked what they anticipated as needing. Possibly this is the basic root cause of many of today's modern world's conflicts.

I truly think that the first setback that our world had and is still suffering since the very beginning of our known times, the "Creation" moment, is somehow directly related with the traditional and systematic approach that has been used countless times since those remote days by human beings to design, construct, build, manufacture, service or deliver, products and services. Very often those products or services are not yet really required or completely expected by most of the customers of the organization, or for that matter, "creating the wrong 'Creation.' "

We must start thinking now about planning fundamental changes in our global or local culture, in changing our attitudes, and our values

without any delay or hesitation. Maybe it is time to go back to forgotten simple basics! Which in the end will help human beings to create the adequate products and services.

If we do this last, it will surely let us accomplish better results. We require to perform activities that can allow us to achieve continuous improvement of ourselves, our families, homes, neighborhoods, organizations, lands, countries, continents and why not our "Ancient Created World," because, our world, surely deserves it.

The world, is currently resigned and anxiously waiting to see if we humans can finally start using our heads to "think, plan, decide and act" in more advanced and productive ways to assure that we have access to the first product or service ever manufactured, survival.

I think and believe it is our responsibility to do it! And, do it now! There is no more time, resources or lives that we human beings can waste anymore or any longer! If we do not do it, we will finally need to pay for our poor mental attitudes and mismanagement of the world's vast resources and all the related capabilities being currently squandered. All those changes must be immediately started by asking first what is really needed and afterwards plan to organize all available means and resources at our hands to do just exactly that.

I truly think that "G-d," foresaw with all his immense "Entrepreneurial" vision, and did ask then for feedback purposes, all the future inhabitants of the world about their future expected needs and goods in regard to the Universe, and afterwards, made a wise decision! Human beings are the sole blame for our world's "current situation."

Please, now allow me to remember you J. F. Kennedy's great words, expressed to the world on the 20th of January, 1961, at his inauguration as 35th President of the United States of North America: "My fellowmen of the World, not ask, what can be done by the United States for us, but what can we together do for freedom and dignity of men?" (Bothwell, 1965). John F. Kennedy was one of the persons I most admired as a young man.

"G-d" bless you, earthlings, still "alive" and "responsibly willing to improve things around you continuously"!

Included in this thesis, for free, are presented and suggested various tools and ideas that will surely help in all those important quests. I hope you will use them wisely. I have had the opportunity to employ all the ideas presented here in some organizations, and I have been told that significant changes were accomplished with them, as I will also present later if "G-D" allows time and permits me to do it.

## **Abstract**

# **TOTAL QUALITY MANAGEMENT STRATEGIC OPERATIONS SYSTEM AND CONSUMER-USER NEEDS EVALUATION WORKSHOP: AN HOLISTIC APPROACH TO NEEDS ASSESSMENT FOR TOTAL CUSTOMER SATISFACTION**

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The purpose of this Doctoral Thesis is to present and offer empirical support for an holistic methodology specially designed to asses customer needs and to develop an actionable managerial strategy to address those needs. In so doing the focus is on Total Quality Management (TQM), but before quality products and services can be developed customers' needs need to be fully understood and considered. A great deal has been lately written about TQM. However, when trying to implement TQM's particular traditional philosophy and culture in different organizations, many have completely forgotten customers and their needs, regardless of the organization's top managers declared intent not to do so, and always try to keep the customer as its most important source for business growth and development. Total Quality Management must begin not just with the

customer in mind as many say it should be done, but must start with a clear understanding of the customer's needs. Thorough and deep understanding of customer needs, will allow modern organizations to better define and deploy the required strategic operative systems and all their related functional operative processes to offer adequate products or services to current and future customers. The "C-U NEW" methodology will be recommended as an appropriate tool to help top management in the process of adequately defining its customers' current and future needs. After customer needs are clearly defined, strategic and operative team-work planning and behaving by all the personnel participating in the organization, can be promoted to satisfy those previously verbally expressed needs. Customer satisfaction and needs assessment has been stressed as an essential part of what the new and necessary Vision and Mission of modern enterprise should be, but sadly such crucial fact has been very often also forgotten by many managers currently occupying the top positions of the organization. This last fact even gets compounded for Mexican organizations that were never part of those international consultants and academicians research or implementation efforts. If customer needs are better understood and known beforehand, collaborators of the organization can be then better sensitized and encouraged to voluntarily work towards the achievement of "Quality for Total Customer Satisfaction" as a continuous and normal way of working everyday. "TQM-SOS" and "C-U NEW" methodologies were proven to be satisfactory individual and team-work tools in the process of improving the quality of the products and services offered by the participating organizations. Also, improved management attitude towards internal and external customers, appropriate culture development and improved productivity results were actually achieved.

## Table of Contents

List of Figures.....	xviii
List of Tables.....	xx
<b>CHAPTER 1 INTRODUCTION.....</b>	<b>1</b>
1.1 Introduction.....	1
1.1.1 Scope and Importance of the "TQM-SOS" and the "C-U NEW" Methodologies.....	5
1.1.2 Contribution of the "TQM-SOS" and the "C-U NEW" Methodologies.....	10
1.2 Operational Definitions.....	12
<b>CHAPTER 2 STATE OF THE ART TOTAL QUALITY MANAGEMENT AND CUSTOMER NEEDS EVALUATION TECHNIQUES.....</b>	<b>21</b>
2.1 Historic Development and Present State of Knowledge about "TQM" and Principal Supporters.....	22
2.2 Total Quality Management Importance.....	36
2.3 "TQM" Implementation Approaches Being Recommended and Currently Used.....	45
2.3.1 Recommended Tools to Support and Enhance "TQM" Implementation.....	50
2.4 Customer Satisfaction as an Important "TQM" Objective.....	54
2.5 Current Customer Needs and Satisfaction Assessment Methodologies.....	59
2.5.1 Approaches Currently Used for Consumer-User Needs Assessment.....	60
2.5.2 Current Approaches to Consumer-User Satisfaction Evaluation.....	68
2.5.3 Why is Teamwork Recommended for Consumer-User Needs Assessment and Satisfaction Evaluation? .....	77

2.6 Various Objectives, Goals, and Requirements Not Yet Properly Defined to Improve Traditional "TQM" Implementation. ....	83
2.6.1. Customer Needs Assessment and Customer Satisfaction Evaluation. ....	84
2.6.2 Strategic Planning and Implementation of Traditional "TQM" Systems. ....	85
2.6.3. Resistance to Change.....	95
<b>CHAPTER 3 NEED FOR "TQM-SOS" AND "C-U NEW" METHODOLOGIES IN MEXICO. ....</b>	<b>98</b>
3.1 Applicability in Mexican Organizations of the "TQM-SOS" and the "C-U NEW" Methodologies. ....	98
3.2 Purpose and Application in Mexican Organizations of the "TQM-SOS" and the "C-U NEW" Methodologies. ....	102
3.3 "TQM-SOS" and "C-U NEW" Methodologies Justification. ....	118
3.4 Main Objectives Sought with the Development of the "TQM-SOS" and the "C-U NEW" Methodologies. ....	122
3.5 Requirements Needed For Successful Implementation of the "TQM-SOS" and "C-U NEW" Methodologies in Mexico.....	125
3.5.1 Importance of the Internal and External Customer for the Offered Products and Services. ....	126
3.5.2 Top Management Involvement and Participation in the Training and Implementation Processes. ....	127
3.5.3 Strategic Audit Of the Organization. Actual Vs. Future Comparison, Vision, and Mission Statements Review. Strengths, Weaknesses, Opportunities, and Threats. ...	129
3.5.4 Development of Total Quality Management Strategic Operations System and Teamwork Culture. ....	132
3.5.5 Analysis of Problematic Areas and Usage of Quantitative Tools for Product-Service Improvement and Problem Solution. ....	134
3.5.6 Employee Training and Recognition. ....	135
<b>CHAPTER 4 "TQM-SOS" AND "C-U NEW" METHODOLOGIES. ....</b>	<b>140</b>
4.1 "TQM-SOS" And "C-U NEW" General Objectives Expected. .	144

4.2	"TQM-SOS": An Improved Process for Total Quality Management Strategic Operations System Implementation to Achieve Total Customer Satisfaction. ....	147
4.3	"TQM-SOS" Implementation Program Activities. ....	148
4.3.1	"TQM-SOS" Preliminary Organizational Diagnosis. ....	153
4.3.2	"TQM-SOS" Sensitizing and Basic Training. ....	156
4.3.3	"TQM-SOS" Sensitizing and Intermediate Training. ....	170
4.3.4	"TQM-SOS" In Depth Internal Organizational Diagnosis. ....	180
4.3.5.	"TQM-SOS" Objectives Definition and Strategic Operations System Planning Activities. ....	182
4.3.6.	"TQM-SOS" Priority Projects Development. ....	184
4.3.7.	"TQM-SOS" Required Organization Structural and Operative Changes. ....	187
4.3.8.	"TQM-SOS" Implementation Program Activities. ....	188
4.3.9.	"TQM-SOS" Continuous Improvement Activities. ....	190
4.3.10.	"TQM-SOS" Sensitizing and Advanced Training. ....	193
4.4	"C-U NEW." "Consumer-User Needs Evaluation Workshop." 197	
4.4.1	"C-U NEW" Methodology in Depth. ....	210
4.4.1.1	First Phase: "Thinking and Analysis." ....	204
4.4.1.2	Second Phase: "User Simulation." ....	210
4.4.1.3	Third Phase: "Actual Marketing and Sales Simulation of the 'Product-Service' Being Studied in the Workshop by the Current Manufacturer or Supplier that you, the participant, represent." ....	212
4.4.1.4	Fourth Phase: "Review Of Results Achieved by the Marketing and Purchasing Directors: Conclusions and Suggestions." ....	218
4.4.1.5	Fifth Phase: "Define Tentative Priority Improvement Projects ." ....	219
4.4.1.6	Sixth Phase: "Questionnaire of Participation in the Workshop." ....	220

4.4.1.7 Seventh Phase: "Periodic Questionnaire and Interview of Participants and their Application of the Methodology Presented in the Workshop.".....	221
4.4.2 Appendix to the Workshop Instructions. ....	221
<b>CHAPTER 5 RESEARCH EFFORT: ACHIEVED RESULTS OF UTILIZATION OF THE: "C-U NEW " TO IMPROVE THE "TQM-SOS's" IMPLEMENTATION PROCESS. ....</b>	<b>232</b>
5.1 General Results of "TQM-SOS" and "C-U NEW" Applications in Different Mexican Organizations. ....	232
5.1.1 Expected Objectives of Application.....	238
5.2 Research Methodology. ....	249
5.3 FORD: Description of Activities Performed and Results Achieved. ....	253
5.3.1 "TQM-SOS" and "C-U NEW" Objectives Achieved in FORD MOTOR COMPANY MEXICO S. A. DE C. V. ....	257
5.3.2 Comments about "TQM-SOS" and "C-U NEW" Objectives Achieved in FORD MOTOR COMPANY MEXICO.....	271
5.4 TECHNIK-AIR and AYAREB: Description of Activities Performed and Results Achieved. ....	274
5.4.1 Objectives Achieved in TECHNIK-AIR and AYAREB..	277
5.4.2 Comments about "TQM-SOS" and "C-U NEW" Objectives Achieved in TECHNIK-AIR and AYAREB Firms. ....	296
5.5 INSTITUTO TECNOLOGICO y de ESTUDIOS SUPERIORES DE MONTERREY at the GRADUATE SCHOOL in ADMINISTRATION at MEXICO CITY CAMPUS: Description of Activities Performed and Results Achieved. ....	300
5.5.1 Objectives Achieved in INSTITUTO TECNOLOGICO y de ESTUDIOS SUPERIORES de MONTERREY. GRADUATE SCHOOL in ADMINISTRATION at MEXICO CITY CAMPUS. ....	302
5.5.2 Comments about "TQM-SOS" and "C-U NEW" Objectives Achieved at ITESM-EGA-CCM with MBA Students learning the methodologies. ....	320

5.5.3 Students as "Consumers/Users" of the Graduate School in Business Administration (EGA). Comments after their participation in the "C-U NEW" Workshop.....	323
5.5.4 Comments About "TQM-SOS" and "C-U NEW" Objectives Achieved at ITESM -EGA-CCM with Students Playing the Role of Consumers-Users of the Products and Services Offered by their Own Graduate School. ....	338
5.6 Content Analysis of Obtained Answers.....	341
<b>CHAPTER 6: SUMMARY AND CONCLUSIONS.....</b>	<b>351</b>
6.1 "TQM-SOS" and "C-U NEW" Final Justifications.....	351
6.2 Major Implications.....	360
6.3 Methodological Considerations.....	366
6.3.1 Strengths.....	366
6.3.2 Weaknesses.....	368
6.4 Recommendations for Future Research and for Improvement of the "TQM-SOS" and "C-U NEW" Methodologies.....	371
6.5 Epilogue: Final Comments.....	374
Figures.....	388
Appendix A "ESQUEZOFRENIA." .....	430
Appendix B "QUESTIONNAIRES." .....	432
Appendix C "TABLES." .....	439
References .....	498
Vita.....	513

## **List of Figures**

Figure 1: Organization's Philosophies.....	390
Figure 2: Total Quality Circuit.....	391
Figure 3: Current vs. Future Value Systems Comparison.....	392
Figure 4: Current Value System vs. Current Technology Sub-system Comparison.....	393
Figure 5: Current vs. Future Needs Sub-systems Comparison. ....	394
Figure 6: \$ = Authorization to Operate a Business. ....	395
Figure 7: Total Quality Management Strategic Operations System Planning.....	396
Figure 8: Strategic Evaluation of the Organization. ....	397
Figure 9: Ishikawa's Diagram.....	398
Figure 10: Sampling Chart.....	399
Figure 11: Relative Accumulated Frequency Analysis.....	400
Figure 12: Pareto's Diagram .....	401
Figure 13: Correlation and Regression Chart. ....	402
Figure 14: Control Chart.....	403
Figure 15: Integrated Process Management Model.....	404
Figure 16: "TQM-SOS" Training and Implementation Stages.....	405
Figure 17: "C-U NEW" Activities Chart. ....	406
Figure 18: General Data of Interviewed Participants. ....	407
Figure 19: Data Summary of Age, Job, and Position Seniority of the Respondents.....	408

Figure 20: Job Seniority Histogram.....	409
Figure 21: Position Seniority Histogram.....	410
Figure 22: *Age Histogram.....	411
Figure 23: Number of Positive Comments per Objective. ....	412
Figure 24: Frequency of Positive Answers of the expected Objectives.	418
Figure 25: Improve Strategic Operative System Planning Process. ....	419
Figure 26: Improve Operations Management Process. ....	420
Figure 27: Change the Organization Culture. ....	421
Figure 28: General Objectives Comparison. ....	422
Figure 29: Not Matching Objectives. ....	428

## List of Tables

Table 1. "Important traits and characteristics of the Mexican worker." .	440
Table 2. "Important Terms Definitions." .....	441
Table 3. "Important traits and characteristics required by supervisors in order to implement policies or systems." .....	448
Table 4. "Principal points and requirements offered by Deming." .....	450
Table 5. "Principal points and requirements offered by Juran." .....	453
Table 6. "Principal points and requirements offered by Ishikawa." .....	457
Table 7. "Principal points and requirements offered by Crosby." .....	464
Table 8. "Recommended Work Group Processes." .....	470
Table 9. "Principal Guidelines and characteristics required by 'The Quality Master Plan to achieve Quality Improvement.' " .....	477
Table 10. "Principal Guidelines for developing a Process Improvement Plan." .....	480
Table 11. "A Model for Implementing TQM in Purchasing." .....	482
Table 12. "TQM Implementation Guidelines." .....	485
Table 13. "TQM Implementation Process: Three Steps to Continuous Improvement." .....	487
Table 14. "TQM: A Step-by-step Guide to Implementation." .....	490
Table 15. Guidelines for Implementing Total Quality Management in the Engineering and Construction Industry." .....	492
Table 16. "Partnering for Total Quality: Executive's Implementation Guideline. ....	495
Table 17. "Well Functioning Teams." .....	497

## CHAPTER 1

### INTRODUCTION

This dissertation will be found enjoyable and rewarding to anyone interested in meditating about performing, although generally exercised in reverse order, which is appropriate to first: Think, Plan, Decide, and then Act.

#### 1.1 Introduction.

"In the broadest sense, Quality Planning consists of developing the necessary products and processes to satisfy the needs of the customers" (Juran, 1990).

This thesis presents an improved holistic approach for implementing Total Quality Management (TQM). The enhanced methodology discussed here will be referred to as: Total Quality Management Strategic Operations System (TQM-SOS). The basic difference between "TQM-SOS" and other approaches currently used to implement the traditional "TQM" process in an organization, is that it demands the direct involvement, participation, utilization, and application of the "Consumer-User Needs Evaluation Workshop (C-U NEW)."

Both methodologies must be implemented by senior, top, middle, and lower level managers together with other collaborators of the firm in order to successfully achieve the expected results by the organization.

In this dissertation, the "C-U NEW" methodology will be presented, explained, and discussed as the most important empirical and practical contribution in implementing the "TQM-SOS" methodology.

The main objective of the "C-U NEW" methodology is to help management broaden its understanding and definition of current or potential customers' verbally expressed needs. Once known, management will be able to define, design, and manufacture those products or services needed by the customer. The resulting products or services should satisfy customers needs much better than the actual ones.

The objective of this thesis is to discuss both the "TQM-SOS" and the "C-U NEW" methodologies, as well as the results already achieved by several industrial or service organizations. In these organizations, I was invited to participate as a facilitator or consultant in special organized programs that taught management these methodologies. The participation of top managers created a great learning experience. Later these same managers implemented these methodologies at their particular workplace. Obviously, they took the time to adapt the methodology to each one's work environment.

The principal intention of the training sessions was to teach and sensitize managers to "TQM-SOS" and "C-U NEW" methodologies. With this in mind, it will be shown how each organization applied the methodology and the results that were achieved.

It is interesting to note that originally the organizations had in mind the traditional "TQM" methodology as a way of improvement, and later management adopted the principal ideas of the "TQM-SOS" and "C-U NEW" methodologies in its actual organizational changes. The

applications and achieved results, discussed in this thesis, are taken directly from these implementation efforts.

The important results achieved by the organizations that were introduced to the "TQM-SOS" and "C-U NEW" training sessions will be reported later in Chapter Five. In that chapter, the merits of using the improved "TQM-SOS" methodology to implement Total Quality Management in modern organizations will be demonstrated.

It also will be presented in this dissertation the different results that were achieved after the training exercises of the "TQM-SOS" and the "C-U NEW" methodologies were offered to graduate students (most were studying part time and working full time in different organizations as middle-level managers) of the Master of Business Administration as part of their academic course work at the Instituto Tecnológico y de Estudios Superiores de Monterrey. The subject students were taking dealt with Total Quality Management.

The questionnaires (see Chapter Four) administered to managers and students in the training sessions of the "TQM-SOS" and "C-U NEW" methodologies were applied some years later, in the case of the industrial organizations, after the actual participation of top and middle managers in the different sessions, and was part of this dissertation research effort. The questionnaires were designed to allow the evaluation of the real-life results that these training and implementation exercises had had for the managers that participated on a personal basis and to evaluate the results achieved in those particular firms where the methodologies were previously explained and voluntarily used.

The first Chapter presents the intended scope and the expected importance and contribution that this work can have in the Mexican

environment and its possible application in other countries. There also will be presented operational definitions that are required to implement in a modern organization the "TQM-SOS" and "C-U NEW" methodologies and to understand and appropriately use important terms such as customer, consumer, and user, among others. Also discussed are different operational definitions that are required to better understand what customer needs are and the importance of the need of defining them in the first place by any organization wanting to improve its products or services for quality and productivity improvement purposes.

The second Chapter will offer a comprehensive literature review of the current importance and the related main objectives that Total Quality Management has in our industrialized world, as well as a summary of its historic development and possible implementation guidelines or procedures.

The third Chapter discusses the importance of "TQM-SOS" and "C-U NEW" methodologies for Mexican organizations.

Information dealing with customer satisfaction and needs assessment methodologies used today in different organizations also will be shown. Also discussed are the requirements that must be considered when implementing "TQM" in an organization and the different factors such as needs, values, culture, vision, and mission that need to be defined and managed as part of the strategic intent of the organization if it is truly committed to attain quality and productivity for total customer satisfaction and thus achieve the expected internal growth and the required business profitability of the firm.

Chapter Four discusses the improved process to implement Total Quality Management Strategic Operations System (TQM-SOS) in an

organization and the different procedures it comprises. Also, an improved methodology to define and evaluate consumer and user needs will be presented. This methodology will be referred to as "Consumer User Needs Evaluation Workshop (C-U NEW)."

Chapter Five discusses the results observed after various organizations used the "C-U NEW" methodology as part of their intended approach to implement in their firms the traditional Total Quality Management or the improved "TQM-SOS." The results achieved after real-life applications of the main concepts of the "TQM-SOS" and the "C-U NEW" methodologies in various industrial, manufacturing, and service organizations also will be presented in this chapter.

Empirical support to recommend and employ the "C-U NEW" methodology as an adequate procedure to be used by top management and all the personnel working for the firm to achieve total customer satisfaction is included for review, too.

Finally Chapter Six presents conclusions and implications that this work and the "TQM-SOS" and the "C-U NEW" methodologies can have in various organizations. Recommendations for further research and development considering the strengths and weaknesses of these procedures also are discussed.

### **1.1.1 Scope and Importance of "TQM-SOS" and "C-U NEW" Methodologies.**

For years, marketers around the world have said that understanding customer needs is paramount to developing effective corporate strategy. Theoretical Marketing Concept and real marketing efforts present us with the following paradoxes and comments. Deming (1982) argued that:

The principal utilization of consumer research should be to reintroduce consumer reactions in the design of the product in such a way that management would be able to anticipate demands and changing requirements, and be able to establish economical production levels. Consumer research is then a communication process between manufacturer and potential users of his product.

This communication process can be done today in an economical and confident way using trial and sampling procedures designed according to adequate statistical procedures. Using this, the manufacturer discovers how his product is behaving in actual usage conditions, what people think about the product, why some people buy it, and others do not, or why some might not buy it again, and use such information to redesign the product, to manufacture it according to the quality and uniformity that best fits final users of the product at the price they can pay.

The Marketing Concept presented by Kotler (1984) clearly states:

The key to achieving organizational goals consists in determining the needs and wants of target markets and delivering the desired satisfactions more effectively and efficiently than competitors.

Kotler (1984) also warned:

Fast Forgetting. Even after strong marketing is installed in an organization and matures through the various stages, management must fight a strong tendency to forget basic marketing principles. Management tends to forget marketing principles in the wake of marketplace success. For example, a

number of major American companies entered European markets in the 1950s and 1960s expecting to achieve outstanding success with their sophisticated products and marketing capabilities. A number of them failed, and a major reason is they forgot the marketing maxim: 'Know your market and how to satisfy it.' American companies came into these markets with their current products and advertising programs instead of redesigning them on the basis of what the market needed. American marketers failed to appreciate the major cultural variations between and even within European countries and the need to start where the consumers are, not where their products are.

Kernan and Sommers, printed in the 17th chapter of their collection, an article by John Douglas that presented an emerging approach to deal with consumers:

The New Marketing Concept: This new theory sounds almost naive in its simplicity; that is, all marketing activity should start with the consumer. While the consumer has always been important, he has not always been the key figure in the design and manufacture of the product. In the past years, the problems of reducing costs and increasing efficiency have required the major efforts of the corporation; however, a new focal point is being discussed. No longer can the engineer demand the most attention. The important man on the emerging scene is now the consumer. (Kernan & Sommers, 1968; Douglas 1968)

We know today that not many listened, heard, read, or understood what Douglas, Kotler, or Deming meant. It is argued also that Douglas' comments are only partially acceptable. If Douglas would have added that the marketer and the top manager, along with the engineer must

work together in favor of the consumer, I would then agree with him, if consumers would have assumed the important position Douglas recommended. But this has not occurred.

More recently, the Management discipline also has offered the Total Quality Management Concept emphasizing the importance of customer satisfaction through quality products and services. While both marketing and management are concerned with quality issues and customer needs satisfaction, neither has merged to develop a customer-based methodology to better understand customer needs. Customer satisfaction must not be a hit-and-miss proposition.

When organizations and their managers begin with a clear understanding of their customers' (consumers'-users') needs, they are buying profitable stock in their survival. Also, "TQM-SOS" will help organizations to develop the adequate culture toward better team-work efforts in favor of customer satisfaction.

In this work, it is argued that "TQM-SOS" is an appropriate procedure to be followed by organizations (Mexicans first, then other nationalities) interested in achieving "Total Consumer-User Satisfaction." The principal difference between the known procedures to implement the traditional "TQM" approach in an organization and the "TQM-SOS" methodology presented here is that this last one will include a special section devoted to performing a thorough evaluation of the current and potential needs of consumers and users, even before reviewing posterior improvement or development in the new products and services offered to them by the organization.

The revision of the current or future products or services needs satisfaction will be done with the utilization of the "C-U NEW" that also

will be fully described and justified in this thesis, and that is shown to be a fundamental part of the process to satisfactorily implement the "TQM-SOS" in modern organizations (see Figure 1).

In this thesis, it will be shown that improved "TQM" implementation results can be achieved with the utilization of "TQM-SOS" if adequate knowledge of current or future customer needs is first defined and analyzed by each organization with the help of the "C-U NEW" methodology which will be considered part of the "TQM-SOS" technology. If modern organizations would just follow this recommendation and approach, then the New Marketing Concept presented in the 1960s by Douglas (Kernan & Sommers, 1968) will become a reality.

The "C-U NEW" methodology has been shown to be a better procedure to help define customers' needs in order to satisfy them later with better products or services. Such organizational behavior has not been completely agreed upon as one of the first top priority activities that management should engage in their continuous managerial tasks everyday. Empirical evidence for these statements will be presented in Chapter Five.

This thesis will help top Mexican or international managers remember that the organization's main purpose and reason for existence is to: Satisfy all its consumers'-users' needs with products and services manufactured and offered at an adequate price level. These basic operations, and/or marketing concepts, have been forgotten by many managers and this has not helped them achieve the expected planned corporate objectives. Such memory lapses have sometimes been very costly, too.

### **1.1.2 Contribution of "TQM-SOS" and "C-U NEW" Methodologies.**

"I hope everyone will heed the following warning: Any enterprise that does not practice Quality Control will not be around for long" (Ishikawa, 1989).

This dissertation discusses the principal guidelines for how to use the "TQM-SOS" and the "C-U NEW" methodologies as well as the results and information finally obtained during the actual participation of managers of different organizational levels.

On those applications there participated also various managers, customers, and suppliers. Participant managers in sessions where the "TQM-SOS" and the "C-U NEW" methodologies were used argued in the questionnaires that the methodologies have been successfully applied in various organization and executive training workshops since 1986, the moment in time that both methodologies were developed.

"TQM-SOS" and the "C-U NEW" methodologies are fully documented and recommended for organizational applications in this Doctoral Thesis as appropriate methodological tools to help senior management in the process of adequately defining its customers' needs. After these needs are defined, reviewed, and understood by everyone in the organization, strategic and operative team-work planning by all the personnel participating in the firm can be recommended and followed according to those customer's expressed needs to generate the required products or services.

With all the related information available in regard to the customer's expressed needs, top managers will be able to more efficiently deploy the "TQM-SOS" methodology to achieve "Quality for Total Customer Satisfaction" in their daily operations. Products and services will be easier to design and manufacture if customers' requirements and needs are better known beforehand and considered accordingly in the required design and product development and research stages. (see Figure 2)

One of the most important contributions that the "TQM-SOS" and the "C-U NEW" methodologies will offer Mexican management are the applicability and implementation guidelines for the using the methodologies. This is very important considering the "lack of general knowledge and training most Mexican managers or workers have available to help them apply ideas and suggestions in all kinds of practical situations" (Kras, 1989). This last fact was pinpointed by Kras in her study of Mexican Top Management traits (for more details, see Table 1).

Ishikawa, one of the most respected scholars behind Japan's economic recovery after the Second World War, also confirmed before his untimely death, the need of developing methodologies with similar characteristics to the methodologies I am presenting here and applying them in organizations to obtain the expected contributions of such procedures. Ishikawa even offered the following comments and recommendations in regard of the subject: "Product Research (research into the use of products and services)" and "Service (Marketing) Research technologies":

Product research is extremely important in quality control; although this point has been studied for many years, it is still not

satisfactorily grasped, and not enough of this type of technology is being accumulated. Service research has improved considerably, but sales personnel still do not have a sufficient grasp of it and are not trying to improve it. In some extreme cases, they do not even have sufficient knowledge of the products they are selling. Ishikawa (1989)

Approaches as "TQM-SOS" and the "C-U NEW" methodologies presented here were not available during Ishikawa's lifetime, as he mentioned in several of his most important works (Ishikawa, 1986; Ishikawa, 1989).

## **1. 2 Operational Definitions.**

There are many important concepts that must be defined and that are related to most of the ideas behind this dissertation. Some will not be operationalized directly while others will. This section is offered to provide the reader with a perspective of concepts relevant to the topic and its developmental conceptualization.

The methodology to define customer needs will be known as "C-U NEW" and the process to implement the traditionally known Total Quality Management philosophy in an improved way in the organization and that will be presented also in this work will be named as "TQM-SOS."

A series of definitions for the terms and factors that will be continuously used and talked about throughout the complete text of this dissertation are introduced next. The purpose is to obtain consensus about some terms that are currently used by many people but that do not have common acceptance or are completely agreed about by everyone in the scholarly field. It is important to note that these operational

definitions were specially coined as part of the methodologies studied and that their main purpose is to guide discussion.

Also, the definitions presented here may not be agreed upon by many of the readers, but they are offered as a starting point for their consideration, review, and improvement, the principal objective of this research. Human knowledge, or abstraction, can be developed by unknown people in different settings or by not well understood means within the human brain, without meaning intentional piracy, or not giving credit to experts, for lack of reference and bibliography reading spent time.

In this Doctoral Thesis are used interchangeably the following operational definitions. Some of them will be used and accepted as ultimate truths for the time being (but which can be modified and adapted if required by interested parties) for the complete support of this thesis, pending further research and more in-depth thinking about the included subjects.

Many of the concepts discussed in this dissertation have numerous unclear definitions. Table 2 presents various definitions to better understand this complete document and to compare them with the definitions proposed in this paper. Some are included to orient the reader, others are more central to the theme.

For example, as shown in Table 2, needs are defined on respected references as: "A lack of something required or desirable. Necessity. Something required or wanted; requisite." (The American Heritage Dictionary, 1988). Or, as will be needed to operationally define the term "Needs" for the better understanding of this thesis.

This must be done because the previous definition is not very helpful for managers or creates for them semantic problems when, for example, needing to define such terms as "Customer's Needs".

Needs: Knowledge of customer needs is the basis for understanding and achieving customer satisfaction. Operationally, the term needs is defined as those special attributes and specific characteristics verbally expressed and personally defined by, and together with, the customer (consumer-user) as wants or expectations that must be present in a product or service that the same customer wants and is expecting to receive now and in the future, which will fully satisfy his or her requirements when receiving and using (as intended and designed) such products or services now, or in the future, for an adequate paid price.

The "C-U NEW" methodology presented in this dissertation will focus on salient needs and how managers can use first-hand knowledge of these needs to implement "TQM-SOS" toward improved customer satisfaction. In this thesis the term "Needs" will be used interchangeably and defined as: Expressed and/or Verbalized wants or expectations (NOTE: For other available traditional definitions of needs please, refer to Table 2).

This dissertation explores in detail customer needs, hence, presenting operational definitions about all related matters is important to understand the terms used from this point on.

Other operational definitions are given for such terms as values, culture, vision, mission, customers, consumers, users, quality, and satisfaction. These are defined next.

Also, other normal term definitions that are considered important to be reviewed, to better understand the methodologies being presented in this paper, will be included for your reference in Table 2. This knowledge will surely help various organizations properly implement "TQM-SOS" for Total Customer Satisfaction.

Values: The set of beliefs and thoughts that influence the creation of accepted and expected world rights, norms, and modes of behavior allowed to exist within organizations or society which mentally help regulate and define how people or groups can behave and act to enable them to satisfy their current or future needs of an individual, or within a given group or organization, in a particular moment of time.

Culture: The set of values and accumulated information, knowledge, technical and manual skills and abilities, and gathered technology level, that allows an individual, group, or organization to define, procure, and use all the available resources and means at a particular moment in time. These will permit people to perform the required activities or operations to generate the required products and services to satisfy their own, and those of their consumers and users, current and future needs in an efficient and productive way and done right at the first time.

Vision: The current projection, forecast, or preview of expected future needs that directly depend on the impending forecasted and expected changes in values that individuals, groups, or organizations will have in the same future time span considered. Such future needs will be satisfied with the expected available, or also easily achievable (within the same span of time), products and services, due to the values and materialized culture that an individual, group, or organization will have in the same future span of time.

If development of the necessary values, culture, and the reflected technology levels required to satisfy future needs takes longer to be achieved than the actual materialization or realization of the consumer's or user's needs, which would be already required or expected to satisfy those needs in such a particular time span, organizations will not be able to satisfy them for real, and, we will be talking about or dealing only in the domains of science fiction, because of the lack of the required knowledge or technology level to manufacture or deliver the required products or services to satisfy such already expressed needs.

The same happens in the cases when available technology would have been used to develop products or services that are not yet needed or expressed as required in the minds or actions of the potential consumers or users, mainly because the values or sustaining culture that will be needed or allowed to exist to support such products' or services' applications or usage would have not yet been achieved or attained.

For products or services to be needed and seen as already culturally and socially appropriate for their design, manufacturing, marketing, sales, usage, or consumption, it is required the same pace forward movement between needs and values (including its dependent culture) (see Figures 3 and 4).

It also is interesting to note that it must be forecasted and projected simultaneously the expected values and its related culture advancement or changes. Such projections must be done also to define the future expected needs that such changes will create or originate in the future potential consumers or users (potential target markets) of the products or services, that would be required in the same forecasted time span by

them, and that would be required as wanted, to be able to satisfy their future needs.

We must project forward also the level of technology (dependent on related culture level) that would be required to generate the required products or services that would be needed in such same time span as well (see Figures 3, 4, and 5).

Mission: The principal reason for the existence of the organization is and must be stated along the following lines (NOTE: Remember that the mission statement for particular organizations must include the principal objective of the organization in its wording and also describe the products or services it intends to offer besides the types of recognition measures that will be presented to the different stake holders that participate in the whole operation of the organization): Satisfy the current and future verbally expressed as expected needs of its actual or potential customers (consumers-users) with adequate products or services done right at the first time without any excuses.... and at a productive, efficient and competitive level of cost for the organization manufacturing or generating them, and, that also offers sufficient value and satisfaction to the direct or indirect consumers and or users of such products or services for an adequate paid price level, while at the same time recognizing all the efforts and satisfying all the personal needs and delivering appropriate benefits to all the collaborators, employees, participants and stake holders of the organization that continuously strive to improve the quality of their work, products and services in honest ways.

The real authorization to operate and to be in business is given to any organization from the environment and it is directly conveyed, obtained, delivered or received by the monetary deposits made in the

arches of the corporation by its continuously satisfied customers. (see Figure 6).

Corporate Strategy: It is contended also that corporate strategy must be aligned and defined in such a way as to allow the organization to achieve its mission or principal reason to exist: Corporate strategy is then the pattern and process of decision making and acting in an organization that determines and reveals its most important objectives, purposes, and goals, produces the principal policies and plans for achieving those goals, and defines the type and range of business the company is to pursue, the kind of economic and human organization it is or intends to be, and the nature of the economic and non economic contributions it intends to make to its shareholders, employees, customers and communities. (see Figure 7).

Consumer: The one that pays (monetarily) for the product, good or service being considered, and enjoys or suffers the particular physical characteristics that the involved product or service has. This is realized when consuming (buying) it in order to satisfy his or her expressed needs.

User: The one that uses (purposely or without knowing) the product or service being considered and enjoys or suffers the particular physical characteristics the same product or service has. This is realized when using it in order to satisfy his or her expressed needs.

Customer: Is the person or organization that can behave as a consumer, user or both, of the product or service that is being required by the individual or organization to satisfy their verbally expressed needs, wants or expectations.

Price: Is the current monetary/species amount that a consumer would pay at a store or wholesale distribution outlet. It is also qualitatively considered equivalent to the level of real needs (received value) actually satisfied, that the 'Product-Service' can provide for a particularly interested 'Consumer-User' after 'Buying-Using' the 'Product-Service' involved."

Quality: Products and services that are offered at the adequate price level to consumers and users that will completely satisfy their verbally expressed needs (wants and expectations) done right at the first time (productively) without any excuses.

Satisfaction: Is achieved by a consumer or user of a product or service when his or her verbally expressed expectations and needs are met or even slightly surpassed, if possible, by the product or service received at the level of price paid to obtain them, without any required hassle, returns, hidden faults or guarantee claims, and that can be used as intended immediately after it is acquired and for all the expected duration of the service life of the product or service involved.

Total Customer Satisfaction Achievement or Total Quality Achievement: Is achieved at the exact moment in time in which the customer evaluates and agrees that the product or service already paid for, received and used adequately, completely satisfies the previously expressed needs (wants and expectations) that he or she had before such business transaction took place, regarding the same product or service needed, and thus involved.

"TQM-SQS": The operational definition that used in this dissertation for the concept "Total Quality Management Strategic Operations System" is: The managerial task of personally be thinking,

planning, deciding, and acting to continuously define, promote, participate, supervise and recognize all the participants of the organization for their utilization of the statistical process tools available for measuring and evaluating if the organization is actually offering its current and might offer its future consumers and users the products or services they previously expressed as needing, at the adequate price level that will completely satisfy their current and future verbally expressed needs and expectations, where everything must be done right at the first time by everybody without any excuses in all organizational areas involved and even be voluntarily willing to improve everything on a continuous basis to maintain the organization profitable and productive. At the same time, everybody collaborating with the firm is sensitized to respect the norms and values expected by its current and future organizational context and environment, while appropriately rewarding and recognizing its employees for all their efforts done in the process of delivering such products and services. Includes as a starting major task the usage of the Consumer-User Needs Evaluation Workshop (C-U NEW) methodology to define such consumers and users expressed and verbalized needs. (NOTE: the corporate strategy statement required within the "TQM-SOS" methodology was shown above).

To define and compare with what renown scholars and organizations are currently employing as an accepted traditional "TQM" definition, please review the official U. S. Defense Department and the Mexican Secretary of Commerce and Industry definitions they offer for Quality Management, which for your reference, are found with other important definitions at the bottom part of Table 2. (see Figure 7).

## **CHAPTER 2**

### **STATE OF THE ART TOTAL QUALITY MANAGEMENT AND CUSTOMER NEEDS EVALUATION TECHNIQUES**

"Why do people who do not have time for quality, always find the time to do their work over again?" George Ellington.

This chapter presents a review of the current status and importance of the traditional Total Quality Management (TQM) system for modern individuals or organizations interested in better satisfying their customer's needs. In this thesis "traditional TQM" will be referred to as those approaches currently known as TQ (Total Quality), TQC (Total Quality Control), QC (Quality Control), and CWQC (Company Wide Quality Control).

Various authors, interested in "TQM" utilization, have commented that the successful implementation process of "TQM" in different organizations is not an event that occurs by chance but rather as a planned one that requires top management guidance and full-time participation.

In their recent article, Dean and Bowen (1994) concluded that "TQ" can be useful to develop new directions in the improvement of Management theory; however, it was noted that "TQ" has not been properly researched and thus not used for practical applications. Dean and Bowen (1994) went further to strongly recommend and argue that management theory research is urgently needed. They comment that: "Areas in which theory development is clearly needed are: Information

processing, strategy implementation, process improvement, and customer focus and satisfaction."

## **2.1 Historic Development and Present State of Knowledge about "TQM" and Principal Supporters.**

"Quality is an achievable, measurable, profitable entity that can be installed once you have commitment and understanding, and are prepared for hard work" (Crosby, 1979).

Many have been interested in the development and in the implementation process of the traditional "TQM" system in an existing organization. There are also many different studies related to the same subject. To better understand the development of the "TQM" system, a brief chronological review of its historical implications and the various contributions of the main proponents of the traditional "TQM" concept will be addressed in this section.

The importance of the various techniques and tools currently used by "TQM" reemerged worldwide because of the modern success that the Japanese industry, strategically allied with its government, had in helping the country recover and develop economically after its defeat in the Second World War by the allied forces in 1945 (Walton, 1986; Ouchi, 1981).

The work of Walter Shewhart was greatly enriched in the late 1920s by the contribution of two other important American statisticians that worked with him: Harold Dodge and Harry Roming. They were mainly interested in applying knowledge of the Statistical Process Control (SPC)

tools they had developed to control the industrial environment in which they participated.

Most of their efforts and studies were initiated at the Bell Laboratories in 1924, when the Inspection Engineering Department was originally created in that organization. The first "Shewhart Control Chart" came into existence that same year. "The basic concepts of sampling inspection by attributes" were presented by Dodge in 1925 (Banks, 1989).

In the 1930s, J. Scanlon put forth the concept of quality control through employee motivation and involvement that was called "The Scanlon Plan." The essence of this plan was: "bringing employees together with supervisors and managers so that they could collectively consider ways of improving the overall quality of work life (QWL)" (Feigenbaum, 1983).

In 1939 Roming presented his work on variable sampling plans in his Ph. D. dissertation 'Allowable Averages in Sampling Inspection' (Roming, 1939)," (Banks, 1989).

It is important to note that "The Shewhart Cycle" and the "Control charts" developed by W. Shewhart and his associates Dodge and Roming (Banks, 1989) were part of the same tools that Dr. Deming later taught and introduced in Japan in 1950.

"The Shewhart Cycle" and the "Control charts" exported to Japan were specially used for continuous quality improvement. Such tools were originally based in the "Plan, Do, Check and Action steps" (Walton, 1986) that Deming directly learned from Shewhart who developed them between 1924-1930 (Banks, 1989; Walton, 1986).

Immediately after the Second World War the Japanese people were mentally and physically devastated, and lacked many decision choices available for them to pursue their impending required subsistence and future economic development (Morita, 1987). The same was true for most of their organizations, due to the situation, both internal and external, that the country experienced after the Second World War.

To make things worse, Japanese products were considered as inferior worldwide and without proper market potential for their international distribution and usage (Walton, 1986). A 'National Strategic Development Plan' was developed to define future activities to improve the drastic economic situation.

Japanese scientists, managers, and engineers, organized and supported by their recently founded (1946) Japanese Union of Scientists and Engineers (JUSE), studied, reviewed, and adapted most of the United States generated management research and applied the techniques related to quality improvement in Japan. After thorough strategic planning work within their organizations, and also throughout the country, defined a successful implementation approach suitable for Japan (Ishikawa, 1986).

Kenichi Koyanagy and a team of colleagues from "JUSE" participated in the country's development after the war. They also participated in the development of the first long-term "National Strategic Development Plan" required to modernize the Japanese industry. This plan was essential to the Japanese, because they had to find a way to feed their starving and defeated people. Kaoru Ishikawa joined "JUSE" in 1949 and also participated in the development of "TQM" concepts for the Japanese industry (Ishikawa, 1986).

Japanese Quality-Productivity development ideas mainly considered also the same concepts that Armand Feigenbaum presented around 1951 in his book "Total Quality Control." Feigenbaum, recommended and stated that: "If an organization is interested in improving the Quality-Productivity of their Products-Services, total cooperation and involvement of all areas, departments and individuals is required besides responsible participation in the performance of their daily work" (Feigenbaum, 1987).

Japan's Government and "JUSE" worked together in the design of a visionary long-term (50 years) "National Strategic Development Plan." The plan would allow them to bring back to economic life, a defeated nation that only had one abundant natural resource: "their own impoverished, hungry, unqualified and uneducated people" (Ishikawa, 1986). The profound changes that were required to improve the economic situation in Japan were finally started between 1949-1950.

Although the plan was met with resistance from many senior management personnel, the execution of the plan continued. Ishikawa commented that after the first "QC" Basic Course offered in September 1949:

It became clear to us that physics, chemistry, and mathematics are universal and are applicable anywhere in the world. However, in the case of quality control, or in anything that has the term "control" attached to it, human and social factors are strongly at work. No matter how good the American and British methods may be, they cannot be imported to Japan as they stand. To succeed, we had to create a Japanese method. (Ishikawa, 1985)

Training on Statistical Process Control (SPC) was authorized later as mandatory for all employees. Television and radio programs to train the Japanese work force were developed to support the required effort. Improvements were slow at first, even though exact guidelines had not been completely defined or approved. These tasks, were only part of the vast programs and activities that were required to achieve Japan's impressive current successes.

Quality and World market share for Japanese products and services have been steadily increasing since 1950, the year in which Dr. Edwards Deming, an American statistician, was invited to Japan by the Japanese Union of Scientists and Engineers.

Dr. Deming was the first American brought to Japan for consulting and training reasons. At the time, "JUSE" was directed by Kenichi Koyanagy. Dr. Deming's purpose was to train plant engineers and middle-level managers on "SPC" techniques. (For more details about Deming's teachings refer to Table 4.)

Remember that the methodologies taught at that time by Deming to Japanese managers, supervisors, and engineers were developed by Walter Shewhart, expert in statistics that worked for the Bell Telephone Laboratories in New York between 1924-1930 (Banks, 1989). Those techniques were personally explained and taught to Dr. Deming by Dr. Shewhart in their multiple meetings expressly programmed for such teaching-learning purposes (Walton, 1986).

Since that time, "SPC" tools have been part of the principal methods and techniques used for quality improvement in Japan. It is important to note that most of these tools were not originally developed in the country, however, and were successfully imported from the United

States. After careful consideration, these tools were adapted to the Japanese culture and environment (Ishikawa, 1986).

Training for the Japanese from 1950-1954 was principally aimed at production, engineering, and middle-level management personnel. The principal subjects, technical mostly, covered by Dr. Deming, were: "The Shewhart Cycle, the importance of observing statistical variation and Statistical Process Control (SPC) with the help of control charts and their application" (Ishikawa, 1986).

The decision to offer training first to lower-level managers and engineers was because top and middle management was not yet fully convinced of the importance on personal direct participation, cooperation, or support. Yet a one-day seminar on the subject was created specially for some top managers' participation (Ishikawa, 1985).

At first, top management only authorized lower-level workers, production supervisors, low-level managers, and engineers to participate in the first training and implementation efforts. Ishikawa (1989) commented:

Initially, however, Japanese quality control also suffered from various problems. The first was that statistical methods were overemphasized, and this fostered mistaken impression that quality control and statistical quality control were difficult. Second, the emphasis on standardization led to a tendency for quality control to be carried out merely formally. The third problem was that top management and department and section managers did not develop much enthusiasm for quality control. (Ishikawa, 1989)

The importance of Deming's contribution to the Japanese development was presented to him with the establishment in 1951 of the "Deming Prize." The Japanese created this prize as a token of their appreciation for Deming's work. The Japanese quality prize also recognizes individuals' contribution to the development of the statistical methods and quality control. It is also designed for organizations that have achieved a status as a reliable manufacturer and for its quality of products and services. The first prizes were financed with the proceeds obtained from the sales of the publications of Deming's conferences of which all author rights were donated by him to the "JUSE" organization (Ishikawa, 1989).

Japanese top management and all supervisory levels were finally convinced of the value achieved from their continuous involvement in "TQM" activities with the help and guidance of Dr. Joseph Juran. For this reason, Dr. Juran, also an American scholar, was invited by "JUSE" to lecture in Japan in 1954.

Juran offered special seminars for top and middle managers, where he "explained the functions required by them in the promotion of 'TQM' " (Ishikawa, 1986). Furthermore, he convinced them of the importance of senior management's participation in the process of quality improvements. He went on to clarify management's continual involvement in various other quality and productivity-related projects within the organization. The idea is to solve related Quality-Productivity top priority problems at all levels. Juran also stated that administrative functions are important in the process of creating products-services coinciding with Feigenbaum. (For more details about Juran's current teachings, refer to Table 5.)

Perhaps had the Japanese people invited Dr. Juran first (1950) and then Dr. Deming (1954) to offer their quality and productivity-related

lectures in Japan in the early 1950s, Japanese industry would have had improved the quality of its products and services even faster than it actually did.

The theories and related tools created by Feigenbaum, Shewhart, Dodge, Roming, Deming and Juran's, all Americans, were at that time reviewed and improved by Koyanagi, Ishikawa, and "JUSE's" associates. The purpose of the review was to adapt, modify, and change them in such a manner that would permit them to successfully apply and implement the theories in the Japanese organizations. In order to achieve the expected results of Total Quality Control, the proper adaptations were made so that "TQC" would be applicable to the Japanese culture, environment, and unique characteristics.

American Industry was oblivious during this historic period of change for the Japanese organizations. The improvement or implementation of such technologies or even a slight interest shown by the American industry when considering their products' or services' quality improvement was null. American industries' interests were mostly centered on technological development as the main thrust of their productivity and growth enhancements (Ishikawa, 1989).

Taking into account all the theories (Shewhart's, Dodge's, Roming's, Deming's, Juran's, Feigenbaum's, etc.), presented in the 1950s, none was considered as fully applicable or economical within the United States national boundaries. Rather they were successfully adapted in Japan. These theories served as a means of improving their products-services, which up to that time, were considered worldwide as cheap and without quality. The rejection by the United States of the basic ideas of "quality and productivity" was due to the misunderstanding that "High quality has always implied lower production volume and higher costs" of

products-services. Others believed that the right approach to achieve reduced costs and higher volumes was only possible through technical improvements (Ishikawa, 1989).

Quality Circles, a natural result of the national application of the different continuous quality improvement teachings and practices in different industries, only appeared in Japan around 1962 (Thompson, 1982). Throughout Japanese industry, the "Circles" emphasized the importance of group participation within the manufacturing processes.

Worker productivity, participation, and involvement was greatly improved also with the generalized application of the various Statistical Process Control tools taught to the Japanese work force. Training sessions and actual application of these techniques were made to their daily activities and problem-solving situations. These sessions helped to further improve the quality of the products and services being offered by the different Japanese organizations that participated. It was believed at the time, that the person who performs any activity knows what is wrong with the activity or process, or with the final product or service.

With Quality Circles responsible for the quality of the products being manufactured or the services being offered, the challenge was given to the people directly in charge of the supervisory and manufacturing activities.

The increase in productivity and the quality results achieved in Japan by most of the countries' organizations after being involved with "TQM" and Quality Circles for more than 15 years, have lead many companies to start to use other kinds of team approach techniques. These techniques have been used for problem-solving analysis that has worked successfully in other exercises throughout the organization, as is

stated by Ishikawa (1986). (For more details about Ishikawa's teachings, refer to Table 6.)

Thompson commented that:

Quality Circles soon became a vehicle to achieve limited worker participation in managerial decision making. Considering that the Japanese invented Quality Circles and have dedicated more than twenty years to perfect them, it appeared logical to copy their system. But it is not so. We must analyze their system and take from it what we think would be applicable, the same way they took certain things from our North American system, but caution is a must when we try to perform a total transplant. In Japan, Quality Circles work in an environment in which workers identify themselves with the organization, and where compromise exists with the group decision making process and great interest in worker well being exists. (Thompson, 1982)

Many researchers have observed: "commitment of top management to the innovation was among the major central forces to successful implementation" (Radnor & Bean, 1974). Radnor and Bean were at that time studying the acceptance and use of operations research findings in various companies.

It seems, then, that top management should participate in the process of implementing "TQM" in the same manner that Juran recommended Japanese top executives do around 1954.

In general, policy implementation guidelines had not been researched and studied in depth until a study by Beyer and Trice in 1978. They identified from their study the impacts of mandatory legislative

changes on different organizations. Their research dealt with "setting up programs to deal with problems of alcoholism among employees of the federal government." Beyer and Trice (1978) even commented that:

Despite the centrality and pervasiveness of the issues posed by change, there is little known about the processes by which change is deliberately brought about. Much past scholarly work has centered on the origins of change. It seems equally important to understand how change attempts are planned and implemented, how they are received, how they are resisted, and what factors contribute to success or failure of such attempts. (Beyer & Trice, 1978).

Beyer and Trice commented that for them, the key role in the implementation process of various policies begins with the supervisor:

THE IMMEDIATE SUPERIOR of an affected employee has a key role in the implementation of both of the federal policies studied. In their general leadership role, they will also have impacts on the ways in which the normative changes incorporated in the policies will be viewed by their subordinates. A supervisor who is in clear and active support of a policy may lead his subordinates into better acceptance of the policy. Conversely, a supervisor who is in opposition or who feels no positive support for a policy is likely to inhibit support for the policy on the part of at least some of the subordinates.

In addition, supervisors have some role in disseminating information about a policy to subordinate, both in a general way and in response to situations where further information on the policy would be sought by a subordinate.

Thus supervisors can be seen to have both a formal and an informal role in policy implementation, including all of the phases of the process: diffusion and training, attitudinal receptivity and change, and actual use of the policy. Three types of variables were identified as possible influences on the implementation... by these supervisors: (1) individual characteristics of the supervisors (demographic variables: age, sex and education, and personal attitudes: attitude toward change itself, job involvement and commitment to the organization, (2) Variables related to the supervisory role: tenure within the organization, managerial level, and nature of work supervised, degree of work overload experienced by the supervisor and, reward structure of the employing organization, and finally (3) variables describing the organizational characteristics of the installation in which the supervisor worked: Organization size, union existence, percentage of workers that were supervisors and the degree of centralization in the decision making.

Line supervision will reflect to a significant degree the attitudes and behavior of top management. (Beyer & Trice, 1978)

Summarizing Beyer and Trice's (1978) results, which is described in detail in Table 3, it was observed:

- a) The reward structure has profound effects on the implementation of changes in the federal organizations and also at the managerial level studied.
- b) Expected use of the policy was higher in those organizations where top management participation, positive attitude toward change and open support was higher.
- c) 'Perhaps the main virtue of outside change agents, however, is that they bring new information or expertise into the organization,

and thus initiate change and encourage its adoption.' (Beckhard, 1969)

d) Strong centralized and formalized control structure within the installation was a major inhibitor of the implementation process of one of the policies being studied.

In more recent quality-related studies, Philip Crosby, an American quality practitioner, in his book Quality Is Free, reports and comments about his life-long personal findings and achievements while working with "ITT," a U.S. based corporation. Crosby argued: "For American enterprises to consider as an appropriate and feasible system the TQM, it should be approached under economic perspectives to make it attractive for the organization, to get involved in it" (Crosby, 1979).

Crosby also stated: " 'Quality is free,' " and what that really costs the organization, are the mistakes and errors usually done by everybody when not conforming to customer needs. Crosby even goes on to quote Harold S. Geneen as saying: "Quality is not only right, it is free. And it is not only free, it is the most profitable product line we have" (Crosby, 1979).

Lately, Philip Crosby, also recommends his personal approach to developing and implementing traditional "TQM" efforts in different organizations (refer to Table 7, for Crosby's suggestions). He noted: "The reason very little changes is that implementation is not attacked in a methodical manner as a matter of corporate priority. Somehow management feels that if copies of the book are given to all members of the management team, and if the subject is discussed, it will just happen" (Crosby, 1984).

In recent years, many organizations have implemented Quality Circles along with their quality improvement activities which have lead to

positive "TQM" results. Almost all the newly developed approaches to implement "TQM" consider the important teachings by Ishikawa, Deming, Juran, Crosby, and Feigenbaum.

However, Blake, Mouton, and Allen (1987) suggested the use of a broader application of teamwork efforts, across all the departments of the organization, to achieve improvements in Quality-Productivity.

Blake et al. also argued that: "Synergy helps the organization to achieve: Productivity in a collective way, creativity and innovation when things are done right and when the things that must be done are done and that improves satisfaction of team members" (Blake, Mouton & Allen, 1987). The work just referred to by Blake, Mouton, and Allen (1987), enlightens the use of team-work techniques in any organization interested in continuously improving its performance.

On the other hand, Deming (1982), observed:

Solution of small or big problems, will not stop decay of American industry, nor will do it extensive use of computers, robots or gadgets. The benefits obtained from extensive use of new machinery also constitutes an empty hope. The answer is not either in the immediate massive training on statistical methods to workers, or in the promotion of usage of quality circles. All those activities help, but only help to prolong the life of the patient; cannot stop the decay. Only the transformation of the American management style and of the relations that exist between government and industry, can stop decadence and give a new opportunity to the American industry to lead the world. (Deming, 1982)

Henkoff (1995) more recently argued that: "Executives whose excellence endures tend to have a wide-angle vision of the future, a wide-awake sense of opportunity, and wide-ranging respect for shareholders, employees and customers."

The historical development of "TQM" and the different techniques that have been directly used to help improve customer satisfaction through better products and services have been in continuous development since the beginning of our times.

The people cited in this section, have helped to improve quality and productivity in various parts of the world. But, I think that an improved methodology to define what customers need will be an important stepping stone in the future enhancement of current approaches to improve implementation efforts of the traditionally known "TQM" managerial process in modern organizations.

## **2.2 Total Quality Management Importance.**

"Total Quality is a ubiquitous organizational phenomenon that has been given little research attention" (Dean & Bowen, 1994).

Dean and Bowen (1994) argued that traditional "Total Quality" consists of three major principles: "Customer Focus, Continuous Improvement and Teamwork." They also commented that two of the principal areas required by the Baldrige Quality Award evaluation, "Customer focus and Management of the Quality Process are seldom covered in Management literature." They go on to mention:

It is difficult to identify any major organization in which quality issues are not in their agenda. Furthermore, many leaders of these organizations have begun to question why management research and education have not yet incorporated TQ to any great degree (Robinson et al., 1991). Given its importance in practice, we risk losing our credibility as management theorists by ignoring TQ in our research. (Dean & Bowen, 1994)

Taking into account his vast experience and research, Kaoru Ishikawa (1989) commented:

The following are some of the benefits that have been already demonstrated in Japanese companies that adequately implemented Quality Control (QC):

- \* Quality (in its narrow sense) is raised, and the number of defective products decreases.
- \* Quality becomes more uniform and the number of complaints decreases. Complaints are dealt more quickly, and effective action is taken to prevent their recurrence.
- \* Reliability increases, confidence in the products improves and customer's trust is obtained.
- \* Total Costs decrease. Unit costs improve, and value-added productivity increases.
- \* Products can be sold at higher prices.
- \* A quality assurance system is established, and the trust of consumers and customers is obtained.
- \* Production volumes increase, and it becomes possible to prepare rational production plans.
- \* Wasteful work disappears, rework decreases and efficiency improves.

- \* Technology is established, engineers can be employed in their true capacity, and technology improves. Ways of employing people, particularly engineers become more rational.
- \* Inspection and testing costs decrease.
- \* Contracts with suppliers, subcontractors, and consumers can be rationalized.
- \* Sales routes expand.
- \* Relationships and the flow of information within the organization become smoother.
- \* Research and development is speeded up and made more effective.
- \* Research investment becomes more rational.
- \* Employees' humanity is respected, personnel development becomes possible, and workplaces become more cheerful.
- \* Talent-spotting becomes possible, and people are able to exercise their full capacities.
- \* Human relations improve, and barriers between departments are broken down.
- \* People begin to speak a common language and understand each other better.
- \* The whole of the company can be rationalized, and department managers, section managers, supervisors, and foreman become able to work more effectively.
- \* Good market information is received more quickly.
- \* New-product development speeds up and improves. Products of world beating quality can be made.
- \* People become able to talk frankly and openly.
- \* Meetings go more smoothly.
- \* Plant and equipment repair and expansion can be done rationally according to priority.

- \* The entire company works together, and a system of cooperation is established.
- \* Decision making is speeded up, and policy deployment and management by objectives improves.
- \* The corporate culture is improved.
- \* The organization becomes trusted.
- \* All departments understand the idea of dispersion and becomes able to utilize QC techniques.
- \* The company and its factories cease to issue false data.
- \* Rationalization of all aspects of the organization's management.
- \* Consumers, employees (including top management), and shareholders profit. (Ishikawa, 1988)

The GAO report (1991), showed the results of a survey on Management Practices and Productivity Evaluation Measures. The survey analyzed the performance of various important organizations in the United States of North America. The focus of the report was on the key indicators that are currently being utilized within the industries for their own evaluation purposes. The report showed that there existed several common features that principally contributed to each company's improved performance:

Organizations with the best performance were those that:

1. Corporate attention was focused on meeting customer requirements.
2. Senior management led the way in building quality values into company operations.
3. All employees were suitably trained, empowered, and involved in efforts to continuously improve quality and reduce costs.

4. Systematic processes were integrated throughout the organization to foster continuous improvement. (General Accounting Office, 1991).

GAO report goes on to mention:

"Performance indicators in each area GAO studied showed an overall average annual improvement from the time companies adopted Total Quality Management to the publication of the latest available data and also that companies used no 'cookbook' approach in implementing a successful TQM System. (General Accounting Office, 1991).

The GAO report also stated that:

The principal results observed, for 20 of the companies that were among the highest-scoring applicants in 1988 and 1989 for the Malcom Baldrige National Quality Award were:

1. Companies that adopted quality management practices experienced an overall improvement in corporate performance. In nearly all cases, companies that used Total Quality Management practices achieved better employee relations, higher productivity, greater customer satisfaction, increased market share, and improved profitability. The principal indicators that were used to define a company's performance were: Employee relations, Operating procedures, Customer satisfaction and Financial performance.
2. Each of the companies studied developed its practices in an unique environment with its own opportunities and problems.
3. Many different kinds of companies benefited from putting specific Total Quality Management practices in place. However, none of these companies reaped those benefits immediately.

Allowing sufficient time for results to be achieved was as important as initiating a quality management program.

4. Somewhat better employee relations were realized. Employees in the companies GAO reviewed experienced increase job satisfaction and improved attendance; employee turnover also decreased. Other factors also studied were: safety and health and, number of suggestions made to improve quality and/or lower costs, which showed improvement too.

5. In regards to Operating Procedures the report shows: Improved quality and lower cost were attained. Companies increased the reliability and on-time delivery of their product or service and reduced errors, product lead time, and their cost of quality. Some experts estimated that manufacturing costs could be reduced by over 30 percent simply by eliminating scrap and rework that occurs from correcting defects in the manufacturing process. The other factors studied under this section also included: Order processing time and Inventory turnover.

6. Greater Customer Satisfaction was accomplished. 'Many companies have changed their traditional view that quality involves merely meeting technical specifications. They now recognize that quality is defined by the customer and that companies must focus on meeting customer needs and expectations.'

7. Improved Market Share and Profitability were attained. As measured by several ratios widely used in financial analysis, the impact of an organization's quality management practices was: Improved profitability, Sales per employee, return on assets and return on sales, that also increased in general for the sample being studied. (General Accounting Office, 1991)

Taking a final look at the GAO report, it was found that:

The diversity of companies studied showed that quality management is useful for small companies (500 or fewer employees) as well as large and for service as well as manufacturers. The companies GAO reviewed began to focus on quality in the mid-1980s; their quality efforts are still evolving. Nevertheless, these companies improved their performance on average in about 2 1/2 years. Management allowed enough time for results rather than emphasizing short-term gains. (General Accounting Office, 1991)

Oswald and Burati (1992) in their research for the Construction Industry Institute, reported that successful implementations in organizations dedicated mainly to the construction industry have shown the following important results after applying the traditional Total Quality Management philosophy :

- 1) Corporate attention is focused on meeting customer's requirements.
- 2) Improved customer satisfaction.
- 3) Senior management personally and persistently leads the building of Quality values into the company's operations.
- 4) More satisfied and productive work forces.
- 5) Employees are suitably trained, empowered, and involved in continuously improving Quality and reducing costs.
- 6) Reduction of direct costs.
- 7) Reduction of cycle time.
- 8) Reduction of variability. (Oswald & Burati, 1992)

It has been said many times that better customer satisfaction goes hand-in-hand with improved financial results, competitive market position, healthier market share, and organization growth. The General Accounting Office (GAO) and Oswald and Burati have researched different organizations in relation to the actual goals achieved by the firms after successfully implementing "TQM" systems. Their findings partially confirm

all these achieved results after successful "TQM" implementations. (GAO, 1991; Oswald & Burati, 1992).

In most of the books, articles, papers and other references directly related to the implementation process of the traditional "TQM" system that were reviewed for this thesis, it was found that there exists reasonable agreement with the general objectives and benefits that can be achieved by organizations that successfully implemented "TQM." The reviewed materials included: GAO, 1991; Oswald & Burati, 1992; Crosby, 1979, 1984; Deming, 1982; Feigenbaum, 1987; Juran, 1990; Ishikawa, 1986, 1989; Harris, 1991; Collins, 1987; Townsend, 1990; Chang et al., 1992, etc.

To stress the value and results that a full implementation of traditional "TQM" has had for different organizations that embraced such a strategic mode of operation, an extensive review and comment about the GAO Report presented by the United States General Accounting Office in May, 1991, was done. The report was presented to the Honorable Donald Ritter and was named: GAO, "U.S. Companies Improve Performance Through Quality Efforts." (General Accounting Office, 1991). The corporations that participated in the GAO study and field research were:

Corning, Inc., Digital Equipment Corp., Eastman Kodak Company, Ford Motor Company, General Motors: Cadillac Motor Division, Globe Metallurgical, Inc., Goodyear tire and Rubber Company, GTE Corporation, Hoechst Celanese Corp., International Business Machines Corporation: Rochester and Endicott, L. L. Bean, Inc., Milliken & Co., Motorola, Inc., Paul Revere Insurance Group, Seagate Technology, Timken Company, USAA Insurance Company, Westinghouse Electric Corp., and the Xerox Corporation. (General Accounting Office, 1991)

It is important to note that some of the above-mentioned corporations just mentioned above had already won the Malcom Baldrige National Quality Award by the time the GAO report was developed in 1991. These include the next organizations: "Motorola, Westinghouse and Globe Metallurgical (in 1988), Milliken & CO. and Xerox Corporation (in 1989), General Motors: Cadillac Motor Division (in 1990)." (References: Malcom Baldrige Winners reports for the mentioned years).

The importance of mentioning that these corporations had won the National Quality award is due to the need that these organizations continue to have the need for better understanding, defining, measuring, and anticipating their customer's needs even after winning the award. Taken a step further, some of these companies furthermore need to redefine Total Quality Management. This was observed after reviewing the Conclusions Report to the Columbia University Conference dealing with "Research Issues in TQM." In the Columbia University Conference participated the same Senior Managers and Chief Quality Officers pertaining to some of the organizations that also were interviewed by the "GAO" personnel. Top managers participating in the conference summarized their "TQM" deficiencies in the conference Conclusions Report ("One Day Conference at Columbia University the 12th. of March 1991 Summary," 1991).

Many organizations that attended the Columbia Conference, for example, summarized that they still needed support on "TQM", help to understand their customer's needs, explanations on the role of top management in "TQM's" implementation efforts and a better description on "TQM."

Later in 1992, "IBM Rochester", also represented at the Columbia conference, won the Malcom Baldrige National Quality Award (Malcom Baldrige National Quality Award Criteria, 1992).

Greising (1994), on the other hand, still argues that many organizations have not yet achieved the quality or productivity results they were hoping to have resulting from the inappropriate considerations about consumers' needs. These needs have been forgotten by many firms when considering their traditional approach to "TQM" implementation. Furthermore, Griesing argues that enhancements have been proposed to the methodologies currently being used to closely include customer satisfaction and economic considerations such as "Return on Quality".

Thus, in general it is not necessary to show in this Doctoral Thesis that "TQM" can be successful and appropriate for different organizations. If adequately adapted and implemented, then "TQM" can help modern organizations achieve the expected improved quality and productivity sought. This improvement has been established in various research and references similar to that of the GAO report or the Oswald and Burati Report. However, there is a need for improvement, which can be achieved with various methodologies, including "TQM-SOS" and "C-U NEW."

Using the current traditional "TQM" methodology as a base, then building on top with "TQM-SOS," improvements are possible. Also, the areas or industries where "TQM-SOS" can be applicable are numerous.

### **2.3 "TQM" Implementation Approaches Being Recommended and Used Currently.**

"Our focus begins with the customer, both external and internal, whom we define as 'anyone using our products, services or outputs.' We define quality as 'satisfying the needs of our customers' " (Griffiths, 1990).

To discuss the different implementation procedures that have been used by different organizations, it will be necessary to describe some of those guidelines in full, and others also currently used will be put in a table format.

The most recent summaries of the theories and implementation guidelines to achieve "Total Quality Management" and recommended by Deming, Juran, Ishikawa, and Crosby can be found in Tables 4, 5, 6, and 7, respectively. In Table 8 there is a review of the most important group processes currently in use.

Russell (1990) presented a "Practical step-by-step business plan for implementation of the quality improvement process," and with it he intends that those CEOs interested "can execute the theoretical principles of quality into the reality of day-to-day business." Table 9 shows some of the suggestions presented by Russell. I consider that his recent point of view covers most of the important aspects required today to develop the traditional "TQM" in a modern organization, but that it is still improveable, as will be shown later in this thesis.

Scholtes (1991) also offered interesting comments about the adequate procedure to implement "TQM" and Process Improvement methodologies in an organization. More details of Scholtes' suggested procedures are presented in Table 10.

Table 11 presents an approach recommended to achieve "TQM" in a purchasing environment offered by J. F. Cali (1993); it principally deals with the application of the Quality Function Deployment (QFD) technique to help organizations translate customer needs to engineering and operative specifications for manufacturing purposes.

The principal merit of "QFD" technique lies in the fact that customer needs are translated in specifications and guidelines that can be appropriately used to start production of the products required by the customers. One of the important points that "QFD" has not yet made clear is how to proceed, or the required process to be followed in order to obtain the definition of those customer's needs which later will be the principal inputs in the procedure. The technique is lax on this point and only suggests the application of traditional group processes or marketing tools to define customer's needs.

Scott (1990) suggested "TQM" implementation guidelines that that can be used by any organization. Table 12, presents a summary of his ideas. Tenner and DeToro (1992) also offer ideas on the "TQM" implementation. Table 13 summarizes their recommendations.

While Scott offers interesting ideas to achieve "TQM" in an organization, Scott's suggestions are more like a series of tips to be followed when pursuing "TQM" implementation. Tenner and DeToro's approach recommend a customer focus process improvement and total involvement as major areas of activity for organizations intending to implement "TQM" successfully.

Their insights are interesting because Tenner and DeToro conceptualize two different types of customers to be served, the "Buyer and user," and that they might have different needs to be satisfied.

Tenner and DeToro recommend the usage of Garvin's (1987) "Eight Dimensions of Quality" and Berry, Parasuraman, and Zeithaml's (1985) "Ten determinants of Service Quality" to satisfy the customer. They further suggest the usage of a similar approach as the one used by Boll et al. (1989) for The Quality Assurance Institute (QAI), in which they identified and ranked 20 characteristics of information systems that customers expect to receive, to better understand customer needs and afterwards satisfy them.

Weaver (1991) also presented his ideas in relation to "TQM" implementation. Weaver argues that successful implementation of the "TQM" process has not happened because adequate guidelines to achieve such objectives are not readily available. Table 14, presents Weaver's recommended "Key concerns" and the steps he suggests to implement "TQM" in an organization.

Oswald and Burati (1992), in their enlightening research for the Construction Industry Institute, also developed and proposed an advanced methodology to implement Total Quality Management.

The procedure presented by Oswald and Burati guides us in the right direction and clearly explains which are the stepwise objectives that should be attained in the implementation process. But further review and enhancement of such proposed implementation plan is still required to generalize their approach to other fields of activity. The report presents their research findings about a possible "TQM" implementation process guideline that can have adequate applicability for the construction industry in the United States of America. Oswald and Burati's guideline can be used as a possible guide line to develop an improved procedure for other industries or organizations if the proper modifications and adaptations are considered.

A summary of Oswald and Burati's (1992) work is presented in Table 15. Table 16 presents a review of SEMATECH's suggestions for an adequate implementation of "TQM" in an organization.

Slater (1991) presented an interesting guideline to develop "TQM" in different organizations. He argues that: "The primary objective in Integrated Process Management (IPM) Step 2 is to convert the customer's requirements into clearly identified processes which are measurable, controllable, and assignable to specific people within the producer's organization." Slater goes on to recommend: "More details on how to accurately identify the customer's requirements and convert them to key process variables is contained in the "IPM" Step 2 manual."

In the summary of "IPM" Step 2 Slater suggests: "Brainstorm with the people who interface regularly with the customer and survey for customer's desired product attributes." And, for more details Slater further recommends to review the "IPM" Step 2 manual in detail. To be frank, "IPM" Step 2 manual" full explanation was not found in the mentioned reference. But, the idea is in perfect agreement with what is required to be done. (For more details on the "IPM" general model presented by Slater, see Table 17.)

Motiska and Shilliff (1990) argued in their brief guideline: "Ten precepts of Quality Improvement," that "One of the most critical activities in quality improvement is preparing a clear, concise description of the product or service to be acquired or produced." Motiska and Shilliff commented this in relation to the procurement activities in an organization and further add that "A poorly written specification will invariably yield an unsatisfactory product or service. Therefore, the content of the

specification must be clear and free of ambiguous wording so the supplier will understand what is required."

Brocka and Brocka (1992) presented a compendium of most of the current ideas available to implement "TQM" in an organization and of the principal ideas of the most renowned masters in the Total Quality field.

Brocka and Brocka argued that the primary elements of Quality Management are: 1. Organizational Vision, 2. Barrier removal, 3. Communications, 4. Continuous Evaluation, 5. Continuous Improvement, 6. Customer-vendor relationships, 7. Empowering the worker., and 8. Training.

Neither Motiska and Shilliff nor Brocka and Brocka address the question of how to fully define customer needs for design or specifications final clarification and usage in the product or service generation.

### **2.3.1 Recommended Tools to Support and Enhance "TQM" Implementation.**

State of the art "TQM" related tools recommend the usage of many different procedures and techniques to help organizations obtain the products or services that their customers require. Some used processes were introduced in the previously mentioned tables.

Modern organizations and their senior managers wanting to better satisfy their current or potential customers (target markets) must fully study and understand recent works like: Taguchi's Design of Experiments, the improvements that "QFD" methodology offers organizations (see Table 11), Just in Time (JIT) techniques, Benchmarking

approach, Process Reengineering considerations, Business Process Improvement, Slater's Integrated Process Management, Quality Assurance teachings, ISO 9000 certification process, U. S. Quality Baldrige Award application criteria, Mexican National Quality Award, and finally the Japan's Deming Prize (see Table 6) among other support tools currently used to help organizations improve the quality of their products and services.

"Strategic Intent" (Hamel & Prahalad, 1989) will lead all the involved participants of the organization without any doubt or delay, to adequate profitability, productivity, compensation, motivation, communication and in general terms to achieve the expected "TQM" results' levels. Hamel and Prahalad also argued that:

Too many companies are expending enormous energy simply to reproduce the cost and quality advantages their global competitors already enjoy. Imitation may be the sincerest form of flattery, but it will not lead to competitive revitalization. Strategies based on imitation are transparent to competitors who have already mastered them. Moreover, successful competitors rarely stand still. So it is not surprising that many executives feel trapped in a seemingly endless game of catch-up --regularly surprised by the new accomplishments of their rivals. For these executives and their companies, regaining competitiveness will mean rethinking many of the basic concepts of strategy.

One of the first activities that organizations must pursue to implement traditional "TQM" is to train and educate all the personnel on the usage of different tools and techniques that they need to use for the enhancement of their product and service quality. Philosophical and attitudinal matters must be addressed to improve "TQM" implementation.

People might accept change or not. It is top management's responsibility to participate and be involved if successful "TQM" implementation is expected.

Crosby (1979), one of the most respected "TQM" implementation "modern experts" points out in relation to Quality education that:

Once people reach the age of personal comfort with the world, they stop learning and their mind runs on idle for the rest of their days. They rely on cliches and habits. They may progress organizationally, they may be ambitious and eager, and they may even work night and day. But they learn no more. People subconsciously retard their own intellectual growth, a theory of human behavior says this last. Some people are just not plain interested in learning, that will make them have to change. Quality education must be then aimed directly at the individuals involved, and needs to be directed towards the product, the service and the customer. The three basic forms that such education takes are: 1. Orientation to concepts and procedures of quality; the problems that have a harmful effect on the product; and the expectations of the customer. 2. Direct skill improvement in specific things. 3. A continual low-level but concentrated barrage of quality idea communications to serve as reminders and conditioning, to make quality a thought always in everyone mind. Nothing flashy, just positive ideas that are in good taste and current. (Crosby, 1979)

Caudron (1993) argued that: "Without careful analysis and planning, total quality programs are doomed to fail. The efforts have better odds if the mandate comes from the top and the programs are shaped by goals and action steps." Caudron recommends that:

- 1) CEOs must lead the way.
- 2) Use the Baldrige as a yardstick.
- 3) Use other methods for assesment:
  - a) Statistical measures of customer satisfaction (For established quality assesment systems: like Federal Express).
  - b) Marketplace review that reveals customer's needs and expectations. (For companies that are just starting to asses quality. This is recommended by the Juran Institute).
- 4) Tap the experience of successful firms.
- 5) Create action plans and set goals.
- 6) HR plays a role in quality start-up. (Caudron, 1993)

Weick (1984) in his classic article, "Small Wins," stated:

Alcoholics Anonymous has been successful in helping alcoholics, partly because it does not insist that they become totally abstinent for the rest of their lives. Although this is the goal of the program, alcoholics are told to stay sober one day at a time, or one hour at a time if temptation is severe. The impossibility of lifetime abstinence is scaled down to the more workable task of not taking a drink for the next 24 hours, drastically reducing the size of a win is then aided by several other small measures such as phone calls, one-hour meetings, slogans, pamphlets and meditations, which themselves are easy to acquire and implement.

Small wins are controllable opportunities that produce visible results. Much of the artfulness in working with small wins lies in identifying, gathering, and labeling several small changes that are present but unnoticed, changes that in actuality could be gathered under a variety of labels.

A series of small wins is also more structurally sound than a large win because small wins are stable building blocks.

The approach suggested by Weick with the "Small Wins" concept focuses on a particular state of mind. This train of thought will be recommended for the planning and realization of all the activities to be pursued during the different team-work efforts required, that is, when attempting to develop the priority projects that will come out of the verbally expressed needs of consumers and users. These needs are obtained during the "C-U NEW" workshop participation. The objective of such priority projects will be to continuously improve the products or services currently offered by the organization or to design the new ones that will be needed in the near future.

#### **2.4 Customer Satisfaction as an Important "TQM" Objective.**

Customer satisfaction is one of the most important goals that traditional, or enhanced, "TQM" processes are interested in achieving.

In his well-known writings Kaoru Ishikawa (1985) commented that:

The first step in Quality Control (QC) is to know the requirements of the consumer. Another step in QC is to know what the consumers will buy. We engage in quality control in order to manufacture products with the quality which can satisfy the requirements of the consumers. We must emphasize consumer orientation. To practice quality control is to develop, design, produce and service a quality product which is most economical, most useful, and always satisfactory to the consumer.

In the GAO (1991) report it was commented that:

1) "An essential attribute of TQM is the general understanding that the customer is the final arbiter of quality. TQM is based on the premise that quality is driven by and defined by the customer. Product and service attributes that create a perception of quality on the part of the customer will increase customer satisfaction and, ultimately, increase customer demand."

2) "A critical feature in all of the quality improvement efforts we reviewed was the adoption of a strong customer focus. Companies used a variety of means --focus groups, customer surveys, and meetings-- to better understand their customers."

The GAO report further discussed that:

According to company executives, traditional marketing approaches failed to bring to the surface the complex range of customer needs and expectations. Several companies discussed with us," the GAO research team people, "the 'Kano Model,' named for its creator, a Japanese quality management expert. This model differentiates between features the customer expects and features that the customer does not expect but is delighted to find. According to the Kano Model, traditional marketing has focused on expected features and does not recognize opportunities to surprise and delight the customer. Several companies required their sales and marketing executives to meet with random groups of key customers on a regular basis. We also found a number of companies that brought key customers and suppliers into internal product design and development meetings. (General Accounting Office, 1991).

After thoroughly reviewing Beyer and Trice's, and Crosby and Feigenbaum's materials, discussed earlier, it is possible to summarize that all of them support the following:

Top management must organize and promote that everybody in the organization participate in the Total Quality improvement efforts. This includes the various activities that will be required to induce people to do things 'Right the First Time'. The usage of the decision variable of 'Cost of Quality' as managerial tool for measuring the organizations and administrative performance must be continual. If the company can maintain it's efforts then it will be in a better position to satisfy the customer's needs. (For more details about Crosby's current teachings, refer to Table 7., and for Feigenbaum's ideas, refer to his classic book Total Quality Control).

Whiteley, a member of The Forum Corporation, commented: "Providing quality as the customer defines it means fully understanding both dimensions of quality: Product quality (What you get) and Service quality (How you get it)" (Whiteley, 1991).

In the education field, where there are growing challenges, customer satisfaction and product quality are more important for institutions' survival and growth more than ever. Different conferences, seminars, and meetings have been programmed lately to understand what those challenges are and to strategically plan how to meet them.

In the "Quality & Education Conference: Strategies for Transformation," that took place in November (1993) in Denver, Colorado, participants coined the Denver Doctrine, which states:

Education has customers. System wide, the customer is the nation, the student is a partner in its outcome. In the classroom, the customer is the student. The success of both depends on the following:

1. An ongoing understanding of the needs of the customer.
2. Identification and involvement of all participants.
3. An ongoing process which is accessible to all.
4. Measurements which enlighten and linked to improvements.
5. Continuous revalidation in light of new information.
6. Mutual respect and trust.
7. Open, ongoing communication.

Remember: We are in this together, We are together for the long term, We must succeed. (National Quality & Education Conference Report, 1993)

In the Colorado Conference Executive Summary report it also was noted that there is now a "growing national movement to meet the revolutionary challenges of the future with a revolutionary approach -- Quality Management" (National Quality & Education Conference Report, 1993). The major challenge being faced by the American Education System was expressed in the conference summary report as:

The great experiment in public education in America is at risk. The revolution in technology, information, and the demands of a world economy are creating potentially more changes in the way people will communicate and learn over the next ten years than have been experienced in the last one hundred. The existing system, in all respects, may not be able to meet the challenge. (National Quality & Education Conference Report, 1993)

In relation to "QFD" utilization to improve customer satisfaction, Havener (1993) strongly argued that:

In many companies, including product based businesses, the primary way to increase customer satisfaction is by improving customer service rather than by providing products of superior utility or functional value to the users. Yet there is growing acknowledgement that how the product performs, relative to customer's ideals and expectations, is the primary determinant of customer satisfaction. This has led to more emphasis on product design and redesign to provide a product that truly satisfies the customer. But first, companies must know what the customer wants and what the customer defines as valuable. (Havener, 1993).

A recent mismanagement case in the transportation industry, as stated by Henkoff (1995) in Fortune magazine, posed this question and answer:

How do you drive a leading company with a vaunted brand name to the brink of bankruptcy?

Try mismanaging technology, misreading your market and alienating your shareholders.

Henkoff goes on to add:

Greyhound, which emerged from Chapter 11 protection in 1991, seemed to be recovering until the company introduced a computerized reservation and routing system that turned out to be a real, uh, dog. 'Trips,' as the system was called, left thousands of potential passengers unable to get through on the phone and thousands of actual passengers stranded in terminals. Ridership

plummeted as did Greyhound's stock price, sliding from a peak of \$22.75 in May of 1993 to just \$1.75 in December of 1994.

Behind Greyhound's technological travails lay a fundamental marketing mistake. Instead of concentrating on its traditional customer base - lower-income riders making short trips- Greyhound aimed at middle-class passengers traveling between big cities. In so doing, the Dallas company steered itself straight into the flight path of low-fare airlines like Southwest. Says Thomas Keller, a senior analyst at Moody's Investor Service, which recently downgraded Greyhound's debt: "They had a marketing approach that didn't effectively target their natural customers.

Aaron Gellman of Northwestern's Transportation Center says: 'I think they can meet a substantial public need. They just need to be very careful about promoting it, pricing it, and producing it.' (Henkoff,1995)

Taking a look at the global cost of failure and the significant successes achieved by many Japanese, North American, and other international companies, one can follow the trials in order to develop better quality products and services.

## **2.5 Current Customer Needs and Satisfaction Assesment Methodologies.**

"Focusing on the customer's needs as the primary basis for business strategy is the key to Japanese success" Shores (1990).

This section presents some comments and suggestions about currently used needs and satisfaction assessment procedures in various fields or organizations.

### **2.5.1 Approaches Currently Used for Consumer-User Needs Assessment**

Customer needs assessment is required to identify current, or future needs of customers (consumers-users).

The Nominal Group Technique (NGT) can be used for various purposes, and one of them, as Claxton, Ritchie, and Zaichkowsky (1980) stated, can be in the consumer research field. Claxton et al. commented that very few applications explaining its usage in such fields were found in the literature in general. The original field of utilization of NGT was in organizational planning and consumer research, as its developers Delbecq, Van de Ven, and Gustafson (1975) suggested. Claxton et al. (1980) also argued that: 'The NGT method offers two major advantages. First, although a group technique, the structured nature of the session output makes the analysis of individual perceptions possible. Second, using the data analysis extensions developed in the current research, it is possible to do both intra- and intergroup comparisons.'

Claxton et al. (1980) added:

The NGT method will be adequate in particular exploratory consumer research areas as:

- (1) Thinking up ideas in a creative sense, as might be the interest in product or program design,
- (2) Providing time and motivation for articulation of ideas retrieved from memory, as might be the interest

when studying information processing, and (3) Providing a preliminary evaluation of ideas, as might be of interest when identifying choice criteria. (Claxton et al, 1980)

The application of the "NGT" to consumer research that Claxton et al. (1980) presented in their paper was mostly related to the problem of: "Assessing consumer shopping problems and pre-purchase search tradeoffs associated with the selection of consumer products and services." It is important to remember here that one of the principal uses that "NGT" technique has, as explained by Claxton et al. (1980) are:

The main purpose of the technique applicability is to achieve consensus about the topic that is being studied and analyzed. This application might be successfully used to define consumer needs and afterwards develop the organizational structure capable of delivering the products or services that are required by the customers involved. The persons to be involved in this type of exercise must all be related to the product-service being evaluated. Not very many organizations seem to be using or well trained in the application of this useful technique. Most of them will rely in the decision powers and abilities of top managers to perform the decision by themselves and will not allow the people from the organization to participate in the process. This narrows the possibilities of achieving a good solution to the problem analyzed, as is recommended with the usage of the method here proposed.

Deming (1982) goes further in his considerations about customer needs evaluation and assessment. Deming argued that:

To properly define quality it is necessary to measure the interaction of the following three components: 1) The product itself. 2) The

user and how he/she uses the product, how it is installed, taken care, and what was originally expected from the product (due to publicity or marketing presentations). 3) The instructions received about product usage, customer training, service personnel training, received repair service, and spare parts availability. (Deming, 1982)

Crosby (1984) said: "We should first look at what our customers think of our quality, and then at what is being done to improve it," but clear guidelines dealing with the exact procedure to accomplish such important objectives are not completely defined and presented for immediate application.

Dougherty (1987) reminded us that: "Product success is enhanced if marketing, R&D, engineering, and manufacturing share information on customer needs and about segments, technology, and manufacturing capabilities, competitor strategies, business strategy, and pricing."

In his last book, Introduction to Quality Control, Ishikawa (1989) strongly argued that:

'Quality Deployment' is mainly concerned with the problem of inspecting true characteristics required by consumers, so product substitute characteristics that are closely related to its true characteristics and that significantly affect it are defined, and afterwards find out how these are related to factors such as how the products are used.

This last is called quality analysis, or product research in its wider sense. American companies put a lot of effort into product research and are good at quality control even if they have absolutely no knowledge of statistical quality control. Quality control in Japan used to be the opposite: many companies were way behind in

product research and were not implementing quality control, even though they had a good knowledge of statistical methods. This meant quality planning and design were often at the whim of designers or company directors, and inspection was carried out for its own sake, not from the standpoint of the consumer. To improve this state of affairs, more effort must be put into quality analysis and product research, not just into production research. More joint research together with customers is also needed.

Russell (1990) pointed out that:

The first key to quality, continuous focus and satisfaction, sets a standard as well as a target for the organization. The organization must set its sights on the customer, both internally and externally. The standard is continuous (never-ending), 100 percent satisfaction. Just as the environment keeps changing, so do customer requirements and expectations.

Every individual of an organization must design and produce products and services that provide the maximum value to the customer. Providing a product or a service may require several steps, involving many people and functions. In every step there are customers and suppliers, each adding value, to meet the expectations of the final external customer.

Conversely, Kelly, Donnelly, and Skinner (1990) commented that:

"One unique aspect of services is that customers are often part of the production and delivery process. For many services, the customer is required to contribute information or effort before the service transaction can be consummated. The quality of the service delivered is influenced by that information or effort.

There are cases where the consumer is used as a part-time employee involved in the delivery to him or herself of the same offered product or service considered. The quality of the perceived product or service will directly depend on such personal participation.

Griffiths (1990) argued that "Needs assessment must not be done in the vacuum of conventional or personal wisdom. There is only one way to determine customer needs and that is to establish a communicative linkage and ask customers to identify their needs- real or perceived." The exact procedure to establish such communicative linkage is not completely described by Griffiths and is left as personal homework for the reader to define the exact procedure about how to do it.

Male (1991) commented also about the usage and application of teamwork efforts in other arenas:

Team participation process in effective collegial problem solving throughout a school, where multidisciplinary teams that include the teacher, the student and the parents as well, participate to determine student needs and school programs required to attend to such needs and improve the school curriculum and instruction in the short and long run.

The team effort that Male suggests will be comprised of: "real students, parents, administrators and teachers rather than role play activity, in order to emphasize student strengths and problem identification prior to determine a solution." Based on Mary Male's recommended team participative efforts, where all involved consumers and users, besides the people performing the real process of service offering, such as schooling and teaching, are effectively invited to participate for better program

development in schools. The Student Study Team (SST) explained by her, uses a special procedure or algorithm to accomplish its objective in a school environment.

Floyd Leslie (1991) reminds us that in the Chrysler Corporation they: "Recognized the importance of initiating partnerships with its tooling and equipment suppliers to manage various aspects of its business and achieve continuous improvement at all levels."

Leslie (1991) also argued in the chart that he presented in his paper that the process to achieve customer satisfaction starts with a quality audit procedure that completely considers customer requirements to develop a continuous improvement strategy for the organization. It is unfortunate that the complete procedure to develop such an audit or evaluation of the customer's requirements is not fully explained or referenced by Leslie in his interesting paper.

In the presentation of the "House of Quality," particularly in the conceptualization of the first stage required for Quality Function Deployment (QFD), Griffin and Hauser (1992) commented that communications improves new product development if the approach is pursued by teams that have the ability and allowance to work closely. They also discuss an experiment where two teams participated in the development of parallel components' project in the automobile industry, and that the team which had better communication capabilities and used the "QFD" technique was able to better develop its product. This result based on the merits of the "QFD" technique that enhances communication during the product development process.

Griffin and Hauser (1992) also argued that: "The 'QFD' technique uses the customers perceptions as a lens with which to understand how

the physical characteristics of the new product affect customer preference, satisfaction, and, ultimately, sales." And that, the principal guidelines established in the "QFD" procedure at this point in time, are intended to define with the help of an interdisciplinary participating team: customer needs, customer perceptions, engineering measures, and design attributes of the products being reviewed in order to improve them.

In their work, Griffin and Hauser (1992) do not present a detailed picture of the characteristics of the involvement and participation of the customer in the definition of their particular needs or perceptions of the customers, even though other authors commented about the applicability for such purposes of surveys and focus groups. Also, it is not mentioned the extent of the participation of the marketing people, the suppliers of the organization or the production people in the team efforts to design and manufacture such improved products or services. In the last mentioned paper by Griffin and Hauser, it is not clearly stated if the product considered is a new one, if it exists already in the marketplace or if it is an improvement version used instead of an old one.

Havener (1993) further commented in relation to "QFD" that:

The point of QFD is to develop products that when defined in technical development and manufacturing language, incorporate (although invisible at that stage) what the customer wants. If you take an objective view of QFD, you will find that it is predominantly an engineering process. It translates the customer's voice first into product specifications and eventually into engineering and manufacturing specifications.

One of the most interesting arguments that Havener (1993) offers is that:

There is nothing in QFD that guarantees accurately defining what customers want because it contains no understanding of marketing need research. The lack of understanding establishes the real possibility for QFD to be a garbage-in-garbage-out process. There is nothing in QFD that will prevent creating illusions and designing products for mythical customers created by averages.

For more details about "NGT" and "QFD" techniques, refer to Tables 8 and 11 at the end of this dissertation.

Zeithaml, Parasuraman, and Berry (1993) summarized and recommended some special actions to define customer needs in their research on Total Quality in service enterprises. They consider the goal: "delivery of a quality service," as being the most important objective of any service organization. They comment that: "Wrong knowledge of such needs by the organization and its top managers, will mean lost customers to competitors who better or precisely define and deliver such needed products and services to their customers."

Wilson (1994) added:

Enterprises that successfully incorporate Quality Management (QM) relentlessly focus on listening to and understanding customer requirements -information that ultimately drives business strategy. Knowing what customers expect and need enables organizations to asses oportunities for quality initiatives, design improvements that support quality goals and implement programs that provide what customers value.

Helms and Key (1994) summarized their findings after studying "TQM" implementation efforts with postsecondary students as follows:

Postsecondary students are, indeed, more than customers in the classroom. Those who seek to improve classroom teaching in higher education must examine features from traditional TQM implementations dealing with both customers and employees to find those that hold the most promise for the classroom. From this expanded perspective, postsecondary educators can arrive at entirely new paradigms growing from the conventional TQM experience and the expanded model of the role of the student.

The importance of defining, first what customers are expecting to receive in order for them to be satisfied lies in the fact that with such information available it is then possible to appropriately plan what kinds of products or services are required. With products and services defined in such a way, it is then possible to define the types of resources, capabilities, infrastructure, and size of the organization that will be needed to generate those particular products and services.

"TQM-SOS" and "C-U NEW" are methodologies expressly designed to improve quality analysis and product research activities and thus enhance customer satisfaction.

### **2.5.2 Current Approaches to Consumer-User Satisfaction Evaluation.**

"Bad articles come back, but not customers." (Robert W. Peach, Sears Roebuck & Co.)

Before proceeding, I will define what is meant by customer satisfaction evaluation. A customer satisfaction evaluation is required in order to identify if the previous needs and expectations of the customers (consumers-users) were properly satisfied after actual purchase and usage of the involved products or services, making it possible to later measure if the product or service was able to live up to its expectations after its real purchase and usage.

One of the main objectives expected to be accomplished with the implementation and development of "TQM" is to help the enterprise assure and achieve "Total Customer Satisfaction". As mentioned, this can be adequately achieved by consciously "planning to offer the customers the products and services that better satisfy their expressed needs, that is, at the adequate price level."

These type of meritorious objectives have been declared countless times by many corporations as the most important stepping stones made to accomplish their Corporate Mission Statements. When an organization is working to achieve its basic mission of satisfying its customers with adequate products and services, the utilization of the "TQM-SOS" cultural and operative systems will be strategically useful for these purposes.

The principal corporate objective that any organization's mission must state, define, and continuously work to achieve as operationally defined in section 1.2 is: "Offer your Consumer-User, Products-Services at the adequate price level, that will completely satisfy their current and future verbally expressed needs and expectations, done right at the first time without any excuses...."

This mission statement must be also the same main corporate objective for implementing "TQM-SOS" in any organization. This is because at the same time it is also considered as the adequate definition of "Quality" that is used throughout this thesis. (See section 1.2 for more details concerning operational definitions used in this dissertation.)

Any organization that follows the steps to achieve its declared corporate strategy is an organization that is prone to achieve its quality objectives by implementing "TQM-SOS" as a prime tool in order to accomplish the following strategic goals: Corporate strategy a pattern/process of decision making in a company or organization that determines and reveals its most important objectives, purposes, or goals; as well as, produce its principal policies and plans for achieving those goals sought by the company. This strategy also defines the type and range of business the company is to pursue, the kind of economic and human organization it is or intends to be, and the nature of the economic and non economic contributions it intends to make to its shareholders, employees, customers (consumers and users) and communities in which it participates (see definitions in section 1.2).

The argument just presented regarding corporate strategy is similar to that stated and explained by Kenneth Andrews (1987) in his work.

The ideas presented here are offered as a general guideline to be studied, fine tuned, and adjusted by each corporation after the required considerations to its particular cultural, economical, and geographical aspects are done. Allowing for an adequate and final approach which should be developed by each organization that wants to start the trip toward continuous quality improvement. Afterward such endeavors are initiated, one can begin to control the everyday partial improvements that should be obtained daily as part of the general strategic operations system

plan that must be used to achieve "Quality for Customer Satisfaction," focused on "TQM-SOS" and "C-U NEW" methodologies.

Another interesting example of the international applications and accomplishments dealing with customer satisfaction was presented by Claes Fornell (1992) and deals with his work in Sweden. He describes a model developed to evaluate customer satisfaction and afterwards relates the results to the quality results achieved by other various firms. Fornell presents a monitoring tool used in Sweden to evaluate customer satisfaction on a national level. This study comprises 30 different industries and 100 corporations.

The principal application that Fornell's model will have in Sweden is its usage as a guideline to improve quality and make the Swedish industry more productive, competitive, and market oriented. The index there utilizes a weighted composite measure that rates the level of customer satisfaction in the surveyed industries.

The composite also measures the relationship of the "Customer Satisfaction Index" (CSI) to customer loyalty as well as product-service performance. This type of index is similar to the ones currently used in countries such as: U.S., Japan, Singapore and the European Community countries, among others. The index used in Sweden measures levels of customer satisfaction. This information makes it possible to define improvements which is possible to the products or services offered by the organization that participates in the recuperation of such figures.

The strategic importance of using a national index, as Fornell (1992) argued, lies in the possibilities of improving the quality of the products or services being offered to their national customers. To improve the quality of a product or service, it is necessary first to measure its

current performance or level in the market. The Swedish market presents interesting challenges to the various competing industries due to: Increasing international competition, slower growth rates, and mature markets. Such a pattern represents in some cases interesting similarities to that of the Mexican market .

It is important to note that Fornell's (1992) model suggests the following indicators to confirm the "Customer Satisfaction Index" (CSI): "a) General Satisfaction. b) Confirmation of Expectations c) Distance from customer's hypothetical ideal product."

Customer loyalty also is measured and it is valued in the "CSI" index as: a) Repurchase intentions. b) Price tolerance for satisfied customers" (Fornell, 1992).

The last argument advanced by Fornell, seems to validate the intentions or objectives of the establishment of the Swedish National Customer Satisfaction Index described as: "To be competitive in world markets, a company must invest in productivity as well as in the quality of what is produced. Before quality can be improved, it must be measured" (Fornell, 1992).

Fornell also mentioned that: "The ultimate judgment in quality is with the customer. Quality improvements that are not recognized by the customer are questionable investments" (Fornell, 1992).

Parasuraman, Berry, and Zeithaml (1990) also argued that: "A 'Service Quality Gap' results when a service performance falls short of expectations." The principal items that Parasuraman, Berry, and Zeithaml define as criteria used by customers to judge service quality are:

- a) Tangibles: Appearance of physical facilities, equipment, personnel, and communication materials.
- b) Reliability: Ability to perform the promised service dependably and accurately.
- c) Responsiveness: Willingness to help customers and provide prompt service.
- d) Assurance: Knowledge and courtesy of employees and their ability to inspire trust and confidence.
- e) Empathy: Caring, individualized attention the firm provides its customers.

The various measures recommended by Parasuraman et al. in their research methodology will help managers define the areas of opportunity in which to invest funds to better train collaborators of the organizations to improve customer satisfaction. However, in the end, it is not clear how Fornell (1992) or Parasuraman et al. (1990), plan to define customer's needs.

The principal value that "TQM-SOS" and "C-U NEW" methodologies have is to allow top management to understand the expressed needs of current and future customers. It is important to know what customers think, plan, decide, and act on before and after the consumption of the product or service. This, of course, leads to a certain organization of the entire firm and the activities it performs. The basic idea is to always pursue and satisfy the consumer.

An interesting approach to evaluating the service quality problem and defining the steps to be followed in order to improve it can often be difficult to correctly define. One definition is when internal and external customers of the firm are asked to evaluate and comment on what is to be done to improve the entire organization.

One must keep in mind that the "TQM-SOS" and "C-U NEW" methodologies are tools that help to define what customers' needs are even before developing the product or service. These tools not only are intended to define if the product was satisfactory but also to find out if the consumer-user found it to accomplish its purpose. Even though "TQM-SOS" and "C-U NEW" methodologies can also be used to define if the current product or service was satisfactory in the eyes of the consumer, the "C-U NEW" methodology can work side-to-side to define if "Total Customer Satisfaction" was achieved.

In sum, "TQM-SOS" and "C-U NEW" methodologies can be defined as proactive tools that will help top management and their organizations to better think, plan, decide, and manufacture (do) better products or services the first time for their current or potential target markets. Other tools that intend to measure if customers were satisfied or not with the products or services can still be used as a way of reaffirming the previous methods. These methods are a way of offering management the appropriate guidelines as to how to modify such products or services.

The "C-U NEW" methodology can also be used as a reactive tool to find out if products or services were satisfactory to its consumers. Considering that one tool can do both things; that is, plan better quality products and services and correct the mistakes in existing products or services. The idea is to let top management decide which methodologies are better for the organization in terms of learning and teaching their collaborators. (This last is what was called productivity in section number 1.2).

In the literature, and as was noted, it is said time after time that "Quality" is equivalent to "Total Customer Satisfaction." Using the

definition of quality recommended in Operational Definitions in section 1.2, it is possible to define: "Total Customer Satisfaction Achievement" or "Quality achievement," as "the exact moment in time in which the customer evaluates and agrees that the product or service already paid for, received and used adequately, completely satisfies the previously expressed needs (wants and expectations) he had before such business transaction took place, regarding the same product or service needed, and thus involved." It is also important to review here the operational definition I presented before about "Needs" in section No. 1.2.

Ciampa (1992) commented:

Only recently (since 1988 or so) the customer component has taken shape on a large scale. Customer surveys, focus groups, one-on-one meetings between top managers of supplier companies with customers, and other ways to clarify the voice of the customer are becoming more common. This is not to say that these are new developments. Surveys, focus groups, etc. are information-gathering tools that have been used for many years. The differences today in the best examples of Total Quality implementations are that they are being used by top-level managers, that they are part of overall company improvement efforts, that data are being translated to all employees, and most important, that the reason they are being used is to involve customers in the process of improvement so that their voice is both dominant and clear. In times past, customer data were used as input for the marketing department in product positioning and not for important product development and strategy, nor for feedback to the people who made and distributed the product.

Emphasis on the customer seems accepted as an important element of Total Quality in the 1990s. But it has not yet gone far

enough in most cases. The customer and concern for meeting customer's needs and exceeding their expectations while producing what has been promised, must be the driving force behind Total Quality. Doing so provides for customer loyalty, which translates into market share. Also, there is an enormously powerful impact on the internal climate. As employees better appreciate that the customer is a real, live person who depends upon what they, the employees, do and how they do it, increased meaning is given to their efforts.

In an enlightening statement, Ciampa (1992) continued:

We tend to think in terms of the quality of the products we build or the services we offer. But customers don't buy products or services. They buy answers to needs -the ability to do something they couldn't have done without us and for which they're willing to give us money.

Ciampa's arguments also support the need and approach that the "TQM-SOS" and "C-U NEW" methodologies have. But Ciampa fails to complete the following argument that I have: "those needs will only be satisfied at the end by products and services that match those verbalized, expressed and rationalized needs. And that, those products and services must be offered and exchanged at an adequate price level with such customers."

Also, Ciampa (1992) falls short of explaining how such customer's needs are defined and finally evaluated for a successful implementation of the "TQM" system in the organization. Even though Ciampa (1992) addressed the right issue for Total Quality Management success and also presented a good guideline to support the implementation effort for "TQM,"

a complete picture of the needs assessment and evaluation process required for a customer's satisfaction is not presented in his book.

In general, a variety of auditing and survey procedures are used to evaluate if customers were or were not satisfied with the products or services received.

### **2.5.3 Why Is Teamwork Recommended for Consumer-User Needs Assessment and Satisfaction Evaluation?**

Teamwork knowledge is important for complete organizational success.

Eddy (1985) argued:

A substantial part of managerial success depends on getting groups to perform. Yet, few of us have training in group skills. Compared to hundreds of hours of education in technical or professional specialties, such as budgeting or drafting, many managers have not been given adequate preparation to deal effectively with groups.

Various types of problems can be better analyzed and solved with the participation of teams specially assembled and managed for such purposes. Vast amounts of research have been devoted to the evaluation and analysis of teamwork performance and productivity (e. g., Eddy, 1995; James Shonk, 1982; Plovnik, Fry, & Rubin, 1975; Richard Beckhard, 1972, etc.).

It is important at this stage of this dissertation, to review recent findings about teamwork efficiency to justify their utilization and

recommendation as part of the "TQM-SOS" and the "C-U NEW" methodologies. Also, is useful to briefly describe teamwork activities to allow better future training and applications by top management. (For more in-depth details available on teamwork techniques, refer to Table 8.)

To fully utilize the potential that teamwork efforts have for an organization, is necessary to develop such type of work capability. Afterwards, it will be possible to put teams to work on the analysis and solution of a particular quality-productivity problem as one of their chores.

The ability of a firm allowing the team-work effort to grow within its areas and operating systems will permit the continuous satisfaction of its customer's needs.

Wilson (1994) commented that:

Getting all functional areas incorporated into the effort is an important step in moving beyond the product-conformance view of quality. Many of these functional areas play a direct role in determining customer requirements or providing customer service. All of these functional areas are essential for ensuring smooth and effective operations. Moreover, because so many opportunities for quality improvement are interdepartmental in nature, every part of the organization needs to have an awareness of the major quality principles and possess the capability to work toward achieving them.

Other authors argued that top management participation is required. Others, suggest employee empowerment as a definite must as well. Plovnik, Fry, and Rubin (1975) defined: "A team consists of two people or more who must coordinate their activities to accomplish a common task." James Shonk (1982) argued that: "If two people can best

perform their work without coordination, they are not a team. If only a portion of their tasks requires coordination or interdependence, they are a team for only those tasks that require interdependence and coordination."

In his research Richard Beckhard (1972) found that: "To function effectively, a team must manage how its members work together and how they interact with the rest of the organization. The principal areas suggested for careful management by the team are: Environmental influence, goals, roles, processes and relationships." Eddy (1985) added that: "Effectiveness in working with groups is a set of skills that can be learned, along with certain attitudes about people, groups, and collaborative processes."

To finalize my argument, James Shonk (1982) commented that:

Team development is the process of making a team truly productive, and to do such thing, it is necessary to unify a group of people with a common objective into a functioning unit, and that coordination must be required to accomplish the task in order to justify setting up the team in the first place.

One of the most important points considered as required for team productivity is related to the process that will be used by the team to accomplish its expected results or goals. Shonk (1982) mentioned that: "The process is primarily related to how they will work together. The principal aspects that the teamwork process must consider are: Decision making, communications, meetings, and leadership styles."

It is important to add that employee motivation and the reward and recognition systems utilized in the organization will promote or hamper team effectiveness and productivity. In Table 17 are found the

characteristics of teams that are or not working effectively, as reported by Shonk (1982).

From the list in Table 17, it is important to stress the third point in the environmental influences section, presented by Shonk (1982) which states that: "The appropriate levels of organizational authority are present within the team."

This last point helps support my thesis on the importance of the participation of top managers representing different areas of the organization in the teamwork effort. Also, if properly programmed, activities where various consumers and suppliers are involved together with the team, it will be possible to completely define actual and future consumer needs during these meetings. These meetings will focus on needs evaluation where consumers, users, and suppliers might be invited to participate in the discussions.

Armstrong (1990) reminds us from his work that:

In a performed research, where practitioners and academics involved in the consumer behavior field of study and research, were not much better predicting outcomes than high school students with supposedly no experience at all in the subjects or matters being evaluated. The most important fact that the study was trying to confirm, was that academics were the group of people that based on their particular formation and continuous activities, was the one that had greater opportunities or would be the one predicting more accurately the questions being evaluated. The results obtained, ranked the academic group below the high school group, that may be in touch with the reality of the world in which we live much better than what the academic people was supposed to be.

Armstrong (1990) found that a group of practitioners in their own field of study, or related problematic area, know better, or can predict better, based on their continuous mingling with the real world in which they live. This last can be due to their direct involvement with current events and probably close participation in problem solving exercises, a most interesting result to observe.

The limitation presented by Armstrong may be real but an interesting comment came to mind: "If academics are not good enough in predicting outcomes in important matters, appropriately or directly related to their main field of competence, it might be due to the fact that they are not really interested in their consumers, or that they are trying to reinvent the wheel, or are so far apart from reality that their advice can not be meaningful to anybody. Maybe we still can learn a lot from High School Kids, or even from practitioners."

Furthermore, Quality Control Circles are being utilized extensively in different industries. The utilization of team-work effort approach is to analyze and suggest possible solutions to problems existing in their team members' own operative area. Work group teams by contrast, include multidisciplinary area members with the same problem solving purposes. The time used for purposes of quality-productivity improvements is the time specially allotted by the company for such activities.

Since 1962, Japan has implemented quality circles activities in the manufacturing departments of various industries. Statistical Process Control Tools are the principal techniques and guidelines employed in such groups to improve the quality of the operative department. Internal and external customers have been better served after using these methodologies. Eddy (1985) reminds us that:

Such types of employee committees, have been around for many years. Joe Scanlon, a U.S. labor leader, developed a plan for organizational cooperation and participation during the depression of the 1930s (Frost, Wakeley & Ruh, 1974). One central feature of the Scanlon Plan was a series of production committees, composed of labor and management representatives, which met regularly to receive suggestions and discuss ways of cutting costs and improving productivity. The participation philosophy underlying the Scanlon Plan was probably ahead of its time. That, plus the fact that the plan was, in part, a profit-sharing system that evoked both labor and management bias, kept the concept from being widely used.

Other areas of research application found in my review were performed by Deborah Bosley and Joellen Jacobs (1992) when they studied effectiveness of groups involved in an activity described as "Collaborative writing." The activity analyzed was: "Small group activity consisting of students working in groups to solve problems, to discuss study questions, or to prepare for exams." Bosley and Jacobs (1992) also argued that Glidden and Kurfis (1990) found that: "the utilization of these small group activities: 'offer benefits not necessarily obtained from the traditional lecture-discussion methodologies.' "

Bosley and Jacobs (1992) continued: "Collaborative writing is an extension of the more basic belief in the value of cooperative learning, Socrates' great discovery. Modern research has confirmed Socrates' insight." Next, to end this section, I also reproduce a list of outcomes that result from cooperative learning, as found by David Johnson and Roger Johnson of the University of Minnesota Cooperative Center (1987):

1. Higher achievement and increased retention.
2. Greater use of higher level reasoning strategies and increased critical reasoning competencies.
3. Greater ability to view situations from others' perspectives.
4. More positive relations with peers regardless of ethnic, sex, ability, social class, or handicapping differences.
5. More positive attitudes toward school, learning and teachers.
6. Higher self esteem.
7. Greater collaborative skills and attitudes necessary for working effectively with others.

## **2.6 Various Objectives, Goals, and Requirements Not Yet Properly Defined to Improve Traditional "TQM" Implementation**

Peters and Waterman (1984) argued that current Management theory ignores the role of customers in organizations. Dean and Bowen (1994) recently stated:

Customer focus and satisfaction receive little coverage in the management literature, and within that coverage there is some similarity in the prescriptions of TQ and management theory. Management theory still looks very much as Peters and Waterman described it over 10 years ago. Why? The answer may lie in Danet's (1981) observation that organizational theorists view organizations from the top down (management's perspective) or from the inside out (employee's perspective) but rarely from the outside in (customer's perspective).

Dean and Bowen (1994) even stressed that:

The word customer rarely appears in journal article titles, management textbook indexes, or session titles at the Academy of Management meetings. Because customer focus is the central principle of TQ, its essential absence in management theory represents a fundamental difference in the orientation of the two areas. Customer focus in TQ obliges organizations to deal with such issues as assessment of customer expectations and organizational performance in meeting them, customer relationship management and commitment customers. The customer is omnipresent in the practice of TQ. In fact, this category has the highest weighting in the Baldrige criteria.

"TQM-SOS" and "C-U NEW" methodologies will help organizations to better define and understand customer needs and at the same time help Management theory develop in the required direction.

### **2.6.1 Customer Needs Assessment and Customer Satisfaction Evaluation.**

As I have shown, various sources pinpoint the need for a better understanding of customer needs in order to satisfy them with better products and services. Not many explain how such needs will be defined and used to improve current products and services offered by organizations. Whiteley (1991) recommended a series of activities to become better acquainted with customer needs:

- 1) Saturate your company with the voice of the Customer. Let customers' needs drive your whole corporation.
- 2) Who are your customers?
- 3) Know Thy customers:

- a. The spirit of constant listening.
  - b. Beyond the basics: Live with your customers.
  - c. Invest in complaints.
  - d. Get it direct.
  - e. Romancing the customer:
    - e.1 'Focus Groups' and videotapes of customers.
    - e.2 Executive visits to customers.
    - e.3 Employee visits to customers.
    - e.4 Teaching the front line to listen and communicate.
    - e.5 Creating the customer's experience for your people.
    - e.6 Customer councils.
    - e.7 Post-purchase assessments.
    - e.8 Competitive product and service questionnaires.
    - e.9 Complaints on videotape.
    - e.10 Formal training in understanding the customer.
- 4) Walk in your Customer's shoes.

The activities suggested by Whiteley are important in understanding customer's needs and can help interested organizations to define appropriate plans to satisfy them. In his book, Whiteley does not provide those organizations intending to follow his advice with a complete methodology to guide them on each of the steps he recommends. Whiteley also does not comment about what to do after the information is gathered from the research effort.

### **2.6.2 Strategic Planning and Implementation of Traditional "TQM" Systems.**

"Continuous process improvement is fundamental to "TQ"; an organization could hardly practice "TQ" while ignoring it. However, management theorists have devoted only moderate degree of coverage to topics in this category." (Dean & Bowen, 1994)

A couple of interesting and meritorious exceptions of an in-depth study of the socio-technical systems are discussed by Trist and Bamforth (1952) and Hellriegel et al. (1989). In general, "Management theorists have rarely extended their theories to include both social and technical aspects of organizational process design (Dean & Bowen, 1994). In their article, Dean and Bowen continue:

The focus of strategy from the "TQ" viewpoint is simple: strategy consists of understanding what customers want and aligning the organization with a set of plans to deliver it to them. Strategy must be responsive not only to customer needs, but also to the core strengths and weaknesses of the organization. From a "TQ" standpoint: the process of strategy formulation and implementation are no different from any other business or operational process, which is to say that they should be continuously subjected to analysis and improvement. Strategic management researchers, in contrast, have devoted little attention to the improvement of strategic processes.

I find it necessary to comment about the principal results obtained from the questionnaire dealing with "Problems experienced in implementing "TQM" in their own firms, their causes, shortcomings with TQM tools and methodologies, and possible related research issues" ("One Day Conference at Columbia University the 12th. of March 1991 Summary," 1991).

The complete list of participants at the Columbia University Conference included top Chief Quality Officers from different internationally recognized firms for their quality products or services, such as ALCOA, American Express, AT&T Bell Laboratories, Boise Cascade Corporation, Colgate Palmolive Company, The Delta Consulting Group, Ford Motor Company, General Motors Corporation, IBM Corporation, Motorola Inc., Nestle Foods Group, Proctor and Gamble, and Xerox Corporation.

The questionnaires were given to the participants during the "One Day Conference at Columbia University" in March, 1991. This questionnaire dealt with the topic: "Research Issues in 'TQM,' " where Chief Quality Officers of 13 leading United States corporations participated. Results were presented in the conference executive report and an abstract that was prepared especially for such a purpose. The principal issues raised by the Chief Quality Officers that assisted and participated in the mentioned conference at Columbia University, expressed their "concern for lack of support for industrial applications of "TQM" related research issues in the following areas or topics":

1. Help top management in the determination process of customer needs. Difficulty in defining, measuring and anticipating customer needs and satisfaction issues.
2. Clarify the role of top management in the Total Quality Management process. Problems in getting senior management to use the processes and data driven approaches of TQM in their own work on core business problems.
3. What are the appropriate systems to be used in a corporation employing the Total Quality Management Operations Environment to reward and recognize their employees. Changes necessary to create a TQM culture. Organizational change models or processes

for quality. Teamwork and high commitment work systems. Better understanding of TQM as an organizational change. The relevance of cultural issues to implementation of TQM.

4. Define what Total Quality Management is all about and its implications.

5. Managing the large and systemic changes that comprise TQM. Difficulty in implementing, "deploying," a quality policy.

6. Education and training required on tools and teams utilization. Lack of understanding/commitment of the need for continuous education and training to reach the desired TQM knowledge and skill level. Ineffectiveness of training to truly demonstrate the long term benefits to be derived, especially in services. Insufficient education of management on the tools required to continuously manage and improve business processes. Research and experimentation focused on continuous improvement in education that results in Total Quality becoming integrated into the Business Strategy for competitive leadership and excellence." ("One Day Conference at Columbia University the 12th. of March 1991 Summary," 1991).

In general the Chief Quality Officers that attended the Columbia University conference expressed that they still need practical help and support to fully address possible implementation efforts to achieve "TQM" in their organizations.

Scott (1990) commented in relation to "TQM" that in general: "Most people in Aerospace and Defense industries admit that "TQM" remains, at best, a hazy concept shrouded by business management-sounding jargon."

It is also important to note that in other business arenas, despite the great efforts already made by many organizations to improve operative results, market share continues to slip as does other product or service quality indexes, productivity indexes or yearly corporate profits. Quality Digest (1990) commented about the Massachusetts Institute of Technology (MIT) Press Study findings after the Institute completed two years of analyzing eight major U.S. industries such as commercial aircraft, consumer electronics, computers and semiconductors, machine tools, chemicals, automobiles, steel, and textiles.

The report the MIT presented, and I am quoting, is called "Made in America: Regaining the Productive Edge," found that "U.S. productivity is diminishing from past levels and now lags behind that of other nations." The report, "Identifies typical U.S. practices that are largely responsible for today's poor competitiveness" ("Quality Digest," May, 1990). Similar comments were also done by Griesing in his recent article (Griesing, 1994).

Of the major points that have helped U.S. industries to lose ground in the productivity field, according to the MIT report, and due to their impact on the overall performance, productivity and the quality of the products and services that the organization provides the following managerial facts will be commented:

1. Outmoded strategies which are grounded in an over-dependence on mass production of everyday commodity products and inward-focused technology and marketing. U.S. firms traditionally have prospered by producing standard items for primarily domestic markets while ignoring foreign markets, technological advances and innovations.
2. A myopic economic outlook centered on short-term profits.

3. Weakness in the technology of manufacturing and production. US firms have concentrated on elegant, high-technology designs and paid little attention to the benefits of simplicity, maintainability and reliability that follow from a quality first focus in the early stages of product development. Products are loaded with sophisticated high technology and advanced features, but they often fail to work in the field.

4. Neglecting human resources in favor of fatter balance sheet bottom line. Major reforms are needed in the US educational system -both in schools and for workers in industry- to ensure a life-long learning process. Without such a shift, the US will face an inevitable drop in economic performance and standard of living.

5. Failure of individuals and organizations to cooperate. Joint efforts are necessary to promote technological innovation and improve performance in industry, yet many US educational and business tenets foster competition instead of cooperation. A reward system for individuals and organizations must be developed to encourage teamwork at all levels.

6. Strained relations and mistrust between industry and government.

Common factors that have helped some US industries better adapt to the current global change felt in business operations, according to the MIT report are:

1. Development of close ties to customers and meeting their needs. Foster closer quality-based relationships with a select group of suppliers.

2. Breaking down organizational hierarchies to improve communications between traditional functional areas. Levels of management are reduced and fewer separate units are the end

result. Apply technology to advantage through a strategic, long-term approach.

3. Develop human resource policies and rewards that promote employee participation, teamwork, flexibility and continuous learning.

4. Focus on continuous improvement of processes to reduce cost and improve quality of a product or service." (Quality Digest, May 1990).

These last facts show that there is still a lot to be accomplished in different industries or organizations and at the same time the same facts also support the need for the ideas behind the development of approaches similar to the "TQM-SOS" and "C-U NEW" methodologies that will be presented in this thesis.

Scott (1990) further commented that:

The TQM concept now gaining impetus throughout government, academia and the aerospace and defense industry is being viewed as both a means of corporate survival and a powerful vehicle for revolutionizing US productivity and that clearly is not just another passing initiative. The potential bottom-line benefits of reduced costs, improved quality and better customer satisfaction are prompting major US firms to invest millions of dollars in training, new equipment and facilities to enhance their own competitiveness on a global scale. The quality-program names and implementation schemes adopted by companies and governmental agencies differ widely. (the generally accepted principles of TQM are shown in more detail in Table 12.)

In reference to the Health Care Industry, Coleman (1992) commented that: "Price is not even an issue anymore, it is the quality of service. Today, a hospital has to prove insurers that it is the best provider of a particular service in a particular area to get the contract."

Coleman (1992) also added and argued that:

Quality will become a very important factor in managed care and that a patient is a very special kind of customer because he or she doesn't want to be there, so the experience must be as pleasant as possible. If TQM doesn't work, its because top management treats it like another program and not a behavioral change process. Its not a threat or challenge (to marketing); its totally integrated, marketers also have an educational role on TQM internally.

Is important to remember, mention, and remark again that among the participants present in the "One Day Conference at Columbia University the 12th. of March 1991" there were many Chief Quality Officers from prestigious organizations. Some of the organizations that were represented in the Conference had also won in previous years the United States Malcom Baldrige National Quality Award such as IBM Corporation (Rochester), General Motors (Cadillac Plant), Motorola Inc. or Xerox Corporation, (King, 1992, and Malcom Baldrige National Quality Award Criteria, 1992).

Another organization represented in the Conference was American Express, which had won for its Mexican operations the Mexican National Quality Award in 1990 (Fundameca, Monografias No. 6., 1990). The same Mexican award was won by IBM in its Guadalajara plant in 1992 and General Motors in 1991 at its Toluca plant in Mexico and in 1992 in its

Ramos Arizpe complex located also in Mexico (Management Today, in Spanish, 1992). Corporate IBM's and General Motors' quality officers were also present at the conference.

It also should be mentioned that some of the participants at the conference came from organizations that have been under direct consulting and mentoring by world renown quality "experts" such as Dr. Deming or Dr. Juran (NBC Film: "IF JAPAN CAN WHY CANT WE?"), or that at some point in time were helped by them to improve their products and services.

Corporations such as: Ford Motor Corporation (Fundameca, Monografias No. 6, 1990), which was under close guidance, consulting and direct support by Dr. E. Deming, and General Motors' Buick Plant that also was helped by the same renown consultant and quality expert, also were represented in the event. From comments made by the participants, all at the Columbia University Conference, and other references reviewed, I can also conclude that a lot is still possible to do in regards to the traditional Total Quality Management and its possible successful implementation process.

I truly feel that "winning" the mentioned Malcom Baldrige National Quality or the Mexican National Quality awards and/or even hiring these consultants has not meant or resulted in more than partially achieving the goals in the total development process required to satisfactorily implement their "TQM" system. The fact remains that these organizations still have a lot to do in the area of consumer satisfaction. This was obvious from the questionnaires completed by the executives themselves after the Columbia Conference took place.

These last remarks are even more important if we consider and review the current product quality, productivity, and economic situation that corporations such as IBM, Wallace Co., GM and others have been experiencing lately:

IBM is its worst enemy. Employees must waste fewer opportunities, minimize bureaucracy, and put the good of the company before their division's. IBM will reassert its identity as customer's primary computing resource and keep the company whole because customers want it that way. (Gerstner's Vision by: Kirkpatrick, 1993)

Motorola's earnings per share dropped for the first time in five years in 1990; design glitches led to delay in delivery of critical chips. (Main, 1991)

In 1990, Wallace Co. won the Malcom Baldrige National Quality Award. Two years later, the oil company filed for chapter 11 as the oil prices collapsed. (Greising, 1994)

John Wallace, CEO of Wallace Co., Inc., still argues, "The company is going through a difficult time right now" largely because of factors beyond its control: a financially troubled bank holds its loans and the recession is hitting hard the industries it serves. (King, 1992)

GM is loosing money in a terrible car market, but Cadillac is holding its market share in competition with new Japanese luxury models. (Main, 1991)

Business Products and Systems Group (Xerox): Improved quality has raised its share of the copier market from 8.6% in early 1980s to 16% today. (Main,1991)

Main (1991) finally argued that:

No the Baldrige is not the panacea. Winning guarantees neither profits nor market share nor growth. And the prize itself is not defect-free. But the award has prompted U.S. business to improve quality as nothing else has done. Most of the companies seem to understand that the value of the Baldrige lies in the discipline it inspires and not the prize itself.

Current traditional "TQM" approaches can be enhanced in favor of interested organizations. Top managers involved in companies that won National Quality Awards have realized that their organizations still need to do a lot about quality improvement, customer needs assessment, customer satisfaction, and "TQM" implementation guidelines. "TQM-SOS" and "C-U NEW" methodologies can be appropriate tools to achieve the quality and productivity objectives and goals not yet accomplished in many organizations.

### **2.6.3. Resistance to Change.**

"Planned organizational change is difficult." (Reger et al. 1994)

Resistance to change is another of the most powerful barriers to delay proper implementation efforts of traditional "TQM." Fear of the unknown exists from losing the traditional good money for doing nothing while maintaining old attitudes.

Ishikawa (1988) even commented that:

As with other things, there is surprising amount of prejudice against quality control, but the proof of the pudding is still in the eating. Quality control only succeeds when top management feels responsible for the quality of it's company's products and takes up quality control as a matter of policy, and everyone-not just middle management and technical staff, but also administrative staff and front-line workers, and even further, subcontractors, distribution organizations, subsidiaries, and affiliates-bands together to implement it. It will not usually succeed if it consists merely of a handful of engineers studying statistics in a corner of a factory. This is why the understanding, enthusiasm, and leadership of top management, and accompanying action, are all so important.

Reger at al. (1994) commented that: "TQM' failures are sometimes attributed to implementation problems." They also argued that to improve implementation errors three different "cognitive self-concept theories, organizational identity theory, personal construct theory, and self-discrepancy theory," must be considered by cooperating members of the organization. Their position is that "the current state of thinking about total quality and organizational identity should drive how "TQM" is framed and reframed throughout the implementation process."

Reger at al. (1994) also suggested that: "Change should proceed through mid-range modifications that motivate the organization to change; it should not be so radical that organizational members either fail to comprehend change or perceive it to be unacceptable." Weik (1984) recommended similar approaches to solve alcohol problems and suggested the "Small Wins" approach to deal with them.

Reger et al. (1994) also recalled that:

Personal construct theorists suggest that there are two specific cognitive barriers that tend to undermine the acceptance of new programs, especially initiatives that are inconsistent with the organizational identity schema. First, because schemas are composed of a finite set of constructs, individuals may be unable to comprehend fully the meaning of the change. Second, changes that are framed in concepts opposed to positively valued elements of organizational identity are likely to be resisted.

To summarize Reger and others, the implementation problems of "TQM" will occur if there exists a failure in comprehending the opposition to change. If this is not thoroughly considered in the organization as part of the required cultural change process necessary, then attempts to move to "TQM" will fail.

## **CHAPTER 3**

### **NEED FOR TOTAL QUALITY MANAGEMENT STRATEGIC OPERATIONS SYSTEM (“TQM-SOS”) AND CONSUMER-USER NEEDS EVALUATION WORKSHOP (“C-U NEW”) METHODOLOGIES IN MEXICO.**

“Problem solving is often directed at the removal of symptoms rather than causes” (Ackoff, 1978).

#### **3.1 Applicability of the “TQM-SOS” and the “C-U NEW” Methodologies in Mexican Organizations.**

Rodriguez and Ramirez (1992), pointed out in their paper that:

Due to its geographic position and all its available natural resources, Mexico is a country that could be rich and powerful. In fact, it is an underdeveloped country. It does not produce enough or manages right what the country has available. Too many of its inhabitants dwell and live in misery. Those that pretend to involve the Mexican worker towards achievement of productivity and quality only with political speeches, procedures, restructuring the organization, management training and statistical quality control workshops are only touching some of the symptoms but not the complete and real problem.

Personal insights that consider the different comments made by Riding (1985), Kras (1989), Alducin (1989, 1991), Rodriguez & Ramirez (1992), and Forest (1994) are the ones that finally support and justify my intention of developing the "TQM-SOS" and "C-U NEW" methodologies. This will help Mexico and most of its organizations to achieve a high international developed country level, which is well deserved.

The principal reasons to apply the "TQM-SOS" and the "C-U NEW" methodologies are directly related to the need for guiding Mexican top management in its daily efforts to improve quality-productivity results. While at the same time focusing management on increasing "Total Customer Satisfaction" with the different products and services currently offered.

Organizations in their efforts to achieve profitability have confused means with ends and areas work as fiefdoms where team efforts are absent. Internal or external consumers and users never get what they really need and everybody suffers the results of such organized lack of organization. In other words, organizations have deficient strategic operations planning systems, boring jobs, slow growth, inadequate quality products, and services and unproductive activities which deter customer satisfaction and organizational improvement.

Even though the "TQM-SOS" and the "C-U NEW" methodologies were designed considering the particular way of operating and currently doing business by Mexican organizations, their application can be also done in international organizations. Various works were reviewed to obtain an accurate picture of the environment in which Mexican firms and all their participants operate. The material studied included works by Riding, 1985; Alducin, 1989, 1991; Rodriguez & Ramirez, 1992; Aburto, 1992; Forest, 1994; Neuman, 1988, 1994. Mexican enterprises will

greatly benefit as well from the application of the various tools and processes included in "TQM-SOS" and "C-U NEW" methodologies.

Now that "Free Trade Winds" blow in our direction the potential of applying the complete "TQM-SOS" and "C-U NEW" methodologies in Mexico is growing and corporations (local or foreign) that decide to use them, will greatly improve their performance by offering "quality" products and services, just as customers (consumers-users) need them.

When trying to implement traditional "TQM" related strategic philosophies and cultures in different situations or environments, many Mexican or international organizations have forgotten customers and their expressed needs. That is, regardless of the firm's declared intent not to forget this vital part of the business.

Management has always focused its written mission statements toward the customer, considering it is its base of existence. The mission statement always considers customer satisfaction as the primal company source of growth and development. However, reality is far from this point. Usually, both customer needs and mission statements are safely kept away in management's drawers or in nicely framed posters. On the other hand, "TQM-SOS" and "C-U NEW" methodologies are practical steps to be followed that will bring new life to mission statements and customer needs' satisfaction intentions.

The current approaches available for Mexican top managers interested in implementing the traditionally known "TQM" methodology in their organizations, in general have not shown to be very successful within the country. That is, these imported approaches do not properly adapt to the necessities required in many sectors of the Mexican economy. This is so due to Mexico's particular culture, education,

population level, economic situation, resources, labor and its attitude toward work. Mexican organizations are anxious and in need of a specialized designed approach to end with this inefficiency.

The lack of a proven "TQM" methodology for Mexican organizations and their products and services is resulting in high quality costs to the companies. The information that does exist does not provide great detail and clear instructions for the required "TQM" implementation procedure to be used in Mexico. It is remote from the truth to say that the available information is appropriate and even applicable for Mexico's particular cultural characteristics or economic development situation.

While potentially applicable to other countries, it is important to consider that the "TQM-SOS" and "C-U NEW" methodologies were designed and implemented in the context of the Mexican business environment and its particular culture environment.

Riding (1985) commented, after his in-depth observations regarding Mexico, that:

Probably in no other part of the world live, side by side, two countries so different as Mexico and the United States of North America. When crossing the border, suppose from El Paso to Ciudad Juarez, the contrast impacts: from richness to poverty, from organization to improvisation, from artificial flavors to hot spices. But the physical differences are the less important. Probably in no other part of the world two neighbors understand each other so little. More than by levels of development and progress, the two countries are separated by language, religion, race, philosophy and history. The United States is a nation barely two hundred and fifty years old and already in the XXI century. Mexico is thousands

of years old and still dependent on its past. In the last 150 years, Mexico has known and felt the North American mighty powers: in the XIX Century, lost half of its land to his northern neighbor; in the XX Century, became dependent in economic terms, to the United States. In contrast, only lately, the United States seldom cared to look south.

Here the important point is that the "TQM-SOS" and "C-U NEW" methodologies were designed in such a manner that the application also considers other contexts, cultures, and characteristics. Thus the application of the "TQM-SOS" and "C-U NEW" model when pursuing traditional "TQM" efforts can be helpful within other business cultures. This last point is based on the fact that the appropriate considerations are given regarding cultural traits and specific guidelines for its implementation in Mexico or in any other country.

### **3.2 Purpose and Application In Mexican Organizations of the "TQM-SOS" and "C-U NEW" Methodologies.**

The main purpose of this thesis, as mentioned, is to satisfy the needs of Mexican managers in developing and applying improved methodological procedures that will help business owners. It is these business owners and top managers who require help in defining what their current or future customers need to later help them design the appropriate strategic and operational plans and the necessary organizational structure. With improvements in these areas, they will be able to deliver to their customers not only better products but services as well.

The "TQM-SOS" and the "C-U NEW" methodologies introduced here are fully documented on live applications in different Mexican

organizations. The idea was to use a small sample of companies of different sizes, in order to be able to evaluate each's specific needs thus providing the required information that will help better organize the companies' activities and operations. The "TQM-SOS" and the "C-U NEW" methodologies were also developed as practical tools which can help also senior management evaluate their customers' satisfaction level with the products or services that the organization offers.

The importance of presenting the "TQM-SOS" and the "C-U NEW" methodologies lies in the fact that these methodologies will serve as stepping stones for top management goal's achievement. To actually be able to achieve "Total Customer Satisfaction," "TQM-SOS" and "C-U NEW" methodologies are vital in achieving improved and more adequate products and services. In other words, "TQM-SOS" and the "C-U NEW" methodologies are all about obtaining results now.

Many wonder about management's role in planning the use of "TQM-SOS" as an important strategic option for the organization. The strategy focuses on questions such as: 1) Why organizations should even be interested in implementing such methodologies in their companies, 2) What is the importance of management roles in the development and implementation of "TQM-SOS" and the "C-U NEW" methodologies within the organization and 3) What kinds of products will better satisfy current or future consumers and users.

Even though the objective of adequately satisfying the customer has been stated and intended many times, it has continuously been neglected or forgotten by many organization's top management. It is important to remember that such strategic organizational goals must always be treated as an essential component of a company's existence.

Every type of corporation or business, regardless of its individual corporate objectives, is required to clearly state and define all its profit or non-for profit types of general policy guidelines. It is also required to define its quality and productivity objectives, which will be pursued by the entire organization. The objectives that the company chooses are essential to its improvement process when using the "TQM-SOS" and the "C-U NEW" methodologies, as will be shown. Even though improving the quality of products and services is continuously stated by the company, this top most priority is more often than not put aside resulting from other priorities.

I have been involved with the actual process of helping Mexican top management implement the "TQM" concept in many occasions. My involvement with these Mexican organizations has been in the form of an instructor, facilitator, or consultant.

With each and every one of these organizations, the objective has not been that simple to accomplish. The most ironic point is that all have had as one of their top objectives: "The customer comes first concept." My experience has shown me that there are various subjects and areas that must be covered, helped, considered, and involved to successfully implement the "TQM" methodology.

With the current culture and environmental conditions found in Mexico, the country is requiring of an urgent change in the type of internal organization's structure and operating rules being used. There needs to exist more of a team-work environment. These teams would be made up between such departments as: Marketing, Sales, Product Research and Development, Customer Service, Engineering, Operations, Production, Purchasing, Personnel, Logistics, Accounting, Finance, etc.

Although the improvement methodologies that are now suggested by various renown authors and consultants are not completely adequate or clear at face value to "all" companies located throughout the world, many Mexican organizations just blindly try to copy or follow a renown international "guru" without adequately reviewing the applicability of their ideas and methods to the Mexican culture and environment. Pierce (1986) also confirms this personal observation when he himself questions:

Why didn't American management take longer to develop a foundation of understanding of the concepts, theories, and principles of consultants and scientists? Why didn't they address the challenge and learn the skills to create environments that could stimulate employees to improve quality and productivity?

There are three answers: (1) There existed an unmanageable quantity of concepts, theories and principles published by over 200 recognized experts. (2) Most of these experts had difficulty leading the march across the bridge of application because they lacked knowledge and experience in the manager's real world. (3) America's priorities of technology and managing work were higher than managing people. When American companies first attempted to take advantage of Japanese methods, many failed because they tried only to copy the Japanese. Those who succeeded did so because their management took the time to study the philosophies and concepts behind the methods. Then they adapted these to methods suitable for American employees.

In the research recently presented by Kras (1989), she argues that "Mexico is a country of extremes," a fact that must be completely

regarded when trying to implement foreign methodologies in other countries. She points out that:

In our interviews, various U. S. executives quoted well worn clichés such as: 'What works in the US ought to work in Mexico.' In truth, one cannot transplant US methods and management techniques indiscriminately and expect them to work as they do in the US, and that, there are differing cultural factors which affect management styles in Mexico and the US, and some are particularly sensitive to cultural variations.

Kras (1989) also discovered that Mexican people and managers possess the next important traits:

- 1) Tradition of family business.
- 2) Paternalistic and autocratic.
- 3) Relaxed, slow-moving and peaceable.
- 4) Stress and tension for Mexico City inhabitants.
- 5) Loyal.
- 6) Deep and concealed sense of national and cultural identity based on firm attachment to cultural values.

To complicate things more, some of those internationally recommended approaches are not even applicable without some significant modifications or changes to the Mexican environment, ways of life, economic situation, levels of education, and particular culture. These modifications are required without any doubt because of the current basic country's overall situation.

Mexican labor, in general, is considered to be creative, skillful, flexible, ready to learn, and serviceable. One of the most outstanding

characteristics is that he likes to show lots of personal initiative in his daily activities providing that the organization demonstrates the appropriate recognition for his efforts (Rodriguez & Ramirez, 1992). One drawback to the typical worker is that he or she tends to be lazy and often likes to give a lot of different excuses about his or hers current performance (Neuman, 1988).

Together, these traits must be considered for the successfulness of the "TQM-SOS" and "C-U NEW" methodologies in any Mexican organization. These characteristics have also been confirmed in various recent studies. The one recently done in Mexico by Rodriguez and Ramirez (1992) also shows that:

Mexican workers possess and show the next positive characteristics in their behalf: 1) Superior emotional security due to social forces, family cohesiveness, religious beliefs and friends availability. 2) Tranquillity, happiness, satisfaction for life, love, affection and confidence supported by their family, customs, and Mexican traditions. 3) Readiness to be of service, cooperative, and to offer material, or spiritual support, providing he or she is properly recognized, and rewarded, and is considered useful, important, and having special value for the organization in which he participates. 4) Favors harmony and cordiality in his relations. 5) Good sense of humor, social, friendly, extroverted, respectful, obedient, ingenious, and creative. 6) Proud of being Mexican.

Mexican workers possess and show the next positive fundamental values: 1) Liberty. 2) Religion. 3) Equality. 4) Family. 5) Human development. 6) Technical development.

Similar traits were also reported to have been found among Mexican workers by Aburto (1992). Aburto even points out that:

Considering the objective of achieving a defined level of competition, current values and ways of operating must be changed for survival reasons. Some of those changes also will have an impact in the Mexican education system. Management practices and the way work is currently done will be affected, what usually takes time and requires perseverance. Besides, it will surely affect our personal life....

The principal point to consider here is that most of the people in the Mexican work force lack the basic knowledge and work skills. Without this elementary know how there is a need in the industrial and manufacturing areas for more advanced technical training. Taking it a step further, teaching workers how to use and adapt a theory to real life situations and later process its implications would be to much too expect. That is not to say that it does not occur; however, it depends at what level of the work spectrum one is focusing on.

The majority of current Mexican quality and productivity problems are directly related to the country's actual cultural characteristics and its inefficient educational system. It is important to note that this system has only allowed the population to collectively achieve an educational level of grammar school. To be exact, on a national average the work force has reached only a fifth grade level at the most.

I also have observed that the majority of Mexican workers tend to be lazy and love to give excuses for all their intended or unintended mistakes or continuous low performance (Neuman, 1988), contrasted with the values they are said to own by the different authors mentioned above. This is supported by the sad fact that most Mexican workers are underpaid, under qualified, and under trained. To top off the situation,

the needed knowledge for the level of work they are expected to perform in the organization is inadequate.

The Mexican training magazine, Capacitación. Enlace con el futuro, in its July 1993 edition, points out the following approximate figures of the Mexican Education System:

There are 4.2 million illiterates. 20.2 million people older than 15 have not finished 6th grade yet. 16 more million have not finished the 9th grade level yet. Only 15% of all urban inhabitants older than 12 years of age, have education levels oriented to their inception in the labor market. Children of illiterate parents total 3.6 average years of education. Children of parents that ended primary school (6th grade) reach an average of education of 7.4 years. The average for children having parents that studied advanced degrees (Note: Not clear if this last means secondary (up to ninth grade), preparatory (up to 12th grade) or college level), is 12.1 years of schooling. The inefficiency of the Mexican Education System was measured in May 1990 with an investigation in which the average of the primary students obtained 4.83 of grade in a scale going from 1 to 10. The students of the secondary level obtained 3.97 for a scale with the same 1-10 range. ("Data and numbers about education in Mexico," Capacitación. Enlace con el futuro," July 1993).

In a recent survey, Puglisi (1995) confirms most of these observations. Puglisi also argues that:

Beyond the basics, the majority of curricula offered in schools and universities in Mexico fail to prepare graduates to enter the working world with some essential functional skills such as an

understanding of finance, the ability to put into practice the theories learned at school, the ability to analyze and debate issues and the ability to effectively manage time and prioritize tasks. Industry would also like to see graduates with an understanding of microeconomics and of business and its organizational structures and dynamics. 'It's incredible how many graduates have degrees in business subjects like accounting or finance but don't have any idea about how a business operates.'

Puglisi goes on to add that:

From each 100 students that enroll in primary school, only 59.7 finish it. From those first 100 students only 52.5 will start secondary school. The number of students that finish secondary school is only a 73.8% of those who started it, 38.8 students from the first 100. Of those students that finished secondary 15.4% continue on a technical school and 63.1% go on to a preparatory school. From the 5.97 students that started technical school, only 2.2 finish it. From the 24.48 students that started preparatory school, only 14.2 finish it on average. The students that finish technical school are only 2.2% (2.2 students) of those that started at the primary level. The students that finish preparatory school are only 14.2% (14.2 students) of those that started at the primary level.

Comparing equivalent education levels between the three countries participating in the North American Free Trade Agreement (NAFTA), Puglisi concludes from the figures offered by the World Bank that:

Only 14 percent of Mexico's 20- to 24 year-old attend institutions of higher education, compared to almost 75 percent in the U. S. A. and Canada, and that only 30 percent of all Mexican students in first degree programs obtain their diplomas. Whereas the average U. S. and Canadian worker has (respectively) 12.6 and 11.7 years of schooling, the average Mexican worker has only 6.4 years.

Thus, combining the figures offered by Puglisi (1995), of an average of 30 percent of students finishing their first higher degree education level, it is possible to conclude that from the 16.4 that finished technical and preparatory schools only 4.92 will receive a college degree.

Ackoff (1974) argued that: "A developed country is an educated country." I also contend that without the adequate motivation and education for the Mexican work force, it will be very difficult to achieve the interest of the workers in: "doing things right the first time."

Some of the Mexicans' mentioned traits and values that nowadays seen as possessed by the Mexican worker are: creativity, cooperation, enthusiasm, obedience, flexibility, ready to learn, serviceable, cooperative, favors harmony, cordiality in his relations, and has an interest in hard work in order to be able to grow and prosper. These traits were selected and extracted from various references: Riding, 1985; Alducin, 1989; Kras, 1989; Rodriguez & Ramirez, 1992; Aburto, 1992; among others.

In Alducin's (1989) research about Mexicans' values, he points out that the following traits or values are usually found in most of the multidisciplinary Mexican people, workers, and managers. He has gone

on to thoroughly study and define their most important values and characteristics:

Mexicans think that 'responsibility' is the most outstanding attribute that a good worker requires. It is followed by the attribute 'active' with 50% less estimated value. After those two are, 'intelligence, order and punctuality'. We Mexicans define our road towards progress through 'creativity, innovation, cooperation and enthusiasm,' values that stand out as income level increases. We paid high fares in the transition process (from traditionally to modernity) when we devalued or lost fundamental traditional properties such as 'obedience, respect, and care when doing things;' also, loyalty, skills and perseverance result important, but in a second level. To advance and progress in life Mexicans express it is mainly required: 'Good education,' 'Intelligence,' and 'Hard work.' For Mexicans, the most valuable characteristics in a person are 'honesty, respect and initiative.' The majority of workers studied said that the principal reason for working are: 'satisfy aspirations in life, educate offspring's and have money.'

Alducin (1991) also added that the most important current personal objectives that many Mexicans work for are: "Lead a better family life, offer better opportunities to the children, live without worries, take care of physical health, find God, grow as an individual, have my personal business and have lots of money." He also showed that: "Most Mexicans do not want to change if that means losing their identity as a nation (see graph on page 123 of Alducin's referred work)." These traits found in Mexicans are very important when thinking and considering what Alducin, further commented about his research findings:

It worries the loss of moral values that give reason to life, together with those that are not functional in industrial or post-industrial production society's environments. At the same time, economic requirements of world markets demand other attitudes and values, many rooted in traditions, such as solidarity, cooperation, discipline, respect for people and pride in a job well done, among others. Besides some other new ones that help achieve the objectives of obtaining top quality products or services at the lowest cost, flexibility, adaptability, the search for excellence and customer satisfaction.

Only a few works of the internationally renown quality experts (see references at the back) or of the Mexican consultants like Cornejo, 1989; Acle, 1989; Ginebra & Arana, 1991; Aburto, 1992 have considered, for a successful "TQM" implementation in Mexico, some of the many particular cultural, historical, and geographical traits pertaining to the Mexican work force. Let alone, have these individuals considered Mexico's environment when directly trying to assist Mexican top managers in their process of implementing "TQM" in their enterprises.

Interesting, all these traits in the Mexican workers are the same ones that are also required in various worldwide organizations pursuing a successful development and implementation of "TQM." The key here is that these traits have not been utilized properly in Mexico. The reason: "Esquezofofrenia" (Neuman, 1988).

In this study, it has been suggested the utilization of the "TQM-SOS" methodology as a tool that can help management in the enhancement with all of the current Mexican worker's traits; that is, if the proper training, recognition, and modern supervision is provided and authorized to exist in the organization. It is a known fact that many of the

Mexican worker's traits have not been considered and appropriately applied in order to enhance the Mexican worker's participation in the organization's operative system. Thus, achieving low quality and productivity levels of performance from that which is actually possible to achieve.

The "TQM-SOS" and "C-U NEW" methodologies are tools that are planned to use and enhance collaborators motivation. At the same time the Mexican collaborators are being educated and recognized, measures are being taken in order to promote a change in their culture. Resulting in a better development of their products and services for all their consumers and users including current, future, internal, and external.

It has been my intention to consider and include all such important Mexican factors and traits in the development and proof stages of the "TQM-SOS" and the "C-U NEW" methodologies. A recent article that reviewed Mexican values and customs in relation to the management decision of building American manufacturing plants in Mexico by Forest (1994) stated that: "The future holds real promises as long as the culture, beliefs, and customs of Mexico are kept in mind," even though, "The opportunities for American business in Mexico are great."

Forest (1994) goes on to argue that: "The actual job of managing a Mexican fabricating or assembly plant is a challenge for even the best managers - because not only must the production get out on schedule, there is the added twist of dealing with a different culture and language."

Once again note, referring to the first paragraph in the introduction section No. 1.1., that I do not fully endorse Shewhart's quality improvement Cycle: "Plan, Do, Check and Action" (Banks, 1989; Walton,

1986). That is, without slightly modifying the cycle for Mexican organizations (for more details about Shewhart's Cycle, see Walton, 1986.) The main reason for this decision is that I believe that there exists serious semantic problems with Shewhart's cycle when applied to the Mexican environment. When Mexican management tries to distinguish between the "Do" and the "Action" steps, it has been found that those steps are not clearly understood. Even though it may seem to be straightforward and easy to follow and implement.

Looking closer at the "Check" step, it can be considered as an inseparable activity of an adequately prepared strategic "Plan" (Huse, 1979). Steiner (1979), in his book on strategic planning, even commented about feedback or control mechanisms. Steiner even suggested in his writings that: "Measure performance against norms.... The control (check) process is initiated with plans."

Shewhart obviously wanted there to be a continuous improvement in the quality of the organization's products or services. But Mexican organizations require a slight different approach to achieve it. Therefore "TQM-SOS" and "C-U NEW" methodologies for Mexican applications consider Shewhart's, Huse's, and Steiner's combined insights to be applicable.

In this thesis it is proposed that "Do" and "Action" steps seem to be almost the same for Mexicans. And the "Check" step is and must be normally included into the normal planning process of the organization, leaving for Mexican applications only with the "Act" and "Plan" steps available from previous references.

It is for this reason, I will proceed now to suggest the utilization of the: "Think, Plan, Decide and then Act" Cycle (Neuman, 1988), as a

more appropriate cycle to implement the "TQM-SOS" and "C-U NEW" processes in Mexico and other countries.

Considering what has been said about Mexican traits, the "TQM-SOS" and "C-U NEW" methodologies take these into account. The methodologies consider all those particular traits and needs of the Mexican worker concerning his national culture, national resources, economic situation, environment, and particular personality. More so, there is a thoughtful consideration to the important comments also offered by Massie and Lutyens of which they have both expressed the following in relation to implementing foreign approaches in different cultural settings:

The problem is quite similar to that of transplanting an organ in the medical field: a healthy organ may function nicely in its home environment (the original body), but be rejected, or unable to function properly in the body of the recipient. (Massie and Lutyens, 1972)

Considering the situation previously mentioned, trying to adopt at face value different internationally respected teachings in Mexico would not be of much benefit to many organizations. In order to see results, the methodology used must consider each country's situation and culture. "TQM-SOS" quality is geared to providing results taking into account the country's situation.

Internal and external cultural characteristics (education level and their related value systems) are important when considering the appropriate future methodologies in order to develop the required "TQM-SOS" environment in any organization. As for the process of better defining customer (consumer-user) needs and the adequate procedures

or operations required, a true understanding is necessary. These aspects should be of special interest when intending to implement "TQM-SOS" and "C-U NEW" methodologies in any country, as well as when planning to deploy any other operative, quality, or productive systems.

Harris (1991), in his book The Customer is King!, commented that "Customer Service is an attitude" and suggested a comprehensive 12-point guideline, or action plan to achieve this "attitude". The first and third points allow us to understand why it is required that more managers completely satisfy their current or future customers' needs. While at the same time, they must be able to adequately implement those methodologies in their organizations oriented to achieve customer satisfaction. Harris (1991) suggested:

1) Customer service must begin at the very top of the organization with the chairman, president, and upper-level management. 3) As you interact with your customers, make sure you really listen. Don't hear what you want to hear. Listen to what they are saying.

Considering Harris' recommendations, it would then be necessary first to involve top management in the continuous improvement process of customer satisfaction. Then management must accurately understand what customers are actually saying in regards to their product or service. Harris' does not give any final steps on how and what must be listened to or done first in relation to customer comments. He does, however, give proper guidelines in relation to the questions and roles to be played in organizations that have clear intentions to have the customers consistently in mind.

Harris (1991) continued arguing that:

The first step in a successful and ongoing customer service program is to know everything there is to know about your customers. An easy way to make certain the right questions are being asked is to trade places with the customer. If you were the customer what sort of things would you want the purveyor of the goods or services to know about the product?

Similar questions and roles are completely suggested and fully explained in reference to the consumers-users expressed needs in the "C-U NEW" methodology.

### **3.3 "TQM-SOS" and "C-U NEW" Methodologies Justification.**

Total Quality Management must begin not just with the customer in mind as many others have already mentioned. It must be done keeping in mind the customer and what the customer really needs.

Not many authors deal with a complete methodological approach to adequately address, fully understand, and adequately define a 'customer's needs assessment methodology'. This would allow for an enhanced consumers' and users' satisfactory satisfaction. Some of the papers reviewed included: Mickelson, 1986; Collins, 1987; Ishikawa, 1989; Harris, 1991; Houser & Clausing, 1991; Cali, 1993.

A comprehensive analysis of all the recommended steps in achieving the customer's needs understanding and satisfaction are part of the "TQM-SOS" and "C-U NEW" procedures. "TQM-SOS" and "C-U NEW" approaches for total customer satisfaction have been attempted in different industries' workshops since 1986, the year that I used the first

drafts of these two methodologies in various organizations. All the required steps of the "TQM-SOS" and "C-U NEW" methodologies will be presented and reviewed in more detail in the next chapters. The results achieved with these applications will be commented on later.

"TQM-SOS" is an advanced tool that intends to obtain and understand the customer's needs even before starting its products and services development process. The main objective of the "TQM-SOS" and "C-U NEW" methodologies is to begin with a clear understanding of the customer's needs. If this is accomplished, then the organization will be able to better define and deploy the required strategic and operative systems to provide the consumer with what he or she needs.

Using "TQM-SOS" and "C-U NEW" methodologies modern companies (see figure 1) can have a complete understanding of current or future customer needs. Furthermore, these methodologies are completely applicable in different organizations.

It is always useful information to review how different industries or businesses have renewed and rejuvenated their operations after implementing new philosophies within their enterprises. Observing closely the importance of basic characteristics on the approaches used by those organizations to improve their operations, similarities can be found. Once this has been done, one must decide what is useful to him or has a resemblance to the "TQM-SOS" and "C-U NEW" methodologies proposed here.

Performing such a study would allow for plenty of feedback from top managers regarding procedures, rivals, and evaluation of their personal successes or mistakes. One of the most recognized

international comebacks is explained by Carlzon (1987), in relation to his managerial work with Scandinavian Airways System (SAS):

Remarkably, many business executives begin by devising goals and strategies, and only later look back into an examination of the business climate and the customer's needs. Obviously, this is proceeding in the wrong order. How can you know what your goals or strategies should be if you don't have a clear picture of the environment you're working in or what your customers want? Sadly, by the time many businesses recognize they should have planned the other way around, it's too late.

Given today's increased competitiveness and emphasis on service, the first step must be to acquire a customer orientation.

To a certain extent, this means looking at your company and deciding, from the customer's point of view, what business you're really in.

The response to that question will go a long way toward determining how you will organize your company to provide the best service.

When you are oriented toward your customers, you are probably in the business of providing them with a service in addition to the 'hardware' itself.

Another frequently cited example is Iacocca's renewal of the Chrysler Corporation. Iacocca (1985) stated:

In my first day in Chrysler I observed that there reigned the most absolute chaos. I must recognize that during my first term in Chrysler I was very near the shipwreck. At that time there were many small empires in the organization and each one gave or cared nothing about what their neighbors were doing.

They just limited their tasks to build cars, store them in the special place for that and afterwards wait for somebody to take the cars away. There was a time that there were in inventory up to 100 000 cars at the same time. Manufacturing cars became a game of riddles. Nobody listened to what the customer wanted or needed, nor to the requests of the distributors, that were based on what their knowledge of purchasers preferences'. The result was a vast accumulation of products and a continuous economic nightmare. Everybody worked for himself. Sales and manufacturing were under the orders of the same sub-director. This was unthinkable, at least for me, because those were two basic activities sectors very differentiated. To make things even worse, there did not even existed the minimum contact between both spheres. The ones of manufacturing, built cars without even bothering to interchange opinions with salesmen.

It is needed that all involved in the delivery of a product know exactly what is their mission and how it fits with the rest of the participants.

All the problems at Chrysler can be simply summarized as: 'there was no team'.

Moreover, at Chrysler Corporation there was not at that time an adequate implementation of traditional "TQM". "TQM-SOS" and "C-U NEW" methodologies would have helped them to achieve the 'customer needs understanding' required to satisfy their needs.

Both Scandinavian Airways and Chrysler Corporation needed to develop a system molded to their needs to achieve the expected success and better serve their customers. This of course does not go to say that they did not experience a lot of trial and error attempts until the appropriate results were achieved.

### **3.4 Main Objectives Sought with the Development of the "TQM-SOS" and "C-U NEW" Methodologies.**

"True quality characteristics should initially be expressed in the customer's own words, not in the language of the engineers. It is also necessary to determine: How the customer uses the product and how it should be used?" (Ishikawa, 1989).

The "TQM-SOS" and "C-U NEW" methodologies are designed as adequate tools to help organizations solve their current problems equivalent to those troubles of the organizations who were successfully able to achieve their comeback.

The main objectives being pursued with the development of the "TQM-SOS" and "C-U NEW" methodologies and research effort can be summarized as:

1. Offer an adequate methodology for understanding customer (consumer-user) needs.
2. Present an improved methodology to enhance "TQM" implementation process in interested organizations, regardless of the product or service offered in the marketplace.
3. Describe various cases of the actual use and application of these methodologies and discuss the real achieved results in various organizations.
4. Comment about possible enhancements of the presented methodologies and further research areas.

5. Help organizations to become more productive and better satisfy their customers (consumers and users).

Top, Quality and Marketing management experts assert that the identification of customer's needs is important for the survival of the organization (Kotler, 1984; Ishikawa, 1986, 1989; Juran, 1990). However, as top managers know from practical experience, it's difficult to accurately define customer needs. Nonetheless, customer needs identification has to be properly addressed. But how? This Doctoral Thesis provides such a methodology.

There is a tremendous amount of information available concerning the importance of the "Customer" ("Deming, 1982; Crosby, 1979, 1984; Mickelson, 1986; Collins, 1987; Ishikawa, 1989; Cornejo, 1989; Juran, 1990; Parasuraman et al., 1990; Harris, 1991; Slater, 1991; Houser & Clausing, 1991; Cali, 1993). Yet, there are no clearly defined methods to understand the customer and his or her expressed needs in an efficient way. Most likely, then, the customer often gets caught between desire and action. Firms sometimes cannot even act in the customer's favor, because they do not know in detail how to do it.

Furthermore, the firm often tends to get set in its own way losing focus on the customer. Even when there is plenty of information on customers' needs and wants, management still faces the challenge of implementing adequate procedures in the context of an organizational environment that may resist change. This brings us back to the concept of teamwork and employee involvement. The members of the organization must work together to understand customer needs so that the organization can be responsive to them.

"TQM-SOS" is designed as a systematic approach that considers both favorable elements of the traditional "TQM" and Employee Involvement approaches. Lawler (1994) argued that this combination of factors can be possible and that such an approach has been tried already in some organizations. .

In addition, experts recommend that firms must ask and listen to customers about what they want with respect to the current product or service being offered. Specific guidelines to accomplish the important corporate objective of satisfying customer needs can be enhanced with the help of "TQM-SOS" and the "C-U NEW" methodologies.

Various research papers, books, and articles as we have seen, stress that one of the topmost objectives of the firm is to satisfy its customers' needs. However, there is a need for specific and completely supported guidelines about how to define and afterwards employ such needs (see the tables at the end of this thesis, specifically Table 11).

In this dissertation, adequate guidelines will be offered to help managers define and understand customer needs and use them as an important guiding light for their strategic operations system planning. It is important to recognize that great improvements have been achieved lately in some organizations with the application of the Quality Function Deployment (QFD) Technique (refer to Table 11) to satisfy customer needs but significant advances are still possible, as will be shown in chapter 5 with the utilization of the "C-U NEW" and the improved "TQM-SOS" methodologies.

"TQM-SOS" and "C-U NEW" methodologies will be useful for all kinds of enterprises interested in attaining "Quality-Productivity for Total Customer Satisfaction" as well as help them fully develop its required

supporting organizational culture in any Mexican or international environment.

"TQM-SOS" and "C-U NEW" methodologies will be defined in such a way that it will be possible to apply them in existing or future organizations, regardless of national origin, location, product, or service currently offered or planned to be offered. It also will not matter when considering the development of new products in the marketplace, its operating volume, or its size. This objective will be easily achieved considering that organizations will have a proven tool available that will help them first understand what its customer's needs are and thus design, manufacture, and distribute the related products or services.

### **3.5 Requirements Needed for Successful Implementation of the "TQM-SOS" and "C-U NEW" Methodologies in Mexico.**

"Lew Young and others were right: The customer is ignored or considered a nuisance" (Peters & Waterman, 1984).

An organization that plans to implement the improved "TQM-SOS" culture, one of two principal methodologies discussed in this dissertation, must try to develop and efficiently attain the requirements that will be mentioned next.

As the references have shown, the "TQM-SOS" implementation process demands that everybody in the organization understand, assimilate, and continuously work toward the understanding of the following managerial areas of concentration:

### **3.5.1 Internal and External Consumer and User Importance for the Offered Products and Services.**

"Excellent organizations know to listen, and are obsessed with quality, reliability, and service" (Peters & Waterman (1984).

In an organization where the customer's needs satisfaction is the topmost goal, as it should be in a modern organization, it is mandatory to understand who and what are the customers and his or her needs.

In any organization where different activities or operations are required to manufacture and generate the products or services required by its customers, it is necessary to distinguish between internal and external customers and their potential needs. Ishikawa (1989) stated that: "The next process is your customer," to help us better understand the meaning of the "internal customer" concept within an organization.

Cooperation and participation is then necessary to achieve those internal customer needs satisfaction. But before this can be accomplished, it is important to know those needs and analyze them if the company is in the position of being able to satisfy them. The methodologies presented here, can also be used to define verbally expressed customer needs. With those needs specified and understood by top management, strategic operations planning activities can be appropriately carried out. The idea is to improve the general process quality, efficiency, and productivity so to achieve a better internal and external customers' needs satisfaction.

In comparison, external customers are all parties, users, and consumers with the potential of purchasing, distributing, and sometimes using the organization's products or services. User is the final "person" in the distribution line that will "directly utilize" the product or service. Users are the ones who will ultimately suffer or receive the expected value of the article paid for. (for clarification of terms used in this section, review section 1.2, where various operational definitions are presented).

Carlzon (1987), commented:

Only the customer, and the customer alone, will pay our costs and provide our profits. So, we have to conduct all business planning from the customer's point of view. Who knows best what the customer wants? Of course, those who work out in the front lines, closest to the market. Consequently, it is those people who should have maximum influence on how to shape our products, and the greatest amount of responsibility and authority should be pushed their way.

A customer-service orientation culture will be offered and requested to all participants of the organization to achieve the expected quality and productivity goals during the training sessions of the "TQM-SOS" and "C-U NEW" methodologies.

### **3.5.2 Top Management Involvement and Participation in the Training and Implementation Processes.**

As stated, to achieve organizational excellence, it is a must to always satisfy the needs of the customer with both products and services. Products and services that are created considering customers' needs,

free of errors the first time, and that productively involves all the required areas of the organization are those that most always satisfy the customer. (for more details, see Figure 2).

Top management's learning, participation, and guidance with its personal example will then be copied and followed by subordinates. If hard work, honesty, recognition, motivation, closeness, and cooperation with fellow workers is shown by managers in their every day activities, great accomplishments can be achieved by the rest of the organization. The best way of managing an organization is by moving around with sleeves rolled up, untied ties, and open eyes. Others suggest as the most appropriate procedure to achieve organizational results: "To Manage By Walking Around."

Beyer and Trice (1978) commented about the implementation of change, that: "Managers and supervisors usually play key roles in the implementation process of various types of policies in an organization." Cornejo (1989) argued in relation to the Mexican top managers he studied:

If something truly motivates people is the challenge of doing things right, but it is necessary to know how to express such message, transmit it enthusiastically, dignify it and enrich all necessary functions in an organization, because to achieve excellency, there are no activities that are more important than others: all are equally important.

Senior managers must be invited to participate in all the organization's activities to implement "TQM-SOS," from the first training sessions to all the next implementation steps. They also need to be involved in the different priority projects with which the interdisciplinary

groups will be involved. They also must participate in those teams to better define and voluntarily manage the improvement of the quality of the products and services offered. Top managers also will be directly involved in different projects to improve the current levels of productivity of the different areas of the organization. A "Continuous improvement" motto will be necessary from this point on.

Kotter (1990) argued that:

Mary Kay Ash and her management understand that people want to feel good about themselves but often do not because a variety of basic human needs are unsatisfied. They also know that when an individual or a company is able somehow to help people satisfy a number of these needs, normal human beings often turn into dynamos. It is the psychological equivalent of giving a starving man, who cannot even walk, well-balanced meals.

### **3.5.3 Strategic Audit of the Organization. Actual Vs. Future Comparison, Vision, and Mission Statements Review. Strengths, Weaknesses, Opportunities, and Threats.**

An analysis of the strategic position, vision, and mission are essential for an adequate diagnostic of the actual situation of the complete organization.

This diagnostic is composed of studies and analysis of current customers, consumers, users, products, services, suppliers, methods, technology, markets, structure of the organization, sales, marketing, production, operations, management, forces, weaknesses, and threats

and opportunities, to mention some of the factors that should be studied and evaluated.

Having obtained a "picture" of the organization, it is then possible to state the expected and desired future situations of the company (Ackoff, 1974). With this, it will be easier to derive goals, objectives, and priority projects that will surely help the organization achieve the sought future quality-productivity goals or objectives (see Figure 3, adapted from: Huse, 1979).

The plans that will be strategically defined later must lead the organization to decision process making, action, measurement, and feedback continuously to achieve the planned future of the organization. It is always important to remember and consider first customers and their needs. This would lead to a part of the new operational philosophy of the organization. The Vision and Mission statements of the organization must then be aligned with a continuous improvement cultural approach to satisfy their current and future consumers and users.

Ouchi (1981) described various Mission Statements, Company Philosophies and Statements of Corporate Objectives of different successful North American corporations in his work and their importance. (Important Author Note: North American corporations were the ones normally located in the US, but that in the near future with NAFTA in place, this usual expression might be changed to 'MEXICANUS,' people or organizations that live in Mexico, Canada, or the United States).

Several of the mentioned organizations have very interesting Corporate Objectives worth their review and are addressed by Ouchi (1981). One is related to the Hewlett-Packard Corporation and states:

Customers: To provide products and services of the greatest possible value to our customers, thereby gaining and holding their respect and loyalty. The success and prosperity of our company will be assured only if we offer our customers superior products that fill real needs and provide lasting value, and that are supported by a wide variety of useful services, both before and after sale.

Management: To foster initiative and creativity by allowing the individual great freedom of action in attaining well defined objectives.

Ouchi (1981) also presented the Philosophy Statement of the Dayton-Hudson Corporation. In the first section transcribed here, Dayton-Hudson presents its Strategic Mission and Direction Statement:

Dayton-Hudson Corporation is a diversified retailing company whose business is to serve the American (Note: U. S. A.) consumer through the retailing of fashion-oriented quality merchandise.

Serving the consumer over time requires skilled and motivated employees, healthy communities in which operate and maximum long-range profit. We are committed to meaningful and comprehensive employee development, to serving the business, social and cultural needs of our communities, and to achieving levels of profitability equivalent to the leading firms in industry.

Thus, Dayton-Hudson Corporation serves four major constituencies: consumers, employees, shareholders and communities. The common denominator in serving this constituencies is profit - our reward for serving society well. Long-range profit is thus our major responsibility so that we can continue to serve our constituencies in the future.

If an organization does not have an adequate picture of the actual situation and if does not clearly understand the actual influences that the environment is exerting on its operational systems, as well as on its customers' needs, then it will not be able to continually satisfy its consumers and users (see Figure 4 for more details).

Goldrat (1984) recommended through some of the characters played in his interesting novel, where he analyzes a manufacturing organization with productivity and quality problems, that: "Producing a quality product efficiently: that must be the goal. You can't make money for long without a quality product. But, how do I make it happen? Create the culture first."

#### **3.5.4 Development of Total Quality Management Strategic Operations System and Teamwork Culture.**

"TQM-SOS" will be used to continuously evaluate and assess consumers' and users' needs and match their verbalized expectations with adequate products and services that must be productively manufactured and offered by the organization. The purpose of "TQM-SOS" is to create a continuous improvement culture in the organization in benefit of its consumers and users.

Team participation and involvement will play a crucial role in the achievement of the organization's objectives more in the future than in the past. This is one of the reasons it also will be recommended the continuous utilization of a teamwork environment in the firm. If better products and services are to be offered from to the organization's customers, then teamwork is essential.

Rosabeth Moss Kanter (1989) commented that:

Different companies, then, at different ends of the spectrum, are meeting in the middle.... They are converging on a new model. It is a post-entrepreneurial model that marries the best of creative, entrepreneurial approach with the discipline, focus, and teamwork of an agile, innovative corporation.

Also, the environmental conditions must be structured in such a way that it would promote involvement and teamwork to better handle all situations or problems that do not lead the organization toward the achievement of its planned goals. Quick (1992) argued that:

The chief advantage of using your team to solve problems and make decisions is that you bring different resources together to interact and to develop more options than you would be able to enjoy if each member were acting on his or her own. There is no question that synergy in an effective team produces more than the sum of its parts. Working in teams results in benefits for both team members and the organizations in which they work.

Teams can be interdisciplinary at the management or operative level, known as task forces. There also can be groups of people of the same area or organized per department, known in Japan since its general application in 1962, or later in the United States as a Quality Circle. Quality Circles' operative objectives and characteristics are briefly described in Table 8: Section c.

The phenomenon of synergy also justifies Quality Circles' approach to problem solution or quality productivity improvement

employing teamwork effort. It is important to note that: Two or more thinking 'Heads' working together, can come up with smarter and more creative and applicable ideas than one sitting up there alone in his or her ivory tower.

The Total Quality Circuit (see Figure 2 for more details) allows the organization to perform more effectively if a teamwork approach is used to define quality-productivity problem causes' and then implement their creative solutions. It is important that team members participate in specially designed sensitizing, training, and work sessions to enhance their participation and decision-making processes, allowing them to become proficient in their continuous real-life applications.

### **3.5.5 Analysis of Problematic Areas and Usage of Quantitative Tools for Product-Service Improvement and Problem Solution.**

As mentioned, teamwork and individual effort are required to evaluate the current organizational position and develop strategic planning programs to improve its products' and services' quality and productivity.

Statistical Process Control (SPC) tools become handy to managers also interested in improving the quality-productivity of their processes. Ishikawa (1989) even commented that:

Engineers specializing in a particular technology, especially those with experience or who are authorities in the field, are often extraordinarily overconfident and are consequently extremely stubborn and unwilling to listen to the opinions and advice of others. Since they do not know that an engineer who is ignorant

of statistical methods is only half an engineer, they find it difficult to accept Quality Control and statistical methods.

Various teamwork tools and processes for decision making and problem solving are presented in Table 8. In the sensitizing and training phases of the "TQM-SOS" methodology, "SPC" tools are offered to all participants, including senior or top managers. (For more books and references dealing with "SPC" please review the different authors cited at the end of this thesis.) It also is important to remember that in this paper I will use interchangeably the operational definitions related to Quality Control mentioned in Section 1.2.

### **3.5.6 Employee Training And Recognition.**

Many organizations consider that their most important resource is their people. Adequate employee recognition systems must be placed in action so the organization's most important resource does not quit because of accumulated frustration or boredom. Change resistance minimizing measures must also be in place so everyone in the organization works for themselves, their families, and their firms or countries.

Top managers can use as a guiding banner the same one that has proved successful for me. Let collaborators know that: We are not looking for people to blame for our mistakes, but for people with solutions, people that are willing to participate and work hard to improve their current economic situation and that of the firm, through the offering of better products and services that satisfy the needs of our current or future consumers and users appropriately and at the right price.

It also is important to state that for the newly defined modern organization, I am intending to help, a different culture and structure is required. To achieve this, organizations should continuously consider and work with a similar approach to the Sociotechnical system form of enterprise as its main organizational design (Hellriegel, Slocum, & Woodman, 1989). This approach will help firms attract and maintain the required human and technical resources that nowadays are needed to grow and participate in an interesting and rich work environment.

Hellriegel, Slocum, & Woodman (1989), commented without offering practical guidelines as to how we are supposed to follow what they wisely recommend:

If the organization is characterized by distrust, back-stabbing, and hostility, creating self managing work groups is likely to be very difficult until some degree of trust and cooperation is established.

Job satisfaction and fun must be continuously planned for as the principal mode of desired way of working and as a must by any modern organization that intends to remain and prosper in business. Along the same lines, teamwork, active participation, creativity, leadership, participant recognition, rewards, and continuous involvement will be promoted and allowed to exist by top management in organizations that pretend to be triumphant and stay in business in these challenging times.

Peters and Waterman (1984) added:

Successful organizations can be also considered as economically healthy as the most economically sound of all organizations. Their set of values integrate notions of economic health, customer service and meaning for its personnel.

Dale and Cooper (1992) argued that:

Positive performance and achievement must be recognized, and success rewarded. People must see the results of their activities and be constantly encouraged through active communication. For "TQM" to be successful it is essential that management must communicate as never before.

To accomplish all the objectives that "TQM-SOS" and "C-U NEW" methodologies want to achieve, it will be mandatory to sensitize and train all the organization's collaborators about this new type of organizational culture. It is also important to train and sensitize personnel about the behavior it is expected from each of the participants. It will be required to communicate the organization's human resources about the many rewards that will be offered to those people that voluntarily work toward continuous improvement and total customer satisfaction.

The six different requirements just explained must be thought out, planned, decided, and implemented throughout all the organization on a "Small Wins" (Weick, 1984) type of approach, so in the end, a successful "TQM-SOS" implementation can be achieved.

Top managers must participate all the time in this major organizational effort if adequate results are to be expected. Proper employee sensitizing, training, and recognition also is needed to assure satisfactory results. If management confides in its people and allows them to get involved in quality and productivity improvement activities, the results will be interesting for the firm.

I truly believe that if we expect, allow, and confide in people they will want to do a better job. If not, after three new opportunities, given to those obstinate employees, we still can take stronger measures, can't we? That is the reason we are managers and they are not. There is always time to go back to the traditional and totalitarian managerial position.

To make my last point even stronger, let me introduce one of the most interesting pieces of research I found while doing literature reviews for this thesis and for my doctoral program. It dealt with "Expectancy Effects" and it is entrenched in the Behavioral Science field of knowledge and was described by Rosnow and Rosenthal (1984) as:

Recent experiments have shown that an investigator's working hypothesis and expectations can sometimes come to serve as self-fulfilling prophecies. In one study, a dozen undergraduate experimenters were each given five rats that were to be taught to run a maze. Half experimenters were told their rats had been specially bred for maze brightness; the remaining experimenters were told their rats had been bred for maze dullness. There were, of course, no actual differences between the rats assigned to each of those two groups. At the end of the experiment the results were clear. Rats that had been run by experimenters expecting brighter behavior showed significantly superior learning compared to rats run by experimenters expecting duller behavior. (Rosenthal and Fode, 1963).

Why not let our expectations for our collaborators, employees, kids, or students be high? We can let them know that we believe to have good, efficient, and productive workers, workers that can turn out quality products and services the first time without any excuses. We can expect

that our customers will receive a quality product and service and let our collaborators know it, and see what happens later. If rats can do it, I bet humans can too!

## CHAPTER 4

### **TOTAL QUALITY MANAGEMENT STRATEGIC OPERATIONS SYSTEM ("TQM-SOS") AND CONSUMER- USER NEEDS EVALUATION WORKSHOP ("C-U NEW") METHODOLOGIES.**

"The consumer is the most important part in the production line. Quality must be oriented towards consumer needs, current and future" Edwards Deming (1982).

On several occasions, I have recommended to many people to read a book or an article from the end to the beginning, that is, starting with the conclusions or recommendations section first. If what is read in those sections seems feasible to learn or do then return to the beginning and start over.

Following my own advice, I began Brockas' (1992) book from the end. Interesting enough, he recommends something in Appendix A: "When all else fails... 75 Quick start ideas." His first two suggestions (perhaps the most important) are: "1) Have a blue-collar worker visit a customer. Let him also be the factory floor rep. And, 2) Play with your product. Try to use it as though it were the first time you see it" (Brocka & Brocka, 1992).

"TQM-SOS" and "C-U NEW" methodologies are purposely designed to minimize the possibilities of failure of the traditional "TQM" implementation process. The sole purpose is to ensure that things are

done right since the beginning of the "TQM-SOS" implementation effort. Why wait until all other approaches fail, as Brocka and Brocka suggest, to finally start in the right direction?

The "TQM-SOS" and "C-U NEW" methodologies are primarily directed to the consumer and user needs assessment and offer managerial directions and guidelines for the appropriate satisfaction of customer's verbally expressed needs. With these efforts, materials, labor, and money will be finally saved; and products and services will be designed and developed as customers need them.

The expected organizational goals for companies developing and applying the "TQM-SOS" and "C-U NEW" methodologies, should be the satisfactory understanding and implementation of the methodologies from the beginning of the improvement effort. This would result in having the customers more satisfied with the services or products provided by the organization. As for the organization and its collaborators, the rewards of including all participants, employees, shareholders or stakeholders, and society in general, will bring about a more content, satisfactory, safer, and prosperous job, as well as a healthier environment.

Regardless of the research and intended applications of the traditional "TQM" implementation processes, I have concluded that there is no consensus, or a generally accepted implementation methodology to follow. The goal of this incomplete "TQM" theory is to achieve the expected productivity levels, quality, and more orderly results in total customer satisfaction.

The "TQM-SOS" and "C-U NEW" methodologies, however, do consider all the factors that should be reviewed and analyzed as a complete strategic-planning exercise which in turn will help top managers

achieve the expected product-service quality and all basic customer satisfaction objectives. For this thesis there also were reviewed studies on these types of exercises ("TQM-SOS" sensitizing, training, strategic data gathering, consumer and user needs assessment, information analysis, priority projects definition and implementation). The results have shown these to be methodologies worth following. This is especially true for Mexican, North American, or other institutions pursuing significant teamwork efforts to achieve the required organizational objective of "total customer satisfaction."

Once "consumer and user needs assessment" is considered a basic organizational goal the firm can obtain a privileged competitive position by developing better products and services for these customers relative to the competition. This privileged competitive position will help firms improve their current financial, operative, and other corporate results. A privileged competitive position is only achieved after an adequate strategic operation systematic plan is pursued, while at the same time developing and implementing the means of better satisfying the customer's needs.

The new definition for this modern competitive organizational advantage will be: Knowing beforehand what your customers' expressed needs are and then be in the advantageous position of manufacturing and delivering the products as needed, the key being that you are able to provide the expected products or services, while at the same time staying within the quality needs even before your competitors can, if the exact or adequate academic definition of modern competitive organizational advantage, provided above, is correct. It is strongly believed that it is still worthwhile to pursue the organized implementation efforts to apply "TQM-SOS" in a real environment. After the successful implementation of "TQM-SOS", better products and services are available to the organization's

customers. Obviously, progress and growth objectives will be obtained for collaborators of the firm, as well as for the organization.

An improved set of guidelines and required steps that a company interested in its customers satisfaction should follow will now be defined. It is important to take into account the interaction between product or service Quality, Productivity, and "TQM-SOS." It is precisely the "TQM-SOS" and "C-U NEW" methodologies that contain all the necessary and required activities that an organization should follow to achieve customer satisfaction. This becomes essential as a company begins to plan its future intended position in the market place and in the minds of their current and future customers.

At the same time that there are constant changes and emergence of new paradigms in today's society, there also is a continuous alteration in traditional values and cultural rituals. This has resulted in a push from management and organizations toward improved products and services which would be satisfactory to the current or future consumer and user. For a modern organization's survival and growth, it is mandatory that top managers come down from their nicely furnished offices and isolated ivory towers. They must begin to work closer with the firm's collaborators and customers, both internal and external. Only by making such drastic changes can managers assure their organization's subsistence and reemergence. Management is being required to go back to basic managerial techniques, as well as hard, productive, and satisfactorily work hours if they want to achieve successful productive and quality strategies.

#### **4.1. "TQM-SOS" and "C-U NEW" General Expected Objectives.**

The principal objectives that the "TQM-SOS" and "C-U NEW" methodologies intend to achieve can be summarized as:

1) Define the appropriate steps required to use and implement "C-U NEW" and "TQM-SOS" methodologies in any particular organization (Applicability in Manufacturing or Service Industries).

2) Improve the Strategic Operative System Planning Process: The utilization of the methodologies presented here is recommended as a means of evaluating and improving an organization's current Mission Statement and Strategic Operative System. If it is not adequate or must be redefined including short and long term objectives, the following must be addressed:

- a) Who are the main current and future customers (consumers and users) of the organization?
- b) What are customers' expressed current or future needs and expectations in regards to the product and service currently offered by the organization?
- c) What and how the products and services that organizations generate must be offered in the marketplace to better satisfy their customer's current or future needs?
- d) How will those expected products and services be generated to satisfy their current or future customer's needs?
- e) What programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction as well as the required motivation and flexibility to change in creative ways to improve productivity continuously?
- f) Make changes as necessary for the betterment of the organization's culture and structure. This would allow it to achieve more efficiently all its expected corporate objectives:

Understanding the Mission of the organization.  
Organizational Cultural change.  
Personal attitude change.  
Personal growth and Job Satisfaction.

g) **Improve Design and Delivery of Products and Services:** Help top management define their current and future consumers', and users' needs. Then translate such expressed expectations in internal specifications that will help strategically organize all operative activities of the firm. All areas must be organized in a more productive and efficient way, including areas in charge of designing, manufacturing, building, constructing, providing service, promoting, marketing, selling and delivering the products and services currently being required by the customer.

h) **Improve Operations Management Process:** Clarify "TQM-SOS" and "C-U NEW" methodologies to top management and what it can do for them and the firm. Furthermore, what is or should be a top manager's principal role in an organization pursuing such quality or excellence objectives. Then how its complete organization must be structured and its people evaluated, recognized and compensated for all their efforts done in achieving "Total Customer Satisfaction." Some of which are:

Leadership: Development and Promotion.  
Team-work and Brain-storming development.  
Good training tool for "TQM-SOS" and "C-U NEW" future understanding development and applicability in the firm.

i) Improve in general all the organization's quality and productivity results. Also take a look at its general efficiency and its communications process to better satisfy consumers and users: This will be accomplished if adequately trained leaders are allowed to work with the tools mentioned in the methodologies here being studied. One prime objective sought here is:

Organizational growth.

3) Generation of "Auto Purchase Decision = Total Customer Satisfaction = Total Quality-Productivity Cultural Attitude in the Organization" (Neuman, 1988)".

The ultimate test of quality would be the following: "If the people individually or as a team working in the organization are willing to use the

product-service they themselves generate, paying for it, or even free, then we can say that the product or service has the required quality."

4) "Change Resistance Reduction": If everybody in the organization is assured that the main purpose of the "TQM-SOS" implementation process is to achieve a higher satisfaction of their products or services for their internal or external customers the company is left to benefit. However, all the departments involved must participate with a "Quality-Productivity" state of mind.

Taking it a step further, there needs to exist a continuous improvement on the cultural approach required in the minds of everybody invited to participate and offer ideas and creative problem solutions. Adequate employee evaluation and recognition measures must also be developed from the outset. To achieve this, it will be necessary:

a) Continuous improvement promotion.

5) "SPC Continuous Tools Usage Promotion": With regard to this, "SPC" group training sessions are specially programmed in order for each incipient team just organized to analyze and solve particular practical problems with the help of the basic and advanced "SPC" Tools. The vivid simulations and practical exercises developed for training purposes also help the participants understand and better apply the explained and taught concepts to all their daily activities.

6) Real Life Representation through Small Scale Simulation: Each participant works during "C-U NEW" workshop with products and services that are similar to those that he/she currently manufactures and delivers within their daily operations for training and practice purposes.

It is important to note here that the questionnaires presented to participant managers during the interviews after they participated in training and consulting efforts to implement and use the "TQM-SOS" and "C-U NEW" methodologies were developed with the purpose of studying if the organizations that were previously exposed to the methodologies achieved the six major objectives just described.

#### **4.2 "TQM-SOS": An Improved Process for Total Quality Management Strategic Operations System Implementation to Achieve Total Customer Satisfaction.**

The methodologies described here were developed after many years of personal experience and continuous work in various organizations in attempts to improve their operative processes. In addition, the objective also was to help these organizations learn how to achieve better "Total Quality-Productivity" results. Furthermore, these ideas are supported by those authors mentioned in Chapters 2 and 3, of which I studied.

The statements and references, which have been presented, were used for different training or implementation exercises as an important element in the "Total Quality Management Strategic Operations System" development. Different types of exercises were given in various organizations or course-work activities to see the possible merits and applicability that the "TQM-SOS" and "C-U NEW" methodologies can have in actual implementation efforts.

From the literature reviews presented in Chapters 2 and 3, it was shown that "TQM-SOS" and "C-U NEW" types of methodologies are urgently needed for real-life implementation and deployment in many

organizations wanting to improve their current "TQM" implementation results, as well as their present level of customer satisfaction achievement.

Recall that the principal hypothesis in this thesis is: organizations and top management that appropriately follow the "TQM-SOS" and "C-U NEW" implementation guidelines in order to achieve those objectives related to customer needs, understanding, and satisfaction will improve their operation results. Once this is achieved, an organization will continually strive to better serve and satisfy its current and future consumers (see Figure 1).

One of the main goals of this chapter is to show how managers, as well as their organizations, can be able to experience improvements personally and organizationally by implementing "TQM-SOS" with the traditional "TQM" methodology or in an independent effort. A review of the results achieved by the "TQM-SOS" and "C-U NEW" methodologies' implementations will be discussed later in Chapter 5.

#### **4.3 "TQM-SOS" Implementation Activities.**

In this section, there will be presented a series of ten sets of activities which are part of the complete "TQM-SOS" strategic diagnosis of the firm, sensitizing, training, and implementation processes (Figure 16).

After careful study of other successful or failed trials carried out by various organizations which counted on a wide array of different consultants, procedures, theories, and references, it was possible to justify even further the merits of the "TQM-SOS" and "C-U NEW" methodologies presented here. (see Eskildson, 1994, for more details). It is important

not to forget that the "C-U NEW" workshop fully described in Section 4.4 is considered by itself a fundamental part of the "TQM-SOS" methodology.

From the first stage of training and of the development process for the "TQM-SOS's" implementation effort, the organization must invite and allow top management to wholeheartedly participate during all the sensitization, training, data gathering, analysis, priority problems solution, and implementation steps needed, as well as participation during all the required activities in studying and diagnosing the organization's current status.

The organization will also be required to conduct a complete strategic and operative system diagnosis in order to define the organization's strengths, weaknesses, opportunities in regards to the customer's needs and its particular general operative status. The strategic and operative analysis made on the entire organization will be complete, only after applying the "C-U NEW" methodology for the analysis of their own products and services. In reference to the workshop, it will be conducted with the assistance of a team comprised of the most important managers in the organization. These managers will be required to continuously participate in the process. This last requirement, includes as well, their participation in the entire "TQM-SOS" implementation effort.

Only after careful analysis of the verbally expressed customer needs will the final definition of new products and services be possible. Such needs will be obtained, reviewed, and defined with the help of top management participation in the "C-U NEW" workshop.

Having understood the expected needs of their current and future consumers and users, management will be able to better define all the required operations, activities, and strategic plans of the organization. The

purpose is to better organize the operations of the firm, so that later, collaborators can productively and efficiently work for the organization to continuously improve customer needs satisfaction. Thus, Total Quality Management would be, in the end, successfully achieved.

The major activities that comprise the "TQM-SOS" methodology can be described as: sensitizing, training, data gathering, diagnosis, analysis, strategic operations planning development, and implementation efforts, which are graphically shown in Figures 16 and 17. The "TQM-SOS" implementation process contains several practical sensitizing, training and priority projects definition exercises. These exercises are used from the first training, and sensitizing stages of the "TQM-SOS" methodology.

In the first two important stages of the implementation and sensitization activities required to achieve "TQM-SOS" in an organization, it is essential to have the sincere and continuous participation of the top officers of the firm. One of their first chores includes their participation in the newly formed "Total Quality Management Strategic Operations System Council" (TQM-SOS-C).

This council must be implemented as soon as the decision is made to begin the "TQM-SOS" process, or as soon as possible. The purpose of top management's participation and involvement in this council is to be established as the principal guiding arm, as well as to serve as a monitor of the complete "TQM-SOS" implementation effort.

The main objective of the "TQM-SOS-C" is to monitor the development and implementation of all the priority projects being studied and suggested. It is always kept in mind that all priority projects and problem-solving efforts can be better developed only after complete

management understanding of all "TQM-SOS's" philosophical traits and intended objectives is fully achieved.

Another set of activities will require to have managers organized in various interdisciplinary groups or teams. Each team will have a specialized programmed goal in order to review one of the following: the current mission and strategic position of the organization, the operative system of the firm, the actual levels of product, service quality, and the productivity indicators, or other, and then evaluate its actual relation to consumers and users needs.

If top management wants the enterprise and its people to become "modern" (see Figure 1) through a satisfactory implementation of the "TQM-SOS" methodology in the organization, the individual and team efforts must be differently encouraged and managed.

"TQM-SOS" and "C-U NEW" implementation will actually start only with top management participation, major training, and persisting on the application efforts. Top managers will be continuously invited and expected to participate, be directly involved in and personally lead all the required training, data gathering, and implementation activities. If there is not a strong commitment by top management at the outset of the sensitizing, training, and data-gathering phases, no further organizational efforts towards "TQM-SOS" implementation achievement are recommended. Experience has shown that frustration and failure will result irremediably later on.

It has been shown that when the implementation of traditional "TQM" is only supported by middle management and supervisors, and not top management, the results are never those expected by the organization. Frustration almost always emerges. The fact is that

traditional "TQM" efforts have failed to get off the ground from the beginning. The worse result has been that the credibility in the "TQM" process in itself and from its participants has diminished after an unsuccessful effort. The next time, if a second attempt is programmed for "TQM" to be implemented, the barriers to participate from management and employees will be high.

Eskildson (1994) even mentioned that:

Discouragement and loss of motivation of all the supposedly involved people was the final result for such types of efforts, without real achievement of an appropriate and successful "TQM" implementation. Important resources and valuable time were normally lost when those failed attempts occurred.

The principal activities that should be required by top and middle managers from their employees for the successful implementation of "TQM-SOS" are:

- I. "TQM-SOS" Preliminary Organizational Diagnosis.
- II. "TQM-SOS" Sensitization and Basic Training.
- III. "TQM-SOS" Sensitization and Intermediate Training.
- IV. "TQM-SOS" In Depth Internal Organizational Diagnosis.
- V. "TQM-SOS" Objectives Definition and Strategic Operations System Planing Activities.
- VI. "TQM-SOS" Priority Projects Development.
- VII. "TQM-SOS" Required Organization Structural and Operative Changes Required.
- VIII. "TQM-SOS" Implementation Program Activities.
- IX. "TQM-SOS" Continuous Improvement Activities.
- X. "TQM-SOS" Sensitization and Advanced Training.

The analysis of all these different activities that fully comprise the "TQM-SOS" implementation effort will be presented here.

#### **4.3.1 "TQM-SOS" Preliminary Organizational Diagnosis.**

This stage requires a general overview of all the areas that the organization manages and operates. It includes a preliminary Internal Quality and Productivity Audit Exercise (IQ-PAE).

The "IQ-PAE" includes all the needed management interviews, data gathering, and actual visual observations required to fully understand the firm's current operative situation. An important section of this preliminary diagnosis is the evaluation of the current Numerical Indicators (NI) on present quality and productivity levels. The principal activities to be done in this "IQ-PAE" stage are:

- Top Management Interviews and general comments about the current operative status of the organization.
- General Observation of the firm's facilities.
- General Overview of Organizational Status:
  - Preliminary Internal Quality and Productivity Audit.
  - Major Review of Current Organizational Numerical Indicators.
  - Current Strategic Evaluation of the Organization.
- Definition of the organization's "TQM-SOS" actual implementation plan.
- Basic Internal Structural and Policies Changes.

It also is important to note that sometimes the organization will be required to consider within its particular "TQM-SOS" implementation plan,

even previously to the sensitizing efforts, that the next activities are necessary:

- Definition of the required structure and the basic "TQM-SOS" organizational general policies; so that, the new managerial "TQM-SOS" can be successfully achieved.
- Definition of the "Main Guidelines for Continuous Collaborators Involvement (top managers, middle managers, supervisors, and employees)," during and after all the training and sensitization stages for the "TQM-SOS" implementation process.

Sometimes it will be suggested to redesign the current structure of the organization to allow it to satisfactorily implement "TQM-SOS." Other times appropriate quality, productivity, and employee recognition policies must be defined from scratch. Also, major reviews of current processes or operations management results are required. All these must be considered in the "TQM-SOS" implementation plan for its future success.

The unconditional involvement of management in the organization's efforts to help change the firm from a traditional mode of operating to a modern enterprise cannot take place without their support (review Figure 1). Besides, it is also known that a good example motivates and induces workers to also participate in the process.

It is then important to stress that continuous collaborators (management and employees) involvement and participation is mandatory. This participation is required during and after the "TQM-SOS" sensitizing, training, planing, and implementation process. An effective implementation process never starts before top management learns, participates, guides, leads, and communicates it to all the employees and collaborators of the organization.

It is for this reason that getting top managers to understand and believe in the "TQM-SOS" objectives from the beginning is required. One is more likely to obtain the expected results when management is adequately involved than on those occasions where organizations don't have their absolute support.

Management needs to be asked to wholeheartedly participate and learn all the objectives that the "TQM-SOS" training and implementation programs are attempting to achieve. Management must participate from the first planning and training stages to the final evaluation stage. If this can be assured, experience has proven that the expected "TQM-SOS" implementation results can be achieved.

After making this commitment, the organization will be in the privileged position of having its administration's unconditional support. Next, obviously, the organization will need to train its staff in the "TQM-SOS" and "C-U NEW" methodologies to be able to begin improvements within the entire organization.

The "TQM-SOS" and "C-U NEW" training and participation efforts are mainly designed to discover where products and services are not satisfying a company's customers (consumers and users). If this is the case, then special priority projects must be defined to find ways of adapting or redesigning the products and services to the customer's needs.

The first step that the "TQM-SOS" methodology recommends is that top managers engage themselves in better understanding and defining their customer's current and future needs. This is exactly what the "C-U NEW" methodology does. It allows the company to identify those

needs and then strategically plan the manufacturing and delivery of these products and services. On the other hand, as previously operationally defined, a quality or productivity problem can be defined when customers are not receiving the products or services they are expecting from the firm.

Understanding and assimilating the strategic importance of the existence of internal and external consumers and users of all the current and future generated products or services offered by the firm and the continuous need for total customer satisfaction as the most important guiding forces and reasons for existence of the organization is of primary urgency for the firm and its top managers.

If the organization never loses sight of the most critical aspect of its current or future consumer and user needs, that need to be satisfied with its current or future products or services, the organization can hope to continuously improve. Consumers and users allow the organization to survive and grow. In return, the organization will be able to satisfy and accomplish its mission, achieve all its planned goals, and all its related objectives.

At the same time, the people participating in this strategically planned effort, will personally and collectively grow to benefit of the company (refer to Figure 1). Furthermore, the competitive position of the organization will be greatly enhanced, due to the increase in productivity and quality levels.

#### **4.3.2 "TQM-SOS" Sensitizing and Basic Training.**

Since the first practical and theoretical sensitizing, training, data gathering, and implementing activities required for the "TQM-SOS" development

process, it will be necessary to review and clearly state the major objectives and goals that the firm is seeking to achieve during and after adequately implementing "TQM-SOS". These objectives are clearly stated in the "TQM-SOS" implementation master plan.

Managers must continuously participate in this meritorious effort. Management needs to be trained and sensitized as well, in order to develop, by themselves, the appropriate "TQM-SOS" culture that is wanted within the organization. Top management also requires to consider the following main training and development phases as required for a successful "TQM-SOS" understanding, learning, and implementation in the organization.

The basic sensitizing and training program consists of three different modules of vivid exercises and simulations that are required to completely sensitize the organization's managers on philosophical, theoretical, and practical theories behind the "TQM-SOS" methodology. The basic training program comprises of the following modules:

#### **I. Total Quality Management Strategic Operations System Philosophical Sensitization.**

The tone and pace of the training and working meetings programmed for future "TQM-SOS" implementation should always have a joyous tone, while at the same time being critical of the current organizational status, processes, operations, and customer satisfaction level encountered during the diagnosis effort.

"TQM-SOS" and "C-U NEW" methodologies have been developed in such a way that would allow for "vivid simulations and practical

exercises." These exercises will deal with quality and productivity problematic situations currently found within the organization. The exercises and simulations, when properly implemented, have the potential of motivating participation and assure profound learning by all the employees and managers participating.

During the training sessions and in all the support materials used for training purposes, it will be clearly stated that if learning, participation, and utilization are to take place there must exist teamwork. Involvement of managers will take place by actually letting them directly participate during all the "TQM-SOS" training and implementation process phases. With this approach, it is expected that the pride resulting from the achieved results will be enjoyed by managers themselves.

Sensitization and training in this module will be developed with the help of the next workshops and vivid exercises. Various sessions specially programmed for direct management participation and learning purposes will follow:

- "TQM-SOS" main objectives and guidelines.
- Top Management participation and involvement discussion.
- "Esquizofrenia Elimination Workshop" (Neuman, 1984).
- "The Quality Gurus Symposium: Teachings of the international quality personalities. Vivid Exercise." (Neuman, 1990):
  - Ishikawa.
  - Deming, Shewhart, Dodge and Roming.
  - Feigenbaum.
  - Juran.
  - Crosby.
  - Neuman. (Mexican applications and related matters includes the "10 Points of the Anti-Esquizofrenia

Decalogue "which will be commented in this portion of the training effort). (Neuman, 1988).

- Others.

The main objectives that the organization is expecting to achieve with the implementation of the "TQM-SOS" within the firm will be discussed during the sensitization and training activities.

During the first "TQM-SOS" Philosophical Sensitization Training phase, there must exist an adequate open teamwork environment to set an early stage for management's involvement and participation in the future "TQM-SOS" development process. In this module everyone (top managers, middle managers, and supervisors) will be invited and welcomed to participate with any possible questions, suggestions or ideas. An open environment is key.

Also it is necessary to mention that:

We, the participating members of the organization and all its involved managers, will recognize the need and be continuously interested in improving our current level of knowledge, as well as our personal involvement, and that of all the participants of the firm. And, with that, achieved improved level of knowledge, be able to reduce all possible 'excuses' (main observable sign of the Esquezofrenia sickness) for not delivering a quality product-service to the organization's internal or external customers. (Neuman, 1988)

The information that needs to be transmitted to the participants in these first training sessions related to the "Esquezofrenia" theory will be supported and delivered with the help of the booklet dealing with this

serious international sickness referred to as "Esquezofrenia" (Neuman, 1988).

An overview of "Esquezofrenia" is presented in Appendix: A. The basic pathological details of the "Esquezofrenia" sickness can be reviewed in the previously referenced manual.

"The Quality Gurus Symposium. Vivid Exercise" has been described in: "Total Quality: A Strategic Overview," (Neuman, 1990), a compendium of the principal international exponents' theories. The article also includes a brief review of the history of modern quality development. (For more details about the most renown "Quality Gurus Theories," I have included a set of summaries of their current teachings and suggestions in Appendix: C.)

## **II. "C-U NEW" Training.**

In this section, the "C-U NEW" ("Consumer-User Needs Evaluation Workshop") will be described. The "C-U NEW" methodology that helps the organization to define its consumers' and users' needs, will be discussed later in this chapter (Section 4.4).

During the workshop, the facilitator mainly uses a team-work approach with a various vivid simulations to define what are the expected verbalized needs and wants that customers (consumers and users) looks for in the products or services. These products or services are specially selected for training purposes, due to their analogy with the actual ones being delivered by the organization.

During later workshops, management analyzes its own products and services currently and in the future being offered. The results achieved in those workshops can be used to define priority projects which will be used to improve the products and services accordingly. Continuous improvement of the firm can be achieved only after adequate implementation of the decisions arrived at in those priority projects efforts.

The "C-U NEW" methodology also can be applied to forecast possible future needs and to define the related products and services of potential consumers and users. The importance of actual consumer and user needs will be better understood by participating managers during this second training module. It is important to remember that the learning and actual application process of the "C-U NEW" methodology's results can help the organization achieve the following objectives:

- Definition of internal-external consumer-user.
- Definition of consumer-user verbally expressed needs.
- Definition of adequate products and services expected by the consumer-user to satisfy his/her expressed needs.
- Definition of quality-productivity problems due to current existence of differences between what the consumer-user expects to receive and what he/she actually receives.
- Definition of Priority improvement projects to solve existing quality-productivity problems .
- Definition of adequate Strategic Operations System planing, which will help review current organizational and management culture, personnel attitudes, operations quality and productivity, marketing and sales strategies and all the required activities to continuously achieve total customer satisfaction and with it appropriate business profitability.

This sensitization stage requires that the facilitator says the following to those managers participating in the workshop:

It is important to remind the reader and participant in the workshop that many people usually tend to forget in today's competitive world that: Consumers and users have always paid for the organization's growth, besides being also directly responsible of paying everyone's rent, salaries, light, phone bills, employee vacations, insurance, taxes, sport activities, profits, cars, equipment, technology, bonuses, medical expenses, IRAs, gained fringe benefits and perks, dividends, personal growth, kids' college tuition's, etc., etc.. So, better remember it again!

If management does not take into consideration these lastly mentioned forgotten facts more seriously, then only three options will remain:

First, your benefactors (consumers and users) will immediately get the picture of your memory lapses and with it, there will come lots of related headaches.

Second, your competition will be more than glad to have the opportunity to better serve your actual or soon-to-be ex-consumers-users. Instead of maintaining itself as a modern and quality company, the organization will lose its traditional position in the customer's mind.

Third, the previous result will lead not only to more headaches but, more importantly, to market share loss, profit declination, increased customer complaints, employee discontent, and turnover growth. Lastly, the organization will most likely go into bankruptcy.

In today's competitive market, top management must have in its mind that the origin and mission of the organization is to continuously achieve "Total Consumer and User Satisfaction." Total Consumer and User Satisfaction is only achieved by first training top management, so to permit all collaborators currently working in the organization also to be injected with the "Anti-Esquizofrenia vaccine".

This "Anti-Esquizofrenia vaccine" induces everybody to continuously be thinking, planning, deciding, and providing customers with products-services specially designed, manufactured, delivered, and adequately serviced (before or after sales). The key is that all the products and services will continuously be free from defects and always produced correctly the first time (Neuman, 1988), resulting in internal and external consumer satisfaction.

In addition, the organization and all its participants will reap higher profits from this type of productive behavior that is accompanied by improved culturally accepted attitudes in successfully achieving the "TQM-SOS's" objectives.

Shortly thereafter, the entire organization will be required to go back to basic operations management efforts, or in another words, meet the organization's reason of existence, which can be stated as: "Continuously satisfy its consumers and users needs," keeping in sight a modern organizational perspective (see Figure 1).

At this point, there exist only three factors that can hinder management's strategic intent and main objective of continuously satisfying the organization's customers needs. They are: the availability of information regarding current or expected consumer and user needs. The second restriction stated by Ackoff (1974), is an insurmountable

restriction, which is, the lack of a level of technology to fully satisfy verbalized customer needs. The third factor is resistance to change. This, however, can only be minimized with top management's continual participation in leading the "TQM-SOS" implementation effort.

Top management's continuous participation will permit the firm to satisfactorily implement "TQM-SOS" in the organization, that is, with the appropriate application of the "C-U NEW" methodology. The probabilities of successful implementations of "TQM-SOS" increase as long as top management is convinced of the need of achieving total customer satisfaction and gets involved wholeheartedly in the diagnosis, sensitization, training, and priority project's implementation phases.

In order to achieve the objective of defining a customer's needs, it is necessary to promote the continuous participation of all the current important inner players of the organization and at times have other specially invited participants such as: suppliers, consumers, users, service people, and others. These type of interactive groups help managers and collaborators currently working in the organization define their customer's (consumer's and user's) verbally expressed needs.

Later, a better definition of the customer's needs will be achieved with the use of the various vivid problem analysis, exercises and simulations that are practiced in the "C-U NEW" workshop. This workshop was specially designed to help managers participating in the workshop to define current and future expected verbalized needs that consumers have. The workshop puts emphasis on different tasks and homework activities in which all participants will be involved and are asked as a team to turn in a written evaluation of the work done. These results include various matrices where consumer and user needs are described.

A team work environment is used during the training phase of the workshop and later during the required "TQM-SOS" implementation tasks.

The objective of the homework assignment is to help participants practice the concepts reviewed during the sensitizing sessions of the workshop and to induce them to apply them during the vivid exercises to their own products and services, besides the ones used by the facilitator for the training purpose which are employed during the first part of the workshop.

The first time managers and collaborators participate in the workshop is mainly programmed for the learning purpose. This stage of the training process is important because it reaffirms a participant's compromise with the new organization's culture. This allows for all existing enmities between different people or departments to be destroyed and begin to work as a team. If this is not done, then only low quality and productivity will result in the process of "TQM-SOS" learning and implementation efforts. This, of course, will slow down the development of team-work as an appropriate tool for problem solving within the organization that requires a successful "TQM-SOS" implementation.

The facilitator of the "TQM-SOS" and "C-U NEW" workshops is key in getting participants to change their attitudes toward customers, consumers, users, work, fellow workers, neighbors, and, in general, toward the organization. The facilitator also requires a full understanding and belief in the concepts that are explained.

If this can be successfully portrayed during the workshop then the participants will have a much greater possibility of achieving personal involvement and future growth within the organization. It is the same organization requiring collaborators unbiased involvement that still offers

them good paying jobs which, in turn, will be used to satisfy their current or future needs and those of their families. The facilitator must convey an optimistic message motivating employee voluntary involvement and participation.

If everyone, regardless of their current workplace, is more attentive to a customer's needs and at the same time produces the product or service with the quality and productivity needed the first time, the organization will have the opportunity to continuously grow and prosper. Those firms currently growing and prospering have been able to do so through better understanding of and satisfying their consumer's and user's needs. In return, this allowed those organizations to design, manufacture, and offer consumers and users only the adequate products and services.

This type of facilitator and participants' involvement and participation has helped organizations establish a constructive teamwork environment within the firm. Also, it has been shown that improved customer satisfaction levels increases the organization's profitability. In the same manner that the company and all its collaborators profit, so does the nation in which it operates. If this trend is continued, then those nations currently starving, wary, frighten, and full of needy people might have a new, peaceful chance of surviving in the twenty-first century.

Perhaps this sounds like an impossible dream, incredibly optimistic, science fiction or utopia, but maybe the time to change has arrived.

All "TQM-SOS" and "C-U NEW" training and sensitization activities will be mixed with practical applications of theory and ideas. This will begin to have an affect on all the participants since the beginning of the training phases. With such an orientation, it will be possible to rapidly start

the improvement of the products or services that the organization currently offers.

Motivation, participation, and interest grows in the "TQM-SOS" and "C-U NEW" implementation as people are invited and offered an opportunity to freely participate and change current ways of thinking, planing, deciding, and doing things for their own good and that of their customers. If all training and practical efforts are done correctly during the sensitization and workshop activities and purposely directed toward assuring that the organizational culture can assimilate a "continuous improvement way of operating," then it will promote the collaborator's creative participation. This creativity will be needed to appropriately handle all the opportunities that changes can represent for the organization in the future to continuously improve quality, productivity, and customer satisfaction.

Similarly, resistance to change or to react to new situations will be then minimized. The "TQM-SOS" and "C-U NEW" mechanisms should be used also to redefine processes, products, or services even if these are considered as "successful" for the firm. Continuous evaluation and review of current ways of doing things must be from this time on considered as a new organizational policy to be implemented within the organization.

Auto-diagnosis of current performance levels must be done to assure continuous improvement of products and services. This must be done with the help of different group exercises during training and in real-life applications.

Because of the current competitive environment, it is a well known fact that the organization will be confronted with continuous challenges that can hinder its future customers' (target-markets') total satisfaction

potential. It is for this reason that there must exist a new and proved way in which all the organization's operations must be thought out, planned, decided, and performed by everyone in the firm (Neuman, 1988).

Having done the review of current or future consumer and user needs, strategic operations, systematic planning can then be vigorously pursued to redefine and redesign all the required organizational processes and operations. With the help of "TQM-SOS" and "C-U NEW" methodologies, the organization will be able to begin enhancing and improving all the organization's quality and productivity results.

**III. Basic Statistical Process Control (SPC) Tools Utilization Workshop: "The Best Enchiladas in the World Quality-Productivity Problem Solution." Cause and Effect Vivid Exercise Analysis (Neuman, 1990).**

Participants need to understand and learn how to use basic statistical process control (SPC) tools to observe levels of satisfaction of customer needs achieved by the organization.

In addition, this process helps identify if quality and productivity problems exist, and if so, how those problems might be solved. During these training sessions, various basic "SPC" tools will be presented to the participants with the help of "The best enchiladas in the world quality-productivity problem solution." Cause and Effect Vivid Exercise analysis (Neuman, 1990).

This vivid exercise helps participants learn and apply, with the help of a specially simulated problem, the required cause and effect analysis of

a quality-productivity problem specially selected by the facilitator for learning purposes. To the facilitator, the problem being analyzed during sensitization and training will be: "Why the facilitator cannot eat the best enchiladas of the world?" The participants in the workshop will use the basic tools to analyze the root causes of the problem and recommend the adequate "Manufacturing and delivery processes required to obtain the best "enchiladas" of the world."

The approach recommended to explain and teach the Statistical Process Control tools to managers and employees participating in the training sessions, requires the usage of real-life problems and vivid simulations. During this phase of the training, the following three "SPC" basic tools will be reviewed and taught to participants:

- "Ishikawa's Diagram."
- "Pareto Analysis Chart."
- "Initial Sampling Chart."

These three statistical tools conform to the basic statistical process control tool box.

These techniques will enhance the participants' understanding and assimilation levels of the tools presented and explained to them during the training phases. To complement their learning, various teamwork exercises and homework of the organization's actual quality-productivity problems should be assigned.

These problem-solving dynamics will help participants assimilate "SPC's" capabilities. Managers and supervisors must also be taught that particular "quality-productivity" cause-effect problem analysis can be accomplished using the different quantitative tools and techniques provided by the Statistical Process Control (SPC) methods.

Management must decide which problem-solving technique to use in the end. One choice would be Ishikawa's Diagram better known also as: 5M's, Cause-Effect, or Fishbone diagram to be applied to any real-life quality-productivity problem the firm might be currently facing. This technique can be used to define all possible or potential causes of the quality-productivity problem being studied and later validate the causal relationships that exist using prior or initial sampling observations. Having these data available, it will be possible to prioritize the obtained results with the help of Pareto Diagrams (see Figures 9, 10, and 11).

The procedure is utilized to set up possible priority projects to solve the "The best enchiladas in the world" quality-productivity problems observed during the exercise. More advanced tools such as line regression for cause-effect direct relationship validation or design of experiments can be applied for more accuracy later.

#### **4.3.3 "TQM-SOS" Sensitizing and Intermediate Training.**

In this phase of the training program the following courses and training modules will be offered:

##### **I. Intermediate Statistical Process Control (SPC) Tools Utilization Workshop.**

Real root cause elimination and quality-productivity problem solutions requires the application of different intermediate "SPC" tools. In this phase, some practical exercises will also be explained to train the organization's participants on the actual usage of the following tools:

- "Stratification analysis."
- "Correlation and regression tools."
- "Histogram generation and analysis."
- "Statistical process control charts."

With all the previously mentioned information available after "SPC" tools application, it might also be necessary to teach participants how to run a simple, or a multiple correlation, or regression analysis.

This would be done to assure that the proper job of controlling or reducing the causes of process variation is achieved; this will help to eliminate or significantly reduce the magnitude of the root causes of the quality and productivity problem. Thus, allowing the organization to be in an improved and better process controlled position to achieve the required consumer-user satisfaction. (see Figure 13: Multiple and single correlation-regression graphs).

Process Control Charts (see Figure 14) also will be used to help define if the current state of the processes performed to manufacture, or generate, the products or services are in fact meeting customer specifications and expectations. In the cases where customer specifications and expectations are not met, especially defined improvement priority projects must be programmed and pursued by participants. Also, improvement priority projects must still be defined and pursued by newly selected interdisciplinary teams to continuously improve quality-productivity of the firm (for more details on basic and intermediate Statistical Process Control tools application see: Ishikawa, 1989; Banks, 1989; Grant & Leavenworth, 1972; Ozeki & Asaka, 1990).

For the more advanced students, a means to validate if true cause-effect relations exist, which will be taught during the special training phases, are programmed to learn and apply the "Design of Experiments" technique.

## **II. Teamwork Development Training.**

One of the main requirements, besides that of top management's involvement and participation, is that "TQM-SOS" needs to be based on is satisfactory teamwork performance.

Managers and employees participating in the training sessions will be invited to form different kinds of teams to analyze and solve all types of quality and productivity problems related to customer satisfaction. The teams, will voluntarily meet on the company's time to further study and develop personal and group capabilities to learn and implement "TQM-SOS" in the firm. The next subject will teach participants how to work in groups and how to set priority projects in order to continuously improve the quality and productivity of the organization:

- Continuous Participation and Involvement Sensitization.
- Problem Analysis-Solution Activities.
- Decision Making Processes.
- Priority Projects Definition:
  - Designation of responsibilities.
  - Development of Solutions.
  - Planning Implementation of Solutions.
  - Performing Benefits vs. Costs Comparison.
  - Reviewing Alternatives Accepted and Rejected. Supporting Arguments Development.

- Programming Feedback of Achieved Results.
- Planning Implementation of Accepted Solutions.
- Planning Reviewing Achieved Results in Monthly Meetings:
  - Priority Projects Results Review.
  - Implementation Results Review.
- Continuous Quality-Productivity Improvement and Total Consumer-User Satisfaction Systems Design.
- Measurement of Achieved Results through participation and design of appropriate recognition systems for the collaborators efforts.

Teamwork requires special training and sensitization efforts by top managers in developing the right attitude in the organization. Problem analysis techniques must be taught to participants so that they can apply them to their daily teamwork activities. Decision-making processes involving more than one person requires practice and training to achieve satisfactory levels and appropriate results. Once managers and their teams can be sure that the validated cause or causes of the quality-productivity problems under study are the ones that have been defined as having direct relation to the problem reviewed and analyzed, is it possible to continue with the benefit-cost analysis related to the problem situation and plan its complete solution.

Prior to the solution's implementation, it is necessary to economically justify these intended procedures (for more details about the economic justification for different viable projects or problem solution alternatives, refer to Economic Engineering by Canada, 1971) .

With this, participants should be able to finish computing the cost of living with the problem, which means: the cost of not solving it. After the team defines the appropriate steps for a solution, they must also compare

the following two figures: the cost of not solving it (including opportunity costs), to the benefits less the costs or investments required to solve the problem.

Once the team's participants and managers have compared the two costs just computed (cost of not solving vs. benefits less the costs or investments) it will then become apparent: The yearly benefits and costs of solving the problem compared to the yearly costs of not solving it, and this will show management the economical advantages of actually solving, or not solving the quality-productivity problem being studied. One must also take into account that some costs will be subjective, therefore, not easily quantifiable, and the same will happen with some of the expected benefits. It is for this reason, that all these must also be weighted during the final steps in defining the required solution's plan to solve any quality or productivity problem.

If special resources are required for on-line live implementation of the previous defined steps, and after proper justification of the proposed solution's economical viability is demonstrated, it is recommended that top management makes available or lends such resources to the improvement effort. Such funds must be made available until the problematic area starts the actual realization of the expected savings and the inflow of the increased revenues. Even though the economic benefits might seem irrelevant for top management, the decision to implement the team's suggestions should be made. The resources are required regardless if management thinks that the benefits can be small, intangible, or non quantitative, all of which can be achieved at the moment of a full successful implementation, or for the sole purpose of maintaining the motivation, involvement, and participation of the different team members.

The benefits referred to when appropriately solving the quality-productivity problem can include: increased customer satisfaction value, lower customer dissatisfaction cost, lower image loss, reduced credibility loss, or other sunk opportunity costs that might be involved.

When designing and planning the appropriate solution steps to solve the quality-productivity problem, it will be necessary to include a special module for continuous evaluation and measurement of the newly defined process in the procedure for feedback purposes. It is important to review the evaluation and feedback steps in order to find out if the expected results are finally achieved or if continuous improvement efforts are still required. There also is a need to develop a special parallel trial implementation that runs to check if the newly planned procedure is free of any possible pitfalls.

Adequate Control Charts must also be defined and used later on to obtain measures about the ongoing behavior of the processes that was improved. Finally, Control Charts will be also used to assure that the product, service, or process variability is continuously being reduced, while achieving total customer satisfaction. Customer satisfaction must be accomplished at the lower expected operative cost as well as at the higher possible efficiency. (for more details about teamwork and group activities, refer to Quick, 1992; and Scholtes, 1988).

### **III. Leadership Training.**

In this section of the training program, the principal leadership traits that must be enhanced by the management members of the participating organization will be mentioned.

One of the most important strategic goals that any organization must embrace individually and collectively is that its products/services must be offered at an adequate price level. Such a price level will generate revenues and profits for the different participants of the organization, while at the same time, represent value to the consumer/user that purchases/uses them to satisfy their needs. To achieve these goals, the organization must first define what are those customer-user's expressed needs and then plan the acquisition and usage of all the required resources to manufacture and deliver the involved products and services. Appropriate leadership traits will encourage participants to continuously achieve total customer satisfaction.

To induce employees and other participants involvement in the "TQM-SOS" implementation process, it is necessary that the facilitator explains that the organization is not interested in looking for someone to blame, but to rather promote adequate solutions to the quality-productivity problems. The facilitator must emphasize the importance of everyone's help, motivation, and participation. At this stage of the "TQM-SOS" training, it is essential to clarify the importance of understanding the need of participating without fear during the training program. This should be done more than once, in order to insure personal commitment and future job satisfaction, as well as to assure successful implementation effort of "TQM-SOS" in the organization.

Motivation, creativity, involvement, and recognition from all participants in the "TQM-SOS" implementation process are four of the most important stepping stones required to achieve successful organizational results. Top management's involvement is continually needed and required for special provisions, adequate operative standards, and quality policies development, because it is these instruments by which employees are evaluated and recognized. The most important signal that

management can send to those who participate in the "TQM-SOS" implementation process, is to show their unconditional support, intended commitment, and real application intentions about "TQM-SOS".

In addition, if appropriate new personnel evaluation and recognition policies are also defined and implemented within the organization, the participant tends to feel a lot more supported. These policies must also recognize in a special way those participants that start changing for the better previous work attitudes. Weick (1984) commented that people can be adequately recognized when they are starting to achieve "small wins". It is all these results that point in the expected and planned direction of improved customer satisfaction, increased product, or service quality and enhanced organization productivity.

To successfully implement in an organization the proper managerial "TQM-SOS" cultural behavior and attitude, adequate leadership traits must be promoted and developed among managers and participants. Part of the required attitudes in managers participating were already discussed in the basic-training phase. In any modern organization intending to satisfactorily implement "TQM-SOS", its people must have developed high esteem. They must feel as an important part of the process, being capable of achieving important results, and willing to participate with creative ideas.

This will help prevent problems from recurring and develop a productive attitude to find a better way of doing daily tasks. In this phase the following activities are required to improve the "TQM-SOS" implementation results:

- Culture and Values Analysis and Statement Review.
- Communication Effectiveness Search.

- Motivation and Recognition Enforcement.
- Creativity Development.
- Change Resistance Minimization.

Japanese organizations promote life-long employment to enhance employee morale. Adequate personnel and product or service evaluation tools (see "SPC" tools section) and proper continuous improvement guidelines should be provided to managers, too. These are needed to assure that continuous attention toward customer needs is being applied in all the involved areas of the organization. It also is important to help set the appropriate cultural mood in which the organization will be able to encourage and promote the continuous participation and involvement of all the employees. It is necessary to review the existent evaluation and recognition system that the organization presently has available. This will inform employees of different facts and actions that the firm and top management are doing to improve employee recognition measures.

It also is important to state that not everybody in the organization will be willing or interested in participating alone, or in the team effort, to analyze and solve any kind of quality or productivity problem.

This can happen in two ways: The first is resistance to change by some employees. These types of situations can be modified with proper facilitator team-work and "TQM-SOS" selling and training efforts. In these, proper requesting of participation, through individual motivation and assurance of "No Decapitation" (job loss) statements will be presented by management through the facilitator. If adequate employee involvement is to be achieved within the organization and adequate commitment to the expected product's and service's quality by the participants, then management is the key. The second type of situation encountered is with those employees that even though are not openly accepting or declining

participation, these people will do whatever in their power to obstruct the advance with the program.

Resistance to change situations, require that top managers give an in-depth explanation of the organization's sought short-and long-term objectives. This should be accompanied with adequate requests for employee neutrality, support, and patience, mainly from those with a resistance to changing attitudes. If the situation does not improve even with top management's involvement, the person should be asked to leave the company, that is, only after several attempts to get the employee to participate. In order to insure the company's success, those people who cause the problems but are not interested in participating, even after various attempts and friendly invitations to do so, leaves the company with no other choice but to lay the person off.

Perhaps some well-qualified and identified people not interested in working to achieve better products or services will need to be asked to leave the organization, for the organization's benefit. Carlzon (1987) remarked and put these last statements dealing with resistance to change even clearer in his well-read book, MOMENTS OF TRUTH:

Some employee may not see or fully understand the vision and goals at the beginning. The leader must resist the urge to dismiss those people and, instead, work with them, give them additional information, and attempt again to make them understand. Of course, there will always be those who refuse to be persuaded. From them, he must demand loyalty, if not emotional commitment, to the goals. Otherwise, they should be asked to leave.

#### **4.3.4 “TQM-SOS” In Depth Internal Organizational Diagnosis.**

To obtain the information on the current status of the entire organization, it will be necessary to work in terms on the following modules:

##### **I. Internal “CONSUMER-USER NEEDS EVALUATION WORKSHOP.”**

- Apply the "C-U NEW" methodology to products and services currently being offered by the organization:
  - Products and services review:
    - Search for the customer's expressed needs.
    - Analysis of those needs.
    - Evaluation of customer satisfaction reports.
    - Definition of the critical customer satisfaction areas prone to continuous improvement.
  - Priority projects definition for products' and services' improvement.

##### **II. “TQM-SOS” Detailed Corporate Status Diagnosis and Information Analysis:**

- Strategic Operative Systems' Objectives Analysis:
  - A detailed Internal Quality and Productivity Audit is essential. (U. S. A. Baldrige, Deming, the Mexican National Quality Awards Internal Auditing Tools usage and Boston Consulting Group's Matrix application for complete

organizational diagnosis could be used to support the data gathering effort).

- Mission Statement Review:
  - Organizational Strengths and Opportunities need to be re-evaluated:
    - Teams need to be organized as "Priority Projects Enhancement and Evaluation of Strengths and Opportunities Studies".
    - Organizational Weaknesses and Threats:
      - Teams need to be organized as 'Priority Projects Minimization of Weaknesses and Threats Studies'.
  - Current Organizational Market Position review:
    - Market Share Objectives and Policies Study.
    - Critical Customer Satisfaction Areas prone to continuous improvement with priority projects.
    - Current Products and Services Analysis. (C-U NEW" Application mentioned above).
    - Current Market Mix Strategy Study.
  - Quality and Productivity Objectives and Policies Review:
    - Operations Management System Review:
      - Quality and Productivity levels redefinition.
    - Administrative System:
      - Quality and Productivity levels redefinition.
    - Total Quality and Productivity Management Control Systems Review.
    - Total Quality and Productivity Management Feedback Mechanisms Review.

- Human Resources Policies Analysis:
  - Organizational Structure Evaluation.
  - Top management involvement and participation assessment.
  - Tasks and Activities Studies.
  - Employee Involvement, Evaluation and Recognition Policies Analysis.
- Capital and Investment Policies Review.

With this information obtained from the data-gathering modules I and II, it will be possible to define the principal "Strategic Operations System" (SOS) required by the modern organization. The "SOS" planning activities will include the participation of all collaborators in the various priority projects defined with the help of the managerial teams to improve the observed quality and productivity status of the complete organization. The required activities will be carried out following the main guidelines shown in the next stages of the "TQM-SOS" training and implementation.

#### **4.3.5. "TQM-SOS" Objectives Definition and Strategic Operations System Planning Activities.**

After completion of the preliminary and detailed organizational diagnosis phases, a complete analysis of the information is necessary.

With this information, it will be possible to obtain the definitions for the next important factors. This will be done considering the required products and services that actually are required to better meet consumers' and users' needs. The factors that will be studied are:

- New Organizational TQM-Strategic Operative Systems' Objectives:

- Revised Mission Statement:
  - Organizational Strengths and Opportunities.
    - Teamwork Priority Projects Enhancement and Evaluation Plans.
  - Organizational Weaknesses and Threats.
    - Teamwork Priority Projects Minimization Plans.
- Redefine Market Share Objectives and Policies:
  - Critical Customer Satisfaction Areas prone to continuous improvement with priority projects.
  - New Products and Services Definition.
  - New Market Mix Strategy Planned.
- Quality and Productivity Objectives and Policies Review:
  - Operations Management and Administrative Systems':
    - Quality and Productivity levels redefinition.
    - Processes Redefinition.
    - Statistical Process Control System Definition.
    - Total Quality and Productivity Management Control Systems Development.
    - Total Quality and Productivity Management Feedback Mechanisms Development.
- Human Resources Policies:
  - New Organizational Structure Proposal.
  - Top Management Involvement and Participation Promotion.
  - New Processes, Tasks and Activities Definition.

- Employee Involvement, Evaluation and Recognition Policies.
- Capital and Investment Policies Definition.

Other activities to be pursued by top management teams are the revision of its current organizational structure, culture, and its prevailing Quality-Productivity problems. In addition, managers participating on teams will work directly by defining the actual scope of the required priority improvement projects. These projects are essential for the continuous improvement of internal and external customer satisfaction.

#### **4.3.6. "TQM-SOS" Priority Projects Development.**

It is possible that during the last stages of the training and implementation process of "TQM-SOS" that the interest and motivation generated among the employees participating in the newly created teams will enable them to define the quality-productivity improvements themselves. This is based on the fact that people that do any activity know better than anybody if it has been done right.

Every problem has a solution. To find out what that solution is, a priority project with enough resources is assigned to develop the quality-productivity improvement ideas. This requires not only the participants' time and effort but also requires them to plan special work sessions to achieve the expected results. If major investments should be required to implement the solutions that the team offers, an economic analysis of the project merits needs to be performed and justified. In this situation, a cost-benefit analysis is required in order to accept and finally implement the suggested solutions within the organization.

In this phase, it is required to perform various applications dealing with Teamwork Problem Solving Techniques that had been previously taught to the participants in previous stages. Managers will need to continue to work as interdisciplinary and area leaders in the following activities:

- Development of Quality and Productivity Objectives to solve the Quality-Productivity Problem of the organization:
  - Priority and Critical Problematic Areas Analysis with the application of the results obtained after the internal "CONSUMER-USER NEEDS EVALUATION WORKSHOP" done in the organization.
- Control and Feedback Mechanisms Design.
  - Basic Concepts about Priority Projects' Objectives Definition.
  - Development of Tools for Results Measurement.
  - Review of Existing Processes.
  - Development of Improved Processes.
  - Statistical Process Control Measurement points.
  - Design of Systems for Participation and Recognition of Employee Efforts:
    - Recognition of Collaborators' Efforts.
- Final "TQM-SOS" Implementation Program Development.

To perform all the above mentioned activities, remember that managerial teams must basically engage in the activities mentioned in section 4.2.1 first. The priority projects' activities mainly require participants to define who will be responsible of doing when and which of the next tasks:

- Designation of responsibilities.
- Development of Solutions.
- Benefits vs. Costs Comparison.
- Alternatives rejected.
- Proof of accepted Solutions. Supporting arguments.
- Planning the Implementation of Solutions and Suggestions.
- Planning Feedback of Achieved Results:
  - Planning Monthly meetings for review purposes:
    - Review of priority projects development.
    - Review of achieved results in real life implementations.

The required Priority and Critical Problematic Area's Analysis, Definition and Analysis of Quality-Productivity Problem, and Priority Project development steps needed to be reviewed and considered in the Quality and Productivity problem solution can be described and achieved with the help of the following:

- Analysis and definition of the problem:
  - Principal causes of "quality-productivity problems" review with brainstorming sessions. (Ishikawa's Diagram application).
  - Sampling for information required to validate observed relationships.
  - Process review and comprehensive study of available data.
  - Validation of top most important cause-effect relationships.
  - Economic analysis: Cost of Living (not solving) with the problem VS. cost of solving the problem.
- Development of alternative solutions:
  - Gathering creative ideas with brainstorming sessions.
  - Evaluate feasibility studies to define alternatives.

- Define evaluation measures for successful implementation.

- Benefit vs. Costs Comparison:
  - Analyze and compare expected benefits to be obtained by solving the problem vs. costs of not solving and implementing the new procedures. Economic Analysis: Cost of solving the problem and implementing new process vs. expected benefits.
- Implementation decision is made.

#### **4.3.7. “TQM-SOS” Required Organization Structural and Operative Changes.**

When structural and operative changes are required to implement the team's suggested solutions, it will be necessary to proceed according to a previously developed strategy and implementation program. Some of the points that will be required in this mentioned program include:

- New Organizational TQM-Strategic Operative Systems' Objectives Deployment.
- Revised Mission Statement Deployment.
- New Organizational Structure Implementation.
- “Quality Committee/Council Guiding Arm Selection.”
- New Products and Services Implementation.
- New Operations and Procedures Implementation.
- New Recognition of Participants Efforts System Deployment.

#### **4.3.8 "TQM-SOS" Implementation Program Activities.**

When different references about possible applications of "NGT" and "QFD" techniques were reviewed to evaluate their applicability for potential target markets' needs assessment, there was no application found, or that those techniques had been used or reported in this type of application before. The "TQM-SOS" methodology supports and offers similar functional characteristics and improved merits as the "QFD" or the "NGT" in defining customer needs.

##### **I. Statistical Process Control Implementation:**

- New Processes Implementation.
- Statistical Process Control Measurement points.

##### **II. Priority Projects Implementation:**

- Implementation of Programmed Suggestions.
- Feedback of Achieved Results:
  - Control and Feedback Mechanisms Implementation.
  - Priority and Critical Problematic Areas Continuous Monitoring of Improvements.
  - Monthly meetings for review purposes:
    - Review of priority projects development.
    - Review of achieved results in real life implementations.
- Recognition of Participants Efforts.

The total quality circuit (see Figure 2), showed in a simple format, indicates the importance of teamwork and the level of coordination required among the involved areas within the modern firm to better satisfy

internal and external customers. Promotions resulting from involvement and participation will be one of the expected and required roles that modern managers must play to satisfy the organization's consumers and users.

With the help of the total quality circuit, it is understood that modern top management responsibilities requires constant attention and participation. These responsibilities range from close consideration of supplier development levels to the consumer-user needs and their complete satisfaction. It is essential that all areas involved with the organization perform their activities with a "Total Quality-Productivity" cultural attitude. This attitude will permit the organization to satisfy its current and future consumers' and users' needs.

Priority projects will be defined to be worked on different quality-productivity problems. In each and all of the steps that have been explained comprising the first stage or in any of the later stages of "TQM-SOS" implementation procedure, it is possible to use each team's effort to improve the quality and productivity of the whole organization. From the first meeting on, it will be necessary to help people organize their activities in order to successfully work as a team. Top management must promote continuous interaction between all participants and sincere involvement with themselves so to achieve the expected results.

- Proof of solutions:
  - Run parallel problem solutions which improve the procedure in order to verify the final implementation details. (Remember that Fool Proof position means: no last minute surprises.)
- Implementation of Solutions:
  - Implementation of a team's decisions for the problem.

#### **4.3.9. "TQM-SOS" Continuous Improvement Activities.**

The previous stages described and presented (see Figures 16 and 17) are generally recommended to train management to develop and improve the traditional "TQM" implementation process and successfully implement "TQM-SOS" in the organization.

Previous experience suggests that along side the programmed training and implementation stages ( see Figure 16), practical applications are essential. The vivid exercises are directly oriented to all of the Quality and Productivity problems encountered in the operations of today's organization. This approach will serve to improve the organization's problem solution and cause elimination efforts. Such effort includes:

- Continuous Quality-Productivity Improvement and Total Consumer-User Satisfaction.
- Results Feedback:
  - Monthly (periodic) reviews on the results in order to measure problem reductions while cause elimination and process control is in operation. Continuous monitoring and enforcement of solutions.
  - Evaluate if new corrective actions are required.
  - Evaluate if the project's objective of problem elimination is truly achieved.
  - An economic analysis review of the expected cost benefit relationship involved.
- Continuous Quality-Productivity Improvement and Total Consumer-User Satisfaction Evaluation:
  - Review if the operation has yet to be improved by asking the consumer-user if the product/service still satisfies his/her needs? If not, are improvements are still required?

-Request from personnel and actual consumers and users for improvement recommendations and suggestions for future specification and design reviews.

- This must be a continuous process, so then one must begin again!

Different priority projects will be set throughout the organization in order to continuously improve within all its domains its current organizational "forces," while reducing its various weaknesses, threats, and better attack and serve its current and future market opportunities.

With this last in mind as a primary objective the organization will be in a better strategic position to attain its Quality-Productivity goals, and at the same time, develop and improve manufacturing, operative systems, services, products, reduce waste, decrease scrap levels, and regain market share.

Management must define quality objectives and problem solution priorities for specially selected groups. After a detailed selection process, participants will be assigned to a specific task force to study the causes of certain problems and design the required solution to solve the error. The group's sole responsibility is to develop a complete analysis based on all the available information. They should develop confident data in order to study, diagnose, and define the actual situation. With this, they will be able to offer the appropriate suggestions to solve the quality or productivity problems. Appropriate control and feedback steps must also be planned. This would allow for the problems not to occur again after the new procedures are actually implemented.

All these activities will be considered as part of the "Priority Projects Team's" responsibilities and tasks. The team's responsibilities will also include the monitoring of the complete implementation process. Adequate

practical training and implementation for these teams' efforts is recommended as part of the satisfactory "TQM-SOS" implementation process. Individual and teamwork efforts within the organization will be needed in order to find the appropriate quality-productivity problems in the firm followed by the required analysis and solution.

All quality-productivity problems can be solved when continually implementing these teamwork procedures correctly. As significant wins-successes are achieved, the "TQM-SOS" effort will become a more respected position in the minds of management due to the fact that the bottom line economical results will begin to be observed on traditional accounting reports. It is at this time when managerial efforts should not decline. Rather, participation should not be found not just among top and middle management groups, but within the company as a whole. This encouragement must be done by inviting others to participate in regular training sessions and the assimilation of a new continuous quality-productivity improvement culture.

In addition, everyone must follow the new "TQM-SOS" procedures and activities in order to better satisfy its customers. With this, the organization's culture will begin with the right foot forward in its fight for continuous quality improvement and "Total Quality Management Strategic Operations System" implementation. The objective is for all its employees to find TQM-SOS as a normal way of work. Because of greater competition, this change of culture will allow the company to continue satisfying its customer base.

#### **4.3.10. "TQM-SOS" Sensitizing and Advanced Training.**

In order to achieve these organizational changes, there is a need for the following courses. These will provide management with the necessary skills to lead and operate a modern firm.

In this section, there will be suggested different references which can be considered as basic reading, support, and study material for managers interested in satisfactorily pursuing a "TQM-SOS" implementation process. The principal subjects to be covered in-house in this advanced training phase are:

##### **I. Advanced Operations Management Training.**

- Process Analysis and Flow Charts.
- Time and Motion Studies.
- Line Balancing Studies.
- Plant Localization and Layout Studies.
- Inventory Control Models.
- Forecasting Models.
- Engineering Economics:
  - Benefits Vs. Costs Analysis.
  - Return on Investments Studies.

(for more details related to Operations Management and Industrial Engineering, consult the following references: Anderson, Sweeney and Williams, 1991; Buffa and Sarin, 1987; Francis and White, 1974; Gillet, 1976; Hillier and Lieberman, 1974; Johnson and Montgomery, 1974; Thomopoulos, 1980; Wagner, 1975. Each book referenced here will not be reviewed in detail but only mentioned).

## **II. Advanced Marketing Management Training.**

- Marketing Concept.
- Customer and Market Surveys.
- Focus Groups.
- Customer Satisfaction Analysis and Measures.
- "Consumer Behavior and Marketing Management."

(For more details about the marketing field, consult the following references: Hartley, 1992; Hawkins and Tull, 1993; Kotler, 1984; Randall, 1993; Schiffman and Kanuk, 1991. Each book referenced here will not be reviewed in detail but only mentioned for those interested readers).

## **III. Advanced Statistical Process Control (SPC) Tools Utilization Workshop.**

- "Quality Assurance Mechanisms:
  - ISO 9000 and National Standards Review.
  - National Quality Awards.
  - Supplier Auditing Mechanisms.
- "Design of Experiments."

(for more details consult the following references: Griffiths, 1990; Lyonnet, 1991; Messina, 1987; Mizuno, 1988; Ozeki and Asaka, 1990; Shores, 1990; Stebbing, 1991; Stratton, 1991; The Earnst and Young Quality Improvement Consulting Group, 1990. Each book referenced here will not be reviewed in detail but only mentioned for those interested readers).

#### **IV. ADVANCED TOPICS IN BUSINESS ADMINISTRATION:**

- "Finance and Microeconomics of the Firm."
- "Entrepreneurship Theory."
- "Organizational Behavior."

(for more details consult the following references: Salvatore, 1990; Copeland and Weston, 1988; Hisrich and Peters, 1992; Hellriegel et al., 1989.).

#### **V. Advanced Topics in Total Quality Management Strategic Operations System.**

- "Advanced Quality Cost Accounting."
- "Just In Time (JIT)."
- "Quality Function Deployment (QFD)."
- "Business Process Improvement (BPI)."
- "Benchmarking."
- "Re-engineering of the firm."
- "Total Quality Management - Strategic Operations Systems in Service Organizations."
- "Quality Engineering Techniques and Taguchi's Theory dealing with Design of Experiments."

The "Just In Time" (JIT) approach to manage the firm must be also reviewed by managers participating in the different "TQM-SOS" training efforts. The important ideas behind the "JIT" theory are based on the reduction of all kinds of operative inefficiencies and suppliers development among others. Those suppliers must be much more involved in the appropriate delivery process for the materials needed by the firm and thus help top managers not only minimize the required levels of inventory

needed by the organization, but also reduce scrap, lower rejection rates, and increase productivity. The "JIT" methodology can be used to improve the general operation of the firm.

The "Quality Function Deployment" (QFD) technique must be fully explained to participant managers so that they can learn to differentiate the basic differences between the "C-U NEW" methodology and "QFD."

"C-U NEW" helps the organization to better define and understand its customers needs. With this information available, those verbally expressed needs can be used as the top most important input required by the "QFD" methodology. The principal objectives that "QFD" intends to obtain for the organization are to: Translate the needs that customers already expressed, as required by them, to be satisfied with appropriate products and services through the use of successive houses of quality which will be used to define design requirements, parts specifications, key processes and production or processing methods' characteristics.

Considering the recent popularity that the "Business Process Improvement" and "Re-engineering" methodologies have acquired in process analysis and improvement, it is important to mention that these two processes are considered as applicable tools within a broader scope of that of "TQM" (Allender, 1994).

Benchmarking studies also will be considered as supportive tools for the "TQM-SOS" methodology implementation. Benchmarking which also can be used during the complete Strategic Organizational Diagnosis. (for more details about the subject matters to be covered in this training phase please consult the following references: Davidow and Uttal, 1989; Desatnik, 1987; Harrington, 1991; Hay, 1989; Heskett, Sasser & Hart, 1990; Slater, 1991).

#### **4.4 "C-U NEW": "CONSUMER-USER NEEDS EVALUATION WORKSHOP."**

"The first hard important market lesson learned by Akio Morita and the SONY corporation at its very beginnings during the 1950s was: 'The tape recorder was so new for Japan that almost nobody knew what it was and most of the people that knew what it was, did not see any reason for buying it. It was not something that people would consider as needed. We could not sell it' (Morita, 1987)".

Understanding and satisfying consumer and user needs, as suggested in this thesis, should be the principal guiding goal of any organization wishing to survive and grow in these rapidly changing times. With the author's authorization, but still maintaining author rights, it will be presented here the work done on "CONSUMER-USER NEEDS EVALUATION WORKSHOP (C-U NEW)."

As mentioned, it is recommended that the workshop be taken by various participants, that is, internally and externally related to the organization. This workshop will allow the participants to define what are their consumers' and users' current and future expectations and needs in regards to the product or service. The participants are immersed in a simulated team-work environment where they intensively work together to define their customers' needs.

The effort suggested in the workshop activities can first be done exclusively with the managers and employees of the organization. This team then develops sound ideas about bettering current products and services. This process is achieved through role playing between actual or

potential consumers and users, played by company participants during the duration of the workshop.

After internal personnel completes the workshop, special "Tentative Priority Improvement Projects" could be defined. Some of these projects will be so crucial to the organization, that its further development and implementation in the organization will be immediately required, that is, even before the actual customers are invited to participate in other workshop presentations.

Afterwards, before definite priority projects would be finally defined, it is suggested to run the workshop at least a second time. Only this time, involving actual customers and suppliers of the organization and inviting them to also simultaneously participate, internal personnel who would have had the opportunity to participate in previously offered workshops and already understand its methodology. These organizational participants should only listen to what their real customers and suppliers express as their current and future needs, without offering any comment at such point in time. Their role during this second participation is to thoroughly take notes and listen to actual customer needs and product or service performance.

Only after the organization has benefited from the first priority projects implementation results, is it possible to invite customers and even suppliers to participate in similar workshops. Validation and final confirmation of other priority projects that were not considered by those who first participated must be then evaluated afterwards for possible implementation within the organization. New Tentative Priority Improvement Projects will be obtained after actual consumers, users and suppliers (internal and external) also participate in such workshops.

The results of the workshop can later be used for design, engineering, production, and marketing purposes. In addition, other areas of the organization can use this information to plan and develop improvements to the existing products and services, or to help with the launch of new products and services.

The principal objectives that are sought with the participation of managers and supervisors in the "C-U NEW" workshop and teamwork effort is to:

A. Help people grasp the importance of satisfying the needs of their consumers and users which is so important, considering the competitive times.

B. Identify and define the expected and expressed needs of a consumer-user for a product-service. These may include needs that have been required before, during, or after the product or service is purchased.

C. Offer guidelines to be followed by corporations; in regards to the modifications of their current products and services to comply with their customers' expectations. These improvements can then be channeled to the appropriate departments, such as Operations Management, Design, Engineering, Production, Service, Marketing, Sales, Purchasing, etc. As a team, those areas can finally be defined with the commitment and support of top management the required operative and strategic plan of action to be implemented. To more effectively obtain the products-services that are expected of them by their consumers-users, it is necessary to start by understanding consumers' and users' actual or future needs.

D. Develop a "Modern Organization" (see Figure 1) which always has as its main purpose the continuous satisfaction of its current and

future consumers' and users' needs. These needs have to be expressed in the organization's mission statement and then generated into adequate policies supporting such a strategic intent. An organization that strategically plans to function in such an operative mode is more prone to successfully achieve and implement Total Quality Management within its walls. All this will be part of the organization's "TQM-SOS" definite implementation process.

Today's, there is not an adequate, fully accepted approach or methodology to completely define the current or future needs of the consumer. The principal objective of the "C-U NEW" methodology is to give management a proven tool to define those needs. An appropriate "Needs" definition must be first accomplished by any organized corporation wishing to survive or grow. Organizations are living in difficult times, and changes must be accomplished in order to have continual growth (Tenner & DeToro, 1992).

Quality Function Deployment (QFD) and Nominal Group Technique (NGT) techniques sometimes have been helpful for manufacturing and production managers to translate customer needs into engineering specifications. Focus groups have helped to understand some of customers' needs. "C-U NEW" technique will bridge the gap in helping marketing and design, or manufacturing, develop a broader picture of their consumers' and users' needs in an organized and efficient form.

Customer needs must be defined and understood before strategy development is done by the organization, as well as, and also before, current Total Quality Management Strategic Operation System teachings can be successfully implemented.

Despite many improvements that have been made with the usage of the "QFD" technique, its practical application is most often used only by people involved in defining the final engineering specifications of products, and mainly applied by manufacturing and production personnel. Even though lately there have been various field improvements in its application when used along and supported by the utilization of focus groups and customer surveys data gathering exercises.

Also, the independent applications of "NGT," focus groups, or brainstorming methodologies are only partially suggested to accomplish complete definition of consumer-user needs by some of the authors studied. In the first chapter and in the various tables included at the end of this thesis, the methodologies just mentioned will be discussed in greater detail. In most cases, specific guidelines as to the required way in which the above-mentioned techniques must be used to define customer needs are misleading and incomplete. Their applications are left to the creativity or experience of the interested parties together with other recommended applications in the decision-making improvement process (Scholtes, 1991).

#### **4.4.1. "C-U NEW" Methodology.**

For the "C-U NEW" methodology to be successful, a company must follow all the steps recommended within the procedure. This insures the maximum results for the company in dealing with its customers' needs, which, in the end, is the main reason for the organization's existence. The information obtained during the workshop also can be used to compare the particular products' or services' satisfaction levels.

Top, middle, and lower-level managers, supervisors, and collaborators of the organization must first participate in the workshop to be able to completely define by themselves their own real customers' or users' expectations, in regards to the organization's products and services. As the first round of participants complete the workshop, priority projects will be defined in order to begin working on the various problems detected by all these people.

The next step is to have actual consumers and suppliers attend the second presentation of the workshop. This will allow the company to validate and improve all the original recommendations generated by its employees, who have participated in the workshop.

With this information available, adequate steps can be taken to design or redesign all the organizational processes, products, and services to meet consumers' and users' standards. The "Total Quality Management Strategic Operations System" also can be implemented as a result of the data obtained by the "C-U NEW" method. This would later be used to insure that the development and achievement of the required products and services.

Considering that important and sensitive changes must be done immediately in the organization, instantaneous action should be initiated right away. Adequate budgets must be set aside to start the planning process of solving those crucial quality-productivity problems. With this accomplished, immediate small and significant improvements will be also realized by the organization. Obvious things must be corrected as soon as possible after appropriate revisions of the first workshop data are readily available.

Later on, when "TQM-SOS" would be considered as already implemented in the organization, various posterior or special versions of the "C-U NEW" workshop will be held later on again. Those workshops will be also programmed as required, and will need again the participation and inclusion of real customers, suppliers, special agencies, distributors, and again, internal people such as manufacturing, engineering, design, finance, service, logistics, accounting, systems, etc., to better define and design together as a team the needed products and services that the organization must supply to its current and future customers on a continuous basis.

Now, I would like for you to review the next paragraphs which deal with the actual material used to develop the "CONSUMER-USER NEEDS EVALUATION WORKSHOP."

The steps to adequately develop and implement "TQM-SOS" and "C-U NEW" in an organization come from the results obtained from the research and observation of various enterprises that previously tried to implement "TQM" using a traditional approach, some of which, were, or were not ,successful in their attempts to implement such kinds of "quality programs" in their organizations. In those cases where the companies where successful, the idea was to define what made them with their products and services such a good value to their customers. Also, an exhaustive review of available literature was considered to support the recommendations presented in this thesis. Lastly, personal experience obtained after practical applications of the "TQM-SOS" and the "C-U NEW" methodologies was used to improve them even further. Examples of such real-life applications and the achieved results are presented in the next chapter.

The steps needed to apply the "C-U NEW" methodology requires various phases of activities to define consumers' and users' needs and obtain related information. It will be required to review the various consumers' and users' expressed "needs" for the product or service studied in the workshop. This will be done by asking the different invited participants to the workshop to play and think from different points of view and perspectives while maintaining team-work activities. The roles that participants will play during the workshop can vary among the next ones:

- \* Consumer.
- \* User.
- \* Manufacturer.
- \* Consulting Firm.
- \* Supplier or Vendor.
- \* Environmental Participant or Stakeholder.
- \* Other.

Even though, I offer a suggested order for the "TQM-SOS" and the "C-U NEW" activities , it is possible to modify them for each particular firm. (see APPENDIX 2 for more details).

The "C-U NEW" workshop includes the following vivid and practical work phases:

#### **4.4.1.1 FIRST PHASE: "THINKING AND ANALYSIS." (APPROXIMATE DURATION: 2.5 HRS).**

This first phase comprises the following activities and requires that you, all the "C-U NEW" workshop participants, play various parts in the cast. This is needed in order to feel, see, and think about how each of you perceive

and react in close simulation to real life to the products and services studied.

It is required that the particular roles one is playing are performed and thought as it would be done during real life product or service usage. The particular "Product or Service" used for simulation purposes will be kept during the whole duration of the workshop. The next are the principal guidelines that the workshop facilitator must follow for appropriate accomplishment of all the required activities:

1. It is important to keep closed the package of the "Product-Service" the participant receives to work with during the duration of this first phase. In the package the "Product-Service" under study will be revealed to the participant at the appropriate point in time. (Note: you, the participant, will be told by the workshop facilitator when the package can be opened).

2. Divide the group in three or four "competing" corporations which will be manufacturing or supplying the "Product or Service" offered. Each team will analyze and work with the supplied "Product-Service" during the duration of the workshop while maintaining a competitive environment.

3. It is necessary to define the required organizations' structure of this "simulated" company interested in manufacturing and distributing the "Product-Service." This "Product-Service" will be worked on throughout the workshop. Each team must assume all those organizational positions necessary in this simulated firm. Once this has been completed, each participant will select the role or position that he or she would like to play within this simulated organization.

4. Define or list on a piece of paper provided by the facilitator the responses to the following questions:

- What is the "Product-Service" you just received to work with in this workshop? (define it in a few words).

- List all the real-life potential users of the "Product-Service" you just received to work with in this workshop. (use the special forms provided for by the facilitator).

- List all the potential consumers of the "Product-Service." (use the special forms provided for by the facilitator).

- List all the expressed (verbalized) needs that are to be satisfied with the "Product-Service" by all its potential users previously listed. (use the special forms provided for by the facilitator).

- What is the principal verbalized need that the user would like to satisfy with the usage of the "Product-Service"? (use the special forms provided for by the facilitator).

5. Please consider that the price shown on the package is the current consumer price found in the market-place.

6. During the rest of the workshop you will be required to think in terms of the following roles and switch among them as you deem required:

### **CONSUMER:**

Is "The person or organization that buys the product-service and gets the benefits or suffers the costs related to its acquisition." (Operational definition shown in chapter I, Section 1.2).

### **USER:**

"The person that uses the product-service and gets the benefits or suffers all the costs related to its usage." (Operational definition shown in chapter I, Section 1.2).

### **PRICE:**

"Is the current amount that a consumer would pay at a store or wholesale distribution outlet. It is also considered equivalent to the level of real needs (received value) actually satisfied, that the 'Product-Service' can provide for a particularly interested 'Consumer-User' after 'Buying-Using' the 'Product-Service' involved." (Operational definition shown in chapter I, Section 1.2).

7. Construct two matrices "Consumer-User" vs. "Needs" as follows:

The two matrices that will be constructed here, can later be filled with quantitative data concerning the possible relationships that exist between users and their expected needs and consumers and theirs.

This is done to determine which ones are the most critical for such particular points of view. Pareto analysis can be done as well to enhance the results reviewed with the evaluation steps. Proper consideration of this must also be given by the direct supplier or manufacturer of the product-service. These matrices can later be used to define the first

priority projects that the team members can work on to solve current quality-productivity problems.

This will be done by estimating the importance of each of the stated needs that the consumer and user would like to have satisfied with the "Product-Service" (see Matrices 6(a) and 6(b)).

8. Request authorization before starting the 2nd. phase.

Authorization is needed by the participant from the facilitator of the workshop in order to continue. He then has to review the completeness of the answers from this first phase. If the facilitator does not authorize the answers and comments of the participants in the different special forms provided, they must make the changes as necessary in order to continue on to the second phase.

9. Asking and answering questions during the workshop under the main supervisor or facilitator guidelines:

- If during the workshop, participants have questions, they should write them down on a special question form provided by the workshop supervisor. Later, he will answer them in secret meetings for each team.

- No team should ask questions aloud. This could give the other teams an advantage of selected information. This last point should be stressed by the facilitator, because the exercise will be invalidated if questions are asked in this manner. Teams will not be allowed to move from place to place; they must stay in a fixed area. When a question arises, the facilitator should go to the team rather than the team to the facilitator. These precautions are necessary for control purposes

throughout the workshop's activities, not allowing any "Industrial Espionage" to occur during the workshop.

- During the duration of this phase, the "firms" will be given three time intervals to answer the required questions in the phase and to fill out their matrices. The first two intervals will be an hour in length, the last 30 minutes. At the end of each period, the supervisor of the workshop will be required to review the partial results for each group. If these are satisfactory, then the facilitator will authorize the end of the first phase and continue with the second. If these were not the case, the participants would have to continue with phase one.

- To begin the workshop, three or four groups will be predetermined. If possible participants in each team will be selected from different areas of the organization participating or from different backgrounds. Each group will define its particular organizational structure consisting of: director, general manager, manufacturing director, marketing director, finance director, and workers, among others. They also must find a name for the company. Participants must exchange positions among each other throughout the workshop.

- If participants should start to work on their organization's product or service without requesting from the facilitator to define the product or service they were supposed to work with, the facilitator should allow them to continue working on whatever they are doing. Do not interrupt participants for at least 20 minutes. If after that time, the group has not requested the secret delivery of the product or service they were supposed to study, the facilitator must interrupt them. At this point, the facilitator should stop all teams from their activities for 5 minutes and ask the "companies" what they are doing. More than likely they are not working on the product you want them to analyze. So then the question is

what are they wasting their time on? The facilitator must then comment on the traditional approach to quality, where people do whatever they want and not what the consumer or user needs them to (remind them of Figure 1, where traditional and modern organizations are compared).

**4.4.1.2 SECOND PHASE: "USER SIMULATION."  
(APPROXIMATE DURATION: 2.0 HRS.)**

This second phase consists of the following activities and requires that you, all the "C-U NEW" workshop participants, exchange roles in relation to the products' and services' usage. This allows each participant to see every point of view, giving them a wider perspective on the situation.

1. "In this phase the participants will play the role of a user with the "Product-Service." (Refer to the definitions presented above of the descriptions in the first phase).

2. Additional material purchase requisition:

- If the participants feel that in order to use under normal conditions the "product-service "satisfactorily," they need to purchase, or have available, other support materials. Team members should fill out the required requisition form. This form will be given only by the facilitator when appropriate. In order to fill out the form, the facilitator will need to select three members from each group that will be in charge of signing this form for control, delivery, and payment purposes. The participants will have to list the quantity and description of the materials they should require during the workshop for actual "Product-Service" utilization.

After the participants finish with the actual usage of the product-service, they must answer the following questions:

3. Assuming the user and the consumer positions:

- Does the "Product-Service" satisfy the previously written needs of the potential users and consumers. This must be on a separate sheet of paper for each case (user and consumer).

- Is the price of the "Product-Service" adequate considering both consumer and user positions?

- Does the product or service used represent value for each of the positions (consumer-user) role played?

- Would you repurchase the "Product-Service"? (as a satisfied consumer-user would do).

4. Assuming that you are an interested consumer-user or an external consultant to the firm manufacturing or offering the product-service, please comment on following:

- What recommendations you would offer the manufacturer or service provider in order to enhance the needs of the "Product-Service" which you have studied during these two first phases of the workshop.

The participants should make a list of their suggestions and their explanations. The participant must later continue to consider the needs matrices that were developed in phase one of the workshop.

5. Important considerations about price:

- Does the participant consider that an adequate price for a product or service exists or is the price at a level in which the consumer and the user find that they do not satisfy their expected and verbalized needs?

6. Additional supervisor or facilitator guidelines:

- During the duration of this phase and in case that it would be necessary, the participating groups will be required to prepare additional material purchase requisitions. The workshop supervisor should be prepared to deliver such supplies to each group that requests them. At the appropriate point in time any complementary material that would be required to finish and perform satisfactorily the usage of the "product-service" phase should be given to the requesting teams. This material should be brought to the room where the workshop is taking place only by the facilitator. The same will happen with all the other support materials needed for the workshop realization.

**4.4.1.3 THIRD PHASE: "ACTUAL MARKETING AND SALES SIMULATION OF THE 'PRODUCT-SERVICE' BEING STUDIED IN THE WORKSHOP, BY THE CURRENT MANUFACTURER OR SUPPLIER THAT YOU, THE PARTICIPANT, REPRESENT." (APPROXIMATE DURATION: 1.5 HRS )**

In this section of our workshop, the groups will be required to select a person that will play the role of the marketing director of the firm that is currently manufacturing or supplying the "Product-Service." It is now required that the members of the group help the marketing director in preparing a sales presentation of the product-service. Please note that:

1. "In this phase the chosen participants will continue to play the role of the current or actual manufacturer or provider of the product-service."

2. Please think about:

"The Sales Presentation Developed in this Phase  
"Will Not" Consider any of the Recommendations  
Offered to the Firm by the Consultants or  
Concerned Consumers or Users of the Previous  
Phase."

This last request is required in order to assist the "simulated firm" to review its current approach to the market, and evaluate its potential market share, considering its actual product-service perception by its consumers and users.

Also, it will be possible to evaluate alternative approaches to prepare real sales presentations and relate it to the actual market responses to it.

The sales presentation that the marketing or sales directors are going to offer during this phase will be given to a group of potential distributors (volume consumers) specially gathered for this purpose. Those consumers will be role played also by the rest of the team members not selected as marketing and sales managers. This is done in a special meeting programmed for the sales presentations. To participate in the sales meeting, it will be necessary:

1. Supervisor or facilitator guidelines for the marketing or sales representatives and purchasing distributor's directors of the firms:

- After the sales presentations of the different groups are prepared, the place for the required sales presentation demonstration must be set up. Marketing directors and consumers representatives will have to consider:

**A. MARKETING OR SALES REPRESENTATIVES:**

The selected directors of marketing will set up a special sales stand where each one will give a five-minute presentation in order to attract distributors in relation to the advantages of buying and distributing their product-service. The next guidelines about the presentation should now be explained to the marketing representatives of the firm:

- Sales or Marketing managers can only offer a 50% discount on the shelf given price in the first stage, to the potential distributors of the product.

- The maximum length of time that they will offer the distributors to pay for the merchandise is 30 days.

- There are no other volume discounts allowed.

- There are no consignment purchases allowed.

- Each "firm" has in stock thousands of finished units of the offered product-service. These products are stocked in batches. The minimum sale you are authorized to do is per batch. A batch can contain 20 boxes or units of the product-service.

- There is the possibility of immediate delivery F.O.B. of any required quantities of the product-service.

- It is recommended to the potential distributors to accept the 30 day payment terms because no discounts for prepayment will be authorized by management.

- Each "Marketing manager" must concentrate all his or her selling efforts on the current marketable characteristics of the product-service without modifications.

- The "Marketing manager" must prepare his or her voluntary "LETTER OF RESIGNATION" if he or she does not achieve at least a 40% market share during the evaluation of the sales results phase. The facilitator must express that this is mainly because management is tired of false promises to sell the products-services. Making matters even worse, the marketing manager never gives any facts or results to support his or her market share improvement promises.

#### **B. PURCHASING MANAGERS FROM THE DISTRIBUTORS OFFICES:**

This part will be played by the rest of the participants that were not chosen to play as marketing or sales representatives with the manufacturing or supplying firms.

- This person must select a major chain to represent as purchasing director. The purchasing managers in return must wear a badge showing the name of the corporation without duplicating the names of the different distributors selected.

- Purchasing managers are responsible for analyzing the sales presentations, while forgetting that he or she was once a participant of the company now trying to sell him or her the product-service. Objectively, he must review and decide which of the articles would be a welcomed addition to the company's showroom, while having the required sales potential.

- The only restriction that purchasing managers will meet is that they can only buy as many batches of the product-service as there are firms offering them. Budgetary constraints now exist for this firm. As a note, there are always substitutes or complementary products-services that you are required to offer to this organization's customers.

The purchasing managers will be authorized to purchase at the most  $0,1,2,3,4,\dots,m$  batches of the product-service offered by all the suppliers. (Example: If there are 3 different companies presenting their sales pitch, the purchasing person can only buy up to three batches of merchandise: 0,1,2, or 3 batches only. He can also decide to split his purchase orders between different companies but the total must not surpass three batches.).

Due to Market Environment conditions, it is necessary to consider:

- Some of the purchased products-services will not sell during the following high season. If this is the case, and more than 50% of the merchandise purchased remains in the store after the season, this will require the voluntary "LETTER OF RESIGNATION" of the purchasing manager. Management is "sick and tired of purchasing directors and agents buying merchandise that consumers or users are not looking for, and later must be sold for a salvage value or less!"

- If the purchasing manager has any questions during the sales presentations regarding the characteristics of the products-services being offered by the sales managers, ask them after the presentation of all the companies. Time will be available at the end of the presentations to ask questions. Direct all questions to the sales manager of that particular "product-service."

### **C. SPECIAL VOLUNTARY PARTICIPATION:**

Select three volunteers from the distributor's representatives that will be required to:

- \* Sleep and snore during the presentation.
- \* Cough.
- \* Make noise or bother the other participants posing as purchasers or sales managers.

These participants will be instructed directly by the supervisor after the first three minutes of each presentation to start their "show" and to stop it also immediately when the supervisor instructs them to do so, with a special nod or sign that the supervisor-facilitator will give them directly at the appropriate moment.

### **D. OTHER IMPORTANT INSTRUCTIONS FOR THE WORKSHOP FACILITATOR:**

- Strict control of the allowed presentation time (5 min. for each Marketing or Sales Director) is required in this portion of the workshop.

- Request the purchasing managers to prepare their purchasing orders for each of the "product-services" they want to order from each firm.

**4.4.1.4 FOURTH PHASE: "REVIEW OF RESULTS ACHIEVED BY THE MARKETING AND PURCHASING DIRECTORS: CONCLUSIONS AND SUGGESTIONS." (APPROXIMATE DURATION: 1.0 HRS)**

In this phase the facilitator will collect the purchase orders and register them on the board. It is then possible to compute the achieved market share for each of the participating firms that offered their products-services. Sales and market shares calculations are done with the help of a special format included in the appendix of working papers for the workshop.

Now the facilitator can proceed to evaluate the percentage of products that will remain in the purchaser's stock room, due to lack of demand or seasonal problems. In order to do these calculations, one must follow the special format in the appendix.

If the exercise was followed in the correct manner, one will observe that sometimes a significant portion of the target market share will still be available for other potential competitors interested in entering the market with a similar, enhanced, or a substitute product or service.

Note that some of the improvements to the product-service were given in a previous phase when, the outside consultants and customers, gave possible ideas to improve the performance of the product-service.

These ideas are worth considering to improve the current characteristics of the product-service in the study.

At this point, it is possible to generate some marketing and sales strategies to improve the market share of the product-service. Participants can now proceed to fill out the suggestion list of improvement ideas for the product-service studied in the tentative priority projects form specially provided by the facilitator.

**4.4.1.5 FIFTH PHASE: "DEFINE TENTATIVE PRIORITY IMPROVEMENT PROJECTS AFTER REVIEWING RESULTS ACHIEVED BY CONSUMERS-USERS, THE SUGGESTIONS GIVEN BY EXTERNAL ADVISORS, AND AFTER OBSERVING MARKETING AND PURCHASING DIRECTORS PERFORMANCE." (APPROXIMATE DURATION: 1.0 HRS.)**

In this phase the participants of each "Company" will define special tentative priority improvement projects. These projects must be defined, planned so to insure appropriate decisions throughout the organization when considering the quality of the products or services.

The planning stage of development of these projects will include some economic justifications and a clear definition of dates with responsibilities for each person involved in the project.

The priority projects can be defined around those ideas previously presented by consultants concerned with consumers and users satisfaction. In addition, the ideas and experiences from participation in

the sales presentations of the "products-services" must be considered also in the definition of the priority projects.

The actual development and implementation of the selected priority projects will come only after all participants have had the opportunity to participate in the first workshop with those products or services offered by the firm. In a later stage, participants can be invited again to participate in a second run of the workshop where actual consumers, users, and suppliers are involved. Newer priority projects also can be defined after such exercise takes place.

For real-life implementation in the organization of the results obtained with the priority projects defined in the workshop, the next workshop has to include the actual products and services offered by the organization. It is important to note that the crucial priority projects defined in the workshop, must be implemented in the organization after proper authorization and supervision is received from top management. Special economic analysis and justification will be required for their implementation.

#### **4.4.1.6 SIXTH PHASE: "QUESTIONNAIRE OF PARTICIPATION IN THE WORKSHOP." (APPROXIMATE DURATION: 0.5 HRS.).**

This questionnaire offers us valuable information on the methodology used in the workshop and also presents suggestions about its improvement. The actual format of the questionnaire to be employed is presented with the rest of the forms in the appendix at the end of this section.

**4.4.1.7 SEVENTH PHASE: "PERIODIC QUESTIONNAIRE AND INTERVIEW OF PARTICIPANTS AND THEIR APPLICATION OF THE METHODOLOGY PRESENTED IN THE WORKSHOP." (APPROXIMATE DURATION: 0.5 HRS.).**

The main purpose of developing the questionnaire is to evaluate periodically the merits of the "TQM-SOS" and the "C-U NEW" methodologies and the results that the participant's firms actually achieved in the long run. Also, if possible, the questionnaire will help participant managers to obtain information and suggestions of the possible enhancements to the methodologies and for their organizations.

At intervals of three to six months, it is highly recommended to interview those who participated in the workshops and complete the previous questionnaire. This information will allow for a validation of the workshop by the results obtained from the organization.

**4.4.2 Appendix to the Workshop Instructions.**

The following appendix includes all the forms and materials required to supervise and control the workshop activity:

**A. Material and forms required:**

1. Materials requisition form.
2. Questions sheets.
3. Purchase orders form.
4. Market share computation form.
5. Percentage of articles not sold format.

6. Consumer-user matrix formats.
7. Suggestion List.
8. Tentative Priority Improvement Projects List.

**B. Support materials and equipment required in the workshop room:**

- Slide projector (1),
- screen (1),
- large pieces of paper on a stand (50),
- markers (25),
- scissors (5),
- letter paper (200),
- masking tape (2),
- round tables (5),
- identification tags (25),
- chairs for all participants (20 to 24 people maximum).
- tables for at least five participants arranged in a classroom setup.
- The "Products-Services" that will be provided by the supervisor and worked with by the participants during the whole duration of the workshop.







## WORKSHOP APPENDIX FORM

	N° of Batches Ordered	% Market Share MS	If % MS < 40 Quit!
Product 1	$a_1$	$\left(\frac{a_1}{A}\right) (100) =$	
Product 2	$a_2$	$\left(\frac{a_2}{A}\right) (100) =$	
Product 3	$a_3$	$\left(\frac{a_3}{A}\right) (100) =$	
Product 4	$a_4$	$\left(\frac{a_4}{A}\right) (100) =$	
<b>Totals SOLD</b>	$A = \sum_{i=1}^m a_i$	Total =          %	
Number of Purchasing Directors	n (counted in audience)		
Number of products	m (1, 2, 3, ..., m)		
Total number of potencial batches sold	$n*m$		
Undecided batches	$(n*m) - A = UB$		

FIGURE 4: MARKET SHARE COMPUTATION FORM

## WORKSHOP APPENDIX FORM

	q N° of Batches Bought	p % of Batch not Sold	r = q*p N° Batches not Sold
Product 1			
Product 2			
Product 3			
Product 4			
Total	$\sum_{i=1}^m q_i = Q =$		$\sum_{i=1}^m r_i = R =$

$$\text{Percentage of Articles not Sold} = \frac{R}{Q} =$$

$$\text{If } \frac{R}{Q} > 50 \% \Rightarrow \text{QUIT!}$$

**FIGURE 5: PERCENTAGE OF ARTICLES NOT SOLD FORMAT**





## SUGGESTIONS LIST

**SUGGESTION 1:** \_\_\_\_\_

**SUGGESTION 2:** \_\_\_\_\_

**SUGGESTION 3:** \_\_\_\_\_

**SUGGESTION 4:** \_\_\_\_\_

**FIGURE 7: SUGGESTIONS LIST**



## **CHAPTER 5**

### **RESEARCH EFFORT: ACHIEVED RESULTS OF UTILIZATION OF THE "CONSUMER-USER NEEDS EVALUATION WORKSHOP" TO IMPROVE THE "TOTAL QUALITY MANAGEMENT-STRATEGIC OPERATIONS SYSTEM'S" IMPLEMENTATION PROCESS.**

"It's better to try something, fail, and learn something than to try nothing, learn nothing and succeed in nothing" (Neuman, 1994).

#### **5.1 General Results of "TQM-SOS" and "C-U NEW" Applications in Different Mexican Organizations.**

The main purpose of this Doctoral Thesis is to document the methodologies and the results achieved after practical applications of the "TQM-SOS" and "C-U NEW" techniques in different Mexican organizations.

Such efforts included the study of previously programmed "TQM-SOS" sensitizing, training, and implementation exercises. These activities are intended to help those participating organizations improve their ongoing efforts to fully implement the traditional "TQM" organizational way of operating. By traditional "TQM" approach, I mean the current procedures that are normally used today by most organizations. Those current approaches mainly consider the knowledge proposed in the past by renown international quality consultants and experts such as: Ishikawa, Deming, Juran, Crosby, Conway, Feigenbaum, Taguchi, and Peters.

The expected organizational objectives to be achieved with the application of the "TQM-SOS" and "C-U NEW" methodologies in different organizations were briefly described in Chapter 3 (review section 3.3). In that chapter and in chapter 4, we discussed the principal requirements that are needed to satisfactorily implement "TQM-SOS" and "C-U NEW" methodologies.

In a developing country like Mexico, and considering Ackoff (1974) definition of "development", the appropriate application of "TQM-SOS" and "C-U NEW" methodologies in Mexican organizations can offer great competitive advantages for corporate achievers. On the other hand, organizations failing to develop and implement "TQM-SOS" mode of operation can become an endangered and destined for extinction.

Firms in countries like Japan, have supported for approximately the last 50 years proved "TQM" endeavors and have adopted and adapted to their particular culture, environment, and ways of life, various guidelines that the traditional "TQM" approach currently uses.

Japanese organizations are showing the world the impressive results that can be achieved if appropriate support for the traditional "TQM" organizational strategic approach is promoted by top management. Internationally recognized quality and productivity results have been achieved in Japan with the help of the JUSE (Japanese Union of Scientists and Engineers) organization by different Japanese organizations, regardless if those enterprises were physically located within or outside their territorial boundaries.

Because of the North American Free Trade Agreement (NAFTA), Mexican organizations of all kinds will greatly benefit by applying the "TQM-SOS" and the "C-U NEW" methodologies.

Part of those benefits will be recognized as enhanced customer satisfaction, increased job performance, employee satisfaction, better teamwork, operative cost reductions, improved productivity, growth in market share, and greater profitability for the Mexican companies that embrace the "TQM-SOS" continuous improvement process.

It can mean, as well, real and faster economic recovery and development Mexico. It is important for the reader to remember that the NAFTA agreement currently: The United States of North America and Canada, as well as Mexico.

With the help of successful organization's collaborators sensitization, training, and appropriate implementation of the "TQM-SOS" and "C-U NEW" methodologies within the firm, consumer and user needs can be clearly stated, defined, and understood by everyone in the enterprise. The organization can utilize this data and information to significantly plan the required actions to improve the currently offered products or services.

Thus, product or service improvements can be developed with the help of special team priority projects purposefully programmed to achieve such goals and supported by the information gathered after applying the "C-U NEW" methodology. This improvement effort can begin from the product or service design stage.

Additional consumers' and users' needs can also be obtained from traditional marketing surveys or other applicable research tools such as:

1. Quality Function Deployment (QFD): This teamwork technique mainly uses available and researched consumer and user needs as

required inputs. Such inputs are used to translate them with the usage of the progressive "Houses of Quality" in products' or services' specifications and manufacturing or processing guidelines. Those guidelines are organizationally required for the products and services productive manufacturing and delivery.

The principal proponents and supporters of "QFD" recommend the application of special Market Surveys and Focus Groups to define what the consumers' and users' needs are to successfully apply the "QFD" procedure (Glushkovsky, et al., 1995).

It is important to remember that "QFD's" main objective is to translate to operative specifications those customer needs after they are known and not to define them. The definition of the consumer and user needs step is purposefully left out by the "QFD" technique as a different activity to be pursued by the marketing or sales areas of the firm (for more details, see Table 8).

2. Focus Groups: This methodology helps marketing people to define customer needs by working with different groups of stratified potential consumers or users of the products or services. After the group activity is finished it is possible to find the customers' expected needs (for more details see Table 8).

3. DELPHI: Consensus methodology used to obtain better decisions by a group or panel of experts. One of the uses of this technology may be to define of consumer or user needs, but that has not been its only and primary application (for more details, see Table 8).

4. Brainstorming and Nominal Group Technique (NGT) Methodologies: These approaches help management team efforts to

obtain better ideas for all kinds of problem-solution exercises (for more details, refer to Table 8).

Unfortunately, these methods are today only partially used to define proper corporate vision, mission, strategic operative guidelines, and consumer and user verbally expressed needs by organizations interested in better satisfying its current or future customers' needs with improved products or services.

With the help of the "C-U NEW" methodology, verbally expressed consumer and user needs can be more appropriately known, understood, and defined. The "C-U NEW" methodology is purposefully thought, planned, designed, and used to define and help organizations to achieve the vital and sometimes even forgotten important organizational objective of continuously satisfying their consumers' and users' needs. Please remember that in Chapter I we operationally defined the general Mission Statement of any modern organization as:

Satisfy the current and future verbally expressed as expected needs of its actual or potential customers with adequate products or services done right at the first time without any excuses and at a productive, efficient, and competitive level of cost which offers consumers and users value and satisfaction when it is directly compared with the level of price to be paid by the consumer and user, while at the same time, the organization recognizes the efforts of all collaborators that continuously strive to improve their work, products, and services in a honest way.

With usage of the "TQM-SOS" and the "C-U NEW" methodologies, the required products or services will be better understood conceptually by

all participants in the workshop and all the related "TQM-SOS" training activities.

The people working in the organization, will have a clearer picture of the products or services required by the firms' consumers and users and it will be easier to design and manufacture, or offer the products or services expected by its current or potential consumers and users.

By understanding current or future customer needs, it will be easier to think, define, develop, and implement the required strategic operations that will be planned and performed in the organization, to productively obtain such products or services. These activities must be part of the regular "Total Quality Management Strategic Operations System" chores the firm continuously performs, to achieve and improve its current level of "Customer Satisfaction."

Many authors, including Juran, Ishikawa, Deming, and Crosby, even argue in their known theories that to achieve Total Quality and Customer Satisfaction it is not possible, or recommended, to use cookbook recipes, but that each organization should be required to develop its own approach to achieve the required quality in its products or services.

This effort will help organizations meet consumers and users expected needs with adequate designed, built, manufactured, and offered products and services, from the moment those ideas are supported and personally enforced by top management.

Top level executives of the firm are solely responsible for the successful implementation and continuous application throughout the organization for the "TQM-SOS" and the "C-U NEW" methodologies.

### **5.1.1 Expected Objectives of Application.**

To improve the Total Quality Management Strategic Operations System implementation process it is necessary to clarify to top management what "TQM-SOS" and "C-U NEW" methodologies are and can do for them and their firms. This was discussed in previous chapters.

It is also required to sensitize management about what is, or should be, the top manager's principal role in organizations pursuing quality or excellency objectives, how its complete organization must be structured in the future and its people evaluated, recognized, and compensated for all the efforts shown and done in continuously achieving "Total Customer Satisfaction."

The thoughtful revision of all the subject matters mentioned in this thesis will make it easier to develop better answers and plans to achieve these objectives by helping top managers understand and define their proper roles in the "TQM-SOS" development process and their required involvement.

The principal results that were expected after successful applications of "TQM-SOS" and "C-U NEW" methodologies in various participant organizations such as Ford, Technik-Air, and ITESM's Graduate School will be summarized next:

**1) Help organizations define the appropriate steps required to use and implement "TQM-SOS" and "C-U NEW" methodologies (Manufacturing or Service Industries applicability):**

The "C-U NEW" methodology helps organizations define their current and future consumers' and users' expressed needs in order to define which products and services can be offered to them to satisfy their needs. The "TQM-SOS" methodology allows the organization to define the required steps that are required to satisfy those consumers and users on a continuous basis.

Top management continuous support, involvement, and leadership is required to obtain the expected quality and productivity results. The sensitization and training phases of the "TQM-SOS" methodology can help managers to understand the role they need to play from that moment on. Results were positive in organizations where top managers participated in the training and implementation activities in the first stages of the "TQM-SOS" development and implementation effort.

One of the most important objectives sought by the organization is to improve the design and delivery of its products and services. "TQM-SOS" and "C-U NEW" methodologies support these objectives by helping top management define and satisfy their current or future consumers and users needs. With those needs understood it will be possible to translate them in internal processing specifications that will help strategically organize all operative activities of the firm and all involved areas of the organization.

Areas that enhanced the quality and productivity of the products or services offered were: design, manufacturing and production, assembly, support departments and service generating departments such as: customer service, promotion, marketing, sales, and delivery.

Consumers and users needs, if appropriately considered, will favorably impact the inadequate way the organization now operates,

works, and does business by helping management, as well as the entire corporation, return to basic modes of operation.

New basic operative principles will require and include the study and review of all operations performed in the organization, including its Mission Statement, its declaration of General Guiding Operative Policies, and its Strategic Operations System plan. In general all areas of managerial responsibility that currently are not appropriately defined to achieve the most important organizational objectives will be reviewed. These objectives from now on must again be: "Better satisfying its current and future consumers' and users' expressed needs on a continuous basis with adequate products or services offered at the right price level and which must be designed, obtained, manufactured or generated right at the first time."

The effective utilization of "TQM-SOS" and "C-U NEW" methodologies will help improve organizational chances of designing and manufacturing better products and services in interested corporations. Better products and services will be obtained only by enhancing the approach currently used to obtain proper definitions of customers' expressed needs.

After these needs are known and understood by all collaborators of the organization, it will be possible to use expressed needs as reliable support material with the different teachings of the renown international quality, productivity, strategic planning, and marketing experts to continuously improve the products or services offered today by the organization. Hard and continuous Team-Work activities and Priority Projects work will be necessary to deliver the right products or services to current and future customers.

## **2) Improve the Organization's Total Quality Management Strategic Planning and its implementation process:**

Each corporation or organization that wants to achieve the important customer satisfaction goal must make a series of important strategic and operative decisions regarding team-work, employee participation, and their productive efforts recognition. As was shown, written up to date references dealing with team-work include different points of view offered by all kinds of available scholarly or empirical sources about the most appropriate approach to follow or use in any organizational quality improvement exercise.

I believe that each particular organization has its own established culture and requires special applications and considerations to achieve satisfactory "TQM-SOS" and "C-U NEW" related results. This last observation is particularly true for Mexican organizations with different cultural, educational, social, and economic traits.

Any organization that has made the crucial decision to develop "TQM-SOS" for "Total Customer Satisfaction" requires without delay, or doubts, full participation, team-work, and continuous involvement by everyone in the firm. It also requires special development of interpersonal relationships and participatory activities for all the suppliers (internal/external) of the organization.

The first step to be followed with the "C-U NEW" approach is that suppliers as well as customers be identified inside or outside of the organization and invite them to participate in the process of defining and appropriately logging, for reference purposes, their current or future expected needs and wants.

The fundamental guiding corporate mission statement of each organization must be carefully redefined and selected after adequate considerations are made about the current or future expectations and related needs expressed by their customers.

When consumer and user needs are fully understood by everyone in the organization, it will then be possible to start the design phase of the required products or services by using the results obtained during adequate participation in the "Consumer-User Needs Evaluation Workshop".

If organizations use current or future needs of their customers as a guiding light for their required capacity planning definition (Ishikawa, 1985), lower failure or scrap rates can be expected throughout the firm as well as higher profitability levels. Team-work efforts are suggested within the organization to generate all data and information required to achieve these important organizational objectives.

"TQM-SOS" and "C-U NEW" methodologies are appropriate tools purposely designed to teach, show, and help organizations to use team-work efforts for continuous quality improvement activities. This was suggested by the different managers that previously participated in training and consulting efforts in the different organizations that will be mentioned in the next sections.

"TQM-SOS" and "C-U NEW" methodologies also consider for improvement the existing interrelationships which are required to exist between the various functional areas of the firm and its customers (internal or external) and its suppliers. Enhanced interrelationships are needed to help the organization achieve better customer satisfaction.

Principally it's important to consider the required interface and adequate relationships that must exist between the following organizational areas: Marketing, Operations (Manufacturing, Production, Customer Service, Distribution and Logistics, Maintenance, Design, R&D, Management, etc.), Finance, Purchasing, Human Resources, and all the selected suppliers of the organization. These are some of the areas that must be involved in the process of generating the required products and services being demanded by the market (see Figure 2).

The different factors that can be improved after appropriate application of the "TQM-SOS" and "C-U NEW" methodologies and thus help the organization to achieve its short and long-term "Consumer-User Satisfaction" objectives are:

- a) Who are the main current and future customers (consumers and users) of the organization?
- b) What are their customers' expressed current or future needs and expectations in regard to the products and services currently offered by the organization?
- c) What and how the products and services that organizations generate must be offered in the marketplace to better satisfy their customer's current or future needs
- d) How will those expected products and services be generated to satisfy their current or future customers and their needs?
- e) What programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction as well as the required motivation and flexibility to change in creative ways the organization to improve productivity continuously?
- f) Change for the better the organization's culture and related structure to achieve more efficiently all its expected corporate objectives:

Understanding the Mission of the organization.

Organizational Cultural Change.

Personal attitude Change.

Personal Growth and Job Satisfaction.

Organizational Quality-Productivity Goals.

g) Improve Design and Delivery of Products and Services. Help top management define their current or future customers' and users' needs and then translate such expressed expectations in internal specifications that will help strategically organize all operative activities of the firm and all involved areas of the organization besides manufacturing or production areas or service generating departments to design, manufacture, build, construct, service, promote, market, sale and deliver the products and or services currently required by their customers or users in a more productive and efficient way.

h) Improve Operations Management Process: Clarify to top management what "TQM-SOS" and "C-U NEW" methodologies are or can do for them or their firms, what is or should be the top manager's principal role in organizations pursuing such quality or excellency objectives, how its complete organization must be structured and its people evaluated, recognized and compensated for all their efforts shown and done in continuously achieving "Total Customer Satisfaction."

Leadership: Development and Promotion.

Team-Work and Brain-Storming Development.

Good training tool for "TQM-SOS" and "C-U NEW" future understanding development and applicability in the firm.

i) Improve in general all the organization's quality and productivity results, its general efficiency and its communications process to better satisfy its current and future potential consumers and users: This will be accomplished if adequate trained leaders are allowed to

work with the tools mentioned in the methodologies here being studied:

Organizational Growth.

### **3) Generate "Auto-Purchase Decision" (Neuman, 1988):**

The "Auto-Purchase Decision" effect was previously operationally defined and considers:

If the people working in the organization are individually or collectively willing to use (paying for it or even free) the products or services they themselves generate in the firm, then we can say that the product or service can possess the required quality on the eyes of the actual consumer and user.

Generation of "Auto-Purchase Decision" intent in the organization's workers is an important factor leading to "Total Customer Satisfaction" and "Total Quality-Productivity" (Neuman, 1988). Quality can also be operationally defined as: "The continuous satisfaction of the consumer-user needs."

Further explaining these terms it can be stated that: "A product or service has quality if it satisfies the expressed needs and expectations of its potential consumers and users. The contrary will mean that the product or service does not have the required quality" (see operational definitions in section 1.2 for review purposes).

When "Auto-Purchase" is promoted through direct management involvement and participation in the process of culturing its collaborators in the policy of "Always doing it right, the first time," the organization will increase consumer-user chances of obtaining products or services that

match his or her requirements and expectations. If happens, the organization will be closer to the achievement of its major goal of total customer satisfaction, as well as realize its important corporate mission.

It is important to remember that consumer and user needs usually vary continually over time. The flexibility to constantly review and redefine new ways of operating the complete organization must also be implemented as part of a fresh cultural approach that any modern organization wishing to regularly satisfy its customer needs has to implement.

Thus, modern organizations must implement adequate consumer and user needs searching and evaluation mechanisms, like the "TQM-SOS" and the "C-U NEW" methodologies. These techniques provide relevant and current information to the organization that employs them. The information obtained will allow all the organization's areas to be up front technologically when compared to tougher competitors.

In such cases, I can assure that an organization closer to all its customers in all possible ways will know sooner than its competitors what its consumers and users needs are or will be. This information can be easily transformed to define and design accordingly the new products or services that will be required by the market.

#### **4) "Change Resistance Reduction":**

One of the most important factors that can definitely hinder the implementation efforts to satisfactorily apply "TQM-SOS" and "C-U NEW" in an organization is "Change Resistance." Change obstruction must be prevented and reduced to a minimum to enhance the probabilities of a successful implementation.

Everyone in the organization must voluntarily work to achieve the main purpose of "TQM-SOS" implementation process, which is the achievement of internal and external total customers satisfaction. This will be realized when adequate products or services are especially designed and generated with the participation of all the involved departments of the firm.

It is required that a continuous "Quality-Productivity" improvement cultural approach is implanted in everyone's mind. To achieve such an important goal everyone will be invited by top management to participate and offer ideas and creative problem solutions. If participation by all collaborators is expected, it will be necessary to develop adequate evaluation and recognition policies within the organization. The first three required policies to be considered are: a) continuous improvement promotion. b) participation and involvement recognition, and c) the "We are not looking for people to blame but people to offer solutions" policy implementation.

Flexibility in all areas will be culturally allowed, promoted, and developed with the use of adequate team-work involvement. If achieved, the required reaction time to those emergent new expectations and desires stated as required by the consumer or user, will surely decrease, too. Reduced lead time will help the organization to be more efficient and effective in the marketplace as well.

Everyone in the organization must be assured through proper training and sensitizing activities that the main purpose of "TQM-SOS" implementation process is the achievement of their internal or external consumer and user satisfaction. Customer satisfaction is only attained with adequate products or services which are especially designed and

generated with the participation of all the involved departments of the organization. Using a "Quality-Productivity" continuous improvement cultural approach increases the probabilities that the results will be significant and useful for the organization and all its participants. But, providing all the required personnel evaluation and recognition policies already would have been implemented.

#### **5) Statistical Process Control (SPC) Continuous Tools Usage Promotion:**

Regarding this subject, different "SPC" group training sessions are specially programmed after the sensitizing stage of the "TQM-SOS" implementation effort. In the training activities, teams are taught how to analyze and solve particular practical "Quality-Productivity" problems with the help of the basic and advanced "SPC" Tools. The vivid simulations and practical exercises specially developed for training purposes also will help the participants to understand and better apply the explained concepts to their daily activities. The principal objective of this dissertation is not to explain in detail all the characteristics of "SPC" tools but to help top management in their efforts to use them properly.

The utilization of all the vital information that the different "SPC" tools provide managers, must also be taught the participants during the "TQM-SOS" and "C-U NEW" sensitizing and training efforts. The usage of these types of tools and the data they offer should be continuously promoted by top management.

#### **6) Real Life Representation through "Small Scale Simulation":**

The sensitizing and training activities of the "TQM-SOS" and the "C-U NEW" methodologies must be planned and done with products and

services that are directly related to the products or services currently offered by the firm.

Proper products and services are selected during sensitizing and training sessions to be used by participants for practice purposes. Also, the organization's products and services will be used later to start the definition of priority projects which must be pursued within the firm to improve the current levels of quality and productivity attained in the organization.

## **5.2 Research Methodology.**

The six general objectives just described are sought by organizations interested in using and implementing the "TQM-SOS" and "C-U NEW" methodologies. In this thesis, it is also intended to show how the application of the "TQM-SOS" and "C-U NEW" methodologies helped the participant organizations achieve those objectives and to what extent those goals were actually attained.

The questionnaires that were given to the different managers that participated in the "TQM-SOS" and "C-U NEW" implementation and training exercises were specially prepared to validate if the objectives mentioned in the previous section were achieved by them on a personal and organizational basis. The questionnaires also were designed to obtain information in relation to the real results achieved by the involved organizations after application of the "TQM-SOS" and "C-U NEW" methodologies.

It is considered that the achievement of these objectives is important for any organization wanting to develop better products or services. From now on companies interested in maintaining and

increasing their market share must continually try to improve their products and services. If lack of purpose in this respect (Total Customer Satisfaction) is now observed in an organization, I believe that there is still time to try to improve its current market situation.

For the success of the sensitizing and training activities it is required that real-life representation through small scale analogous products or services be used. Those products and services must be similar to the ones currently offered by the firm. The similarities will help participants learn what the "TQM-SOS" and "C-U NEW" methodologies are all about. Both methodologies are theoretically based on the premise that it is easier to teach participants by practically doing themselves similar activities during training to the ones that will be required during actual "TQM-SOS" and "C-U NEW" real-life implementation efforts.

This learning approach will show participants what their real-life roles must be in the "TQM-SOS" and "C-U NEW" implementation efforts that will follow in the organization. The "TQM-SOS" and "C-U NEW" training and implementation methodologies offer real-life analogies for the participants to actually compare between the real-life product or service generally offered by the organization and the products or services being presented for study and analysis purposes during the workshop.

This last point is important because participants can learn in a "laboratory or experimental type of setting" where costs are controlled, minimized, and also where the possibilities of learning by analogy is greatly increased and time frames greatly compressed. Also, the cost of making mistakes in the workshop are minimized when compared to the costs of continuing doing or delivering poor quality products or services to actual and current customers or users in all kinds of manufacturing, service industries, or organizations.

The selection of the particular scale products (toys to assemble) or services, which will be used during the "TQM-SOS" and "C-U NEW" training activities, must be done keeping in mind the similitude that the toys require to have with the currently manufactured or delivered products that the corporation in which the workshop will be presented. Also that, to be successful, the laboratory that in reality is the "C-U NEW" workshop, it is impossible to work with real-size products or services for learning purposes in most occasions.

The general results observed in the set of organizations where the "TQM-SOS" and "C-U NEW" methodologies studied in this thesis were applied, are reported after directly working with a small sample from different groups of managers that previously participated in the mentioned "TQM-SOS" and "C-U NEW" training and implementation sessions. The answers and comments given by those managers in the interviews especially programmed to gather information will follow next.

The results were documented in personal interviews conducted with managers representing various corporations, such as Ford, Technik-Air Group, and ITESM's EGA-CCM Graduate School (Instituto Tecnológico y de Estudios Superiores de Monterrey in its Escuela de Graduados en Administración at the Mexico City Campus), in which I applied the methodologies discussed here.

The questionnaire used to gather information and all the requested commentaries from the different participants in the workshop and "TQM-SOS" training sessions was designed only with open-ended questions in mind. This was done to facilitate the expression of any comments and suggestions that participants may want to offer. This also allowed participants to offer suggestions to continuously improve the

methodologies under study with their ideas and insights after directly participating in the "C-U NEW" and "TQM-SOS" training and sensitizing sessions.

Participants were free to apply the "C-U NEW" and "TQM-SOS" methodologies voluntarily in their organizations. The research effort to show if the sensitizing and training efforts resulted in any kind of change of behavior or attitude toward consumers and users took place some time after those sessions. Participants were never told that the evaluations or interviews would take place in the future when they participated in the training exercises.

The benefits of applying these types of questionnaires is restricted and recommended for small samples. Open-ended questions are also recommended by Hawkins and Tull (1994) who stated:

Open-ended questions leave the respondent free to offer any replies that seem appropriate in light of the question. Open-ended questions do no influence the respondent with a restated set of response categories. Thus, opinions can be expressed that are quite divergent from what the researcher expected or what others had expressed. Related to this is the fact that open-ended questions elicit a wide variety of responses. Open-ended questions can provide the researcher with a basis for judging the actual values and views of the respondents that are often difficult to capture with more structured techniques. This 'feel' for the quality of the information can be conveyed in the report by the inclusion of quotes from representative responses. Finally, respondents generally like to have at least a few opportunities to express themselves openly.

The questions were written to evaluate the merits, level of achieved learning, usage, and implementation results of applying in their organizations the "TQM-SOS" and the "C-U NEW" methodologies. The answers given by some of the selected participants of those organizations will follow in the next sections.

A comprehensive summary of all the general results observed across the studied sample of interviewed managers from the different organizations that participated in the "TQM-SOS" and "C-U NEW" exercises in different points in time will also be presented in this same chapter.

### **5.3 FORD MOTOR COMPANY MEXICO: Description of Activities Performed and General Achieved Results.**

The application of the "TQM-SOS" and the "C-U NEW" methodologies in Ford Motor Company de Mexico S. A. de C. V. was part of a normally planned Total Quality Management introductory sensitization and Statistical Process Control training program that the company had requested from the Instituto Tecnológico y de Estudios Superiores de Monterrey. This training effort was programmed previously to their start-up of assembly operations for its new Thunderbird Model in their Mexico City plant site.

I was assigned the task of working as instructor and facilitator with different managers in charge of the assembly plant and given the special assignment and recommendation to help them learn about Total Quality Management including Statistical Process Control. My teaching assignment included the "TQM-SOS" and "C-U NEW" methodologies in addition to other subjects programmed to be delivered to the Ford

managers participating in the classroom at their own manufacturing facilities.

The original course work programmed by the ITESM-CCM Graduate School to be offered to the managers at Ford Motor Company of Mexico was slightly modified to allow time and space to try to teach and explain to the participants the "TQM-SOS" and the "C-U NEW" methodologies. This last was done because their corporate training representative requested to work hard in the sensitization process of the managers that were going to be present in the training sessions. This approach was required to generate in the long run a different attitude, group mood, and better cooperation between the working areas to be present in the training course.

The reason for attending to this important request was due to the impending start of the production and assembly of their new Thunderbird car in the Mexico Plant at that particular point in time and to improve the quality of the production and assembly process of their cars and trucks. This last was due to the fact that the plant also required to be internally certified as reliable supplier (Q-1) by their own corporate quality assurance measures. Remember Ford's internal "Quality is Job number 1" strategic goal.

In the other two applications of the "TQM-SOS" and the "C-U NEW" methodologies, that also will be presented here (Technik-Air Group and ITESM organizations usage), the purpose was to present them as I had originally developed the methodologies for training and implementation purposes.

The participants in the training program at Ford Motor Company at the time were the active managers and production and assembly

superintendents in charge of the assembly plant at its Mexico City site. When the course was offered in 1989, some of the participants commented that they were not familiar with all the concepts that I was going to explain to them or the reasons why a course on "TQM" was so important for the immediate future of the organization. At least, as they later explained to me, they were not convinced and had some doubts about traditional "TQM's" merits or its possible implementation success in their work areas.

It is important to mention that at that point the assembly plant had not been certified as a "Q-1" reliable supplier, but was already under considerable pressure by its own internal quality assurance area to improve its supplier grading level according to their "Q-101" quality manual.

During the sensitization part of the "TQM-SOS" training sessions, I explained to them the need to eliminate the "Esquizofrenia" sickness throughout their organizations, the difference between a traditional and a modern organization, and the Total Quality Circuit concepts that I developed (Neuman, 1988). We also reviewed most of the Quality experts (e. g.: Deming, Juran, Ishikawa, and Crosby) theories.

During the training sessions there were applied different vivid dynamic exercises to help the participants grasp the importance of the different subjects to be covered in class. Those exercises are not explained here but are part of the different teaching procedures also purposely designed that can be continuously employed in such training sessions. I am sorry not to be able to offer any reference material for such dynamics, because I have not had the opportunity to write them yet.

Afterwards, I made them all participate in the "C-U NEW" where we worked with scale models of different automobiles, trucks, and planes as the manufactured products to be studied with the help of the already explained workshop's methodology (see Chapter 4). The selection of those particular products (toys) was done due to the similitude that those toys have with the real life products that the Ford Motor Corporation currently manufactures in its organization.

The duration of all the programmed training sessions was close to 40 hours of direct facilitator contact per participant. Different team-work exercises to be done in class and special homework projects were also asked from the participants to be delivered in addition to the team-work activities that were constantly utilized during the duration of the workshop and course work to promote participation, understanding, and learning.

Communication, participation, and leadership traits were suggested to enhance "TQM-SOS" implementation efforts. Also, customer needs knowledge and satisfaction was stressed as the most important objective that modern firms must continuously pursue.

The interviews done with the Ford Motor Company managers that participated in the "C-U NEW" workshop and in the "TQM-SOS" training took place approximately four years after the courses. I will summarize the personal and organizational results (participant managers, superintendents, and Ford Motor Company) after this training effort was finished and relate them to the expected objectives of the "TQM-SOS" and "C-U NEW" methodologies. The answers here presented are the same ones the participants gave during the personal interviews I had with them. The names of the participants will be kept confidential, for the time being, as they requested.

Next to each of the six expected objectives of the training and utilization of the "TQM-SOS" and "C-U NEW" methodologies I will include the real results that participants from Ford Motor Company Mexico commented they personally achieved within and for their organization after their individual and collective training and workshop participation. It is also important to notice again that the results were obtained four years after the "TQM-SOS" and "C-U NEW" training took place. This last validates the applicability of the methodologies and also shows its impact in a longer longitudinal time frame.

### **5.3.1 "TQM-SOS" and "C-U NEW" Objectives Achieved In FORD MOTOR COMPANY de MEXICO S. A. de C. V.:**

In relation to the different objectives that "TQM-SOS" and "C-U NEW" are interested in obtaining, stated in Chapter 4, section 4.1, Ford participants interviewed, in general, expressed that the principal results and fundamental things by them learned during their involvement in the "TQM-SOS" and "C-U NEW" training and workshop processes that were achieved in their organization were:

#### **1) Considering "TQM-SOS" and "C-U NEW" methodologies' applicability in any organization regardless if it is oriented toward manufacturing or service activities:**

Participants to the "C-U NEW" workshop and "TQM-SOS" sensitization and training sessions commented that they obtained a broader picture and better understanding of their complete operative processes, considering that such a process initiates since its design stages and up to the moment when its users actually use the products they manufacture and how their daily work might affect all their involved internal or external customers.

Also, participants were able to clarify the concept of "Quality and Service for Customer Satisfaction." One of the assembly plant managers interviewed commented that:

"The product used in the workshop is the best to show product similarities. Thus, our product also can be modified to satisfy the internal customer and improve too."

**2) Considering the objective of improving the organization's Strategic Operative System Planning Process, participant managers commented on the sought objectives:**

a) Who are the current and future customers (consumers and users) of the organization?

Managers argued that they understood better their customers and suppliers roles. Management even commented that they started to work with a more respectful consideration of the different persons involved in the organization and that the concept of "consumer-user" helped Ford to improve their results and operations (assembly and manufacturing) at the same time that it still offers the firm continuous improvement opportunities.

b) What are their customers' expressed current or future needs and expectations in regard to the products and services offered by the organization?

Interviewed managers said:

"Before the Workshop we did not understand the difference between the terms: 'Needs Vs. Stubbornness, or obstinacy by

customers, and learned to listen to our customer, the one that receives my work or service."

"Sometimes we did not want to understand our customer. The dynamic used in the workshop made us play the role of the customer and step in their shoes, and then, the customer is better understood and his needs, too. You also can understand better your supplier."

"During the Workshop you put yourself in the shoes of the Customer-Supplier-Manufacturer and understand better their needs."

One manager concluded that with their participation in the "TQM-SOS" and "C-U NEW" training exercises, an important change achieved in the way they thought and dealt with their customers was:

"Before the workshop we used to say: 'The product is like that. If you do not want it, don't buy it!' Now, I understand better our customer and always try to satisfy the customer for whom I work."

c) What and how the products and services that organizations produce and generate must be offered in the marketplace to better satisfy their customer's current or future needs?

Ford managers argued during the interviews that with the workshop:

"You can learn how to recognize needs that sometimes are above what we normally do everyday: "Sell what the customer wants Vs.

Sell what we can do (this last is a very limited way of seeing things)."

"We now verify what the customer wants and if that has impact in what customers really see. Our perceptions are now equal to those of our customers: If I see it wrong, that is the way that my customer sees it."

d) How will those expected products and services be generated to satisfy their current or future customers and their needs?

One Ford Assembly Plant Manager said:

"I learned to see my job as my customer sees it." It is the concept that now gravitates everyday in our organization about the customer. Objectives are better accomplished with our customers in such way."

e) What programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction as well as the required motivation and flexibility to change in creative ways to improve productivity continuously?

Plant supervisors and managers commented that from that point in time they personally saw the opportunity and changed in the next forms:

"We started to use besides engineering specifications the expressed customer needs (internal customer was better served then), and we did not allow any more that operators would hit or do unnecessary effort to assemble bad parts. Now we look for better tools or materials to facilitate the jobs of everybody. We

understood more the reason of having specifications and learned to use them better."

f) Change for the better the organization's culture and related structure to achieve more efficiently all its expected corporate objectives:

Better understanding of the Mission of the Ford organization was also achieved because managers obtained a more global vision of the company. Some of them argued strongly in favor of the concepts learned in the workshop and about the appropriate applicability of the "TQM-SOS" and "C-U NEW" sensitization phases in their different work areas:

"Personally I benefited from the participation in the workshop. It helped me improve my perceptions and the vision I had about the organization."

"The people that did not understand the cultural change required and expected by the company, are not any more with the organization. The ones that used, applied the concepts, and that changed their attitude in their daily activities, are the ones that now lead the work areas, as I currently do with mine. All the people that participated in the workshop and applied what we learned there now have higher managerial responsibilities and positions were they encourage team-work and quality."

In regard to Organizational Cultural Change various assembly plant managers argued that the "TQM-SOS" and "C-U NEW" workshop helped them with:

"The workshop helped the change of mentality and culture. Many of the participants including myself decided to change."

"It helped us to achieve a cultural change and to support other areas. It was the beginning stage of change. Before, I used to work in maintenance (while taking the workshop) and did not understand well or did not want to understand my customer. It also helped me to better see the relationship between Customer-Supplier. It helped to close the gaps in between interdisciplinary work groups."

"Further developing my common sense. I learned to see things from other point of view: From outside, and I observed a completely different sight. Destroyed old paradigms."

"The methodology did work: We achieved cultural and attitudinal change. The attitude towards the customer (internal/external) changed and that helped us offer them more things."

"We also accomplished better communication, improved service to our internal-external customer, enhanced attitude and in general improved productivity. We are now more sensitive to all things. We now recommend improvements to the manufactured products. We try more to satisfy our customers. We also understand more our competition. We have a clearer concept of "quality" for our daily performance."

The objective of helping participants in the process of achieving personal attitude change was mentioned as accomplished by different participants:

"I became more ethical, with an improved conscience of things."

"Obliged me to change my behavior and I decided to do it to improve myself. I also changed my values."

"After the workshop, the people that participated in it, got closer inside and outside the organization. We accepted that each had different roles to play in the company. We started the change playing and having fun and that way was easier to adopt it in the job."

"I changed my attitude towards things that were not right."

One of the most important achievements of Ford managers, reported in the interviews, after their direct participation in the "TQM-SOS" and "C-U NEW" training exercises was their own personal growth and increased job satisfaction:

"The methodology invites to participate. It created an environment of openness and confidence that lead to improvement. Everyone that participated remembers the workshop up to day".

"I identified various persons in the workshop with 'Esquezofofrenia' and afterwards looked for a different behavior model for myself. Some people thought it was only a game."

"I did not understand before the people, particularly those that had an interest in improving tools, and with the workshop, I personally reacted and understood that traditional approaches can be improved also. The workshop and training received allowed me to grow personally."

"The workshop left a personal mark on me and also information that I can use during all my professional career."

"Personally the changes in my attitude also helped me to improve. I recommend the workshop for people interested in a personal or organizational change to achieve "TQM" and even helps to advance more. Good training tool. Simple to understand."

"It is also applicable to the life you lead at home. Consider your wife as: 'Customer-Supplier.'"

"It helped me to move up in the organization. I questioned myself and decided to change."

"It was a pleasant experience and it is part of what has allowed me to improve and advance in the organization."

"It surprises me the profound mark that the workshop left in my person."

"You can see who applied and who did not applied the concepts given in the workshop. Concerning the dynamic (concepts) shown in the workshop. The people that used them are now two levels higher in the organizational structure of the company. It gave them personal and work results due to their change in attitude. The understanding of the methodology helped us to advance and become people of success."

g) Improve Design and Delivery of Products and Services:

Help top management define their current or future customers' and users' needs and then translate such expressed expectations in internal specifications. Such known specifications will help strategically organize all operative activities of the firm and all involved areas besides manufacturing, production areas, or service generating departments to design, manufacture, build, construct, service, promote, market, sale, and deliver the products and or services currently required by their customers or users in a more productive and efficient way.

Ford participants argued that the workshop allowed them:

"Our plant assembly manager participated also in the workshop and requested immediate application of the learned methodologies in our daily activities and with that, we achieved conformance to USA specifications."

"Concept perfectly related to the areas of the organization: engineering, manufacturing, costs, purchasing, etc., because we see all those areas in a small scale simulation within the workshop. It has application to all other areas of the organization."

h) Improve Operations Management Process:

Clarify to top management what "TQM-SOS" and "C-U NEW" methodologies are or can do for them or their firms. It also will reveal what is, or should be, the top manager's principal role in organizations pursuing quality or excellency objectives, how its complete organization must be structured, and its people evaluated, recognized, and compensated for all their efforts shown and done in continuously achieving "Total Customer Satisfaction."

Considering the organizational intent of improving leadership traits participants commented that:

"The workshop helped us to define what we really needed to do around here."

"It was in an appropriate time, that we the people with a higher administrative level in the areas of assembly and manufacturing, to have had the chance to receive and participate in the workshop."

"It helped me personally to delegate tasks and in developing strategies and projects with direct applicability."

"TQM-SOS" and "C-U NEW" sensitizing and training activities are intended to lead participants toward improved Team-Work and Brain-Storming development. Ford managers that participated in both training and sensitization sessions commented during the interviews that:

"Before the workshop: I had lots of fights with the people at upholstery (our internal customer). We were sick and tired of them. When they used to call us in the internal radio, we did not even answered to their calls. After the workshop: We started to come down to see the upholstery people, we did not wait until they called. We started to put ourselves in their shoes and place, as the workshop taught us. The work and our relationship improved."

After the workshop: "Communication, compromises, and tasks' due dates were improved. Common objectives were started to be considered."

"The workshop fomented improved team-work. Better communication (same language), among participants was achieved."

One of the questions that was presented to the participants in the questionnaire is expressly designed to evaluate the effectiveness of the "TQM-SOS" and "C-U NEW" methodologies as appropriate training and implementation tools to achieve better products and services in the organization. Ford managers answered the question as follows:

"The preparation (sensitization on "TQM-SOS") we received before participating in the "Customer-User Needs Evaluation Workshop" was as important as the participation in it afterwards."

"You learn when you participate in the "C-U NEW" Workshop."

"The previous presentation of the "Esquizofrenia" theory (during "TQM-SOS" training) helped us to break many traditional structural situations of the organization, and afterwards, we were able to see new ways to do things."

"The workshop invites you to react and participate in combination with the help of all the subjects learned with the "Esquizofrenia" teachings. The environment of the workshop and training sessions were cordial, friendly, relaxed, with recognition, and growth possibilities allowed. the message was accepted by the participants and remained in the organization. There was actual application in our daily activities."

"The form of transmitting the message was adequate, the environment generated during the workshop was good and it was

possible to learn. The language used was adequate for the participant: 'The daily one and with openness.'

'Before the workshop we the consumers-users of the training thought we were going to receive a course that was trendy or in vogue. But instead, the workshop was good to change our culture also.'

'Now a days, I take things in my own hands and play with them as I learned to do in the workshop: "I see things closer now.'

i) One of the most important objectives that "TQM-SOS" and "C-U NEW" methodologies are trying to achieve is the continuous improvement in all the organization's quality and productivity results, its general level of efficiency, and the characteristics of the current communications process to better satisfy its current and future or potential consumers and users.

These important objectives will be accomplished if adequately trained leaders are allowed to work with the tools mentioned in the "TQM-SOS" and "C-U NEW" methodologies. When managers were questioned about the results achieved after participating and using the concepts taught to them during their participation in the "TQM-SOS" and "C-U NEW" methodologies sensitizing and training sessions they answered:

'Now we can better support the assembly of our products. Before, we tried to achieve only numerical quotas. Now we are more involved with everybody and also with the quality of the process.'

'Each year our productivity is improving by 7%. We now continuously see that our product requires to be more economic

without affecting the characteristics that our customer expects to receive. (Before the workshop, we did not see things that way!)."

"One of the principal results achieved is the general cost reduction in all the areas. The new culture helped us to reduce 35% the cost of materials handling and also the scarp of all the plant from 1990 to 1993 to the 50% of cost for unit damaged. The team-work effort has been growing also and we are now convinced that is being better perceived and that it works to solve problems."

Considering the objective of achieving organizational and personal growth and improvement, participants commented that:

"We were awarded by the corporation the "Q-1" quality award and its related recognition after we participated in the 'TQM-SOS' training and in the 'Consumers-Users Needs Evaluation Workshop' and used in the plant all the practical things there learned."

"The methodology is necessary to help our country to grow. I have been taking those concepts home to my kids too."

### **3) In regard to "Auto-Purchase" decision making:**

Managers participating in the workshop and "TQM-SOS" training efforts commented that:

"The product used in the workshop is the same but on a different scale. It helped us to think about the final customer, that is, the one that pays for mistakes or good results. It puts yourself in the positions of the supplier and customer and allows you to play both roles."

**4) To satisfactorily achieve the "TQM-SOS" and "C-U NEW" results it is mandatory to achieve at the same time a significant "Change Resistance Reduction."**

Ford Managers argued that the methodologies "Show concern for the people participating," and that:

"Before we used to have lots of revenges in between departments, we did not understand each other's responsibilities and functions, and there was very low support!"

**5) Ford managers did not report any special efforts besides the ones that were already going on in the plant in relation to the question of continuous improvement promotion, or for the "SPC Continuous Tools Usage Promotion" in their organization.**

**6) In regard to the possibilities of using the exercises and support tools shown during the "TQM-SOS" and "C-U NEW" training sessions as equivalent or similar to the products or services currently offered by the organization, and as having possible real-life representation through small-scale simulation, the answers given in the questionnaires by FORD managers were:**

"Definitely good identification of Consumer-User. We manufacture exactly the same type of product as the one used in the workshop. The car was exactly the same as the one we manufacture in the plant. The similitude lies in that the problems we have are the same ones but only on a larger scale."

"During the workshop we represented what we normally do in our daily work and saw closer the things that "must be." Our jobs were easier after the workshop. Nobody wanted to identify themselves with "Esquezofofrenia" but many of us did. Team-Work improved, and after participating in the training, the people and our work meetings also were more productive.

### **5.3.2 Comments about "TQM-SOS" and "C-U NEW" Objectives Achieved in FORD MOTOR COMPANY de MEXICO:**

It is important to note the basic longitudinal effects that the application of the "TQM-SOS" and "C-U NEW" methodologies presented to the different management participants of the workshop and training sessions. Those results were significant for them on a personal basis as well as for the organization they work for. Also, most of the important objectives that "TQM-SOS" and "C-U NEW" methodologies try to achieve in an organization, were accomplished in Ford Motor Company de Mexico as its own assembly managers voluntarily expressed in the interviews.

The areas in which Ford managers expressed that the methodologies had more impact for them and for their organization were: a) Improve the Strategic Operative System Planning Process of the organization, and b) clarification of the appropriate steps needed to use and implement the concepts handled with "TQM-SOS" and "C-U NEW" techniques (see Figure 23).

Participants commented that the tools offered during the sensitization and training activities helped them improve the strategic operative system planning process required to implement "TQM-SOS" and "C-U NEW" methodologies in the organization. Managers also commented that they were able to realize most of the involved objectives

mentioned within the second sought objective of the application of the methodologies: Improve Strategic Operative System Planning Process.

An important result observed was the similarity between the workshop and the real-life activities and products manufactured by the company allowing participants to successfully and productively apply the knowledge obtained in the workshop to their daily activities at their Ford assembly plant. People also became more interested in the consumer and user of the products manufactured and better understood their needs and gave them more importance in their daily work and personal activities.

Top management participation also helped to define future goals and objectives which are now more related to continuous customer satisfaction for its Mexican Ford assembly plant. Immediate application in the plant was also possible because top management participation and commitment was clearly achieved during the workshop. Team-work improved also and allowed quality and productivity to move in the same direction as well. An important cultural change was also attained within the organization's managers that participated in the training exercises.

The personal attitude and organizational culture changed toward delivering in all possible forms better customer needs satisfaction and to consider continuous quality and productivity improvements. Costs were reduced at the same time that scrap levels also were lowered. Participants commented that the methodologies and vivid training sessions helped them to learn and be more prone to implement and use "TQM-SOS" in their organization. The personnel that changed their attitude and applied the learned methodologies in their daily activities were able to move up higher in the organization than those that did not care to even consider their immediate or long term application.

Better team-work and communications among all participants were achieved during and after their participation in the workshop. The quality circuit concept, which includes the customer and the supplier, was also better understood and used accordingly.

Some of the participants even commented that the workshop and training sessions left positive personal marks on them. This impact has helped them improve in their organization, their families, and in their own personal lives. Even interpersonal relationships among people of different departments also were enhanced. Participants also stated that they achieved significant personal growth and job satisfaction (see Figure 23).

Simple concepts such as "Quality and Service to satisfy the customer" were better understood and considered by the managers that participated in the training sessions. The vision of all the operations that an assembly plant requires to perform in order to deliver a quality automobile was obtained by all the participants to the workshop, too. The "Auto purchase" concept also was understood by the different participants because some of the managers now say "they put in the shoes of their customers (internal or external) before making irrational decisions." Now they also listen more carefully to their customers, too.

Ford participants also commented that the "TQM-SOS" and "C-U NEW" methodologies are good training tools to achieve in the organization appropriate quality and productivity results.

The "Q-1" quality certification awarded after passing the appropriate internal corporate auditing process in the Mexico City Ford assembly plant, after direct managerial participation in the "TQM-SOS" and "C-U NEW" training exercises, together with the other strategic planning efforts

that the organization was pursuing, speaks to the merits of applying the "TQM-SOS" and "C-U NEW" methodologies in real-life organizations.

#### **5.4 TECHNIK-AIR and AYAREB CORPORATIONS: Description of Activities Performed and Results Achieved.**

The application of the "C-U NEW" in the Technik-Air Group was also part of a "TQM-SOS" implementation, sensitization, and Statistical Process Control training processes that the company had requested from me. In these efforts I participated with the industrial group as an external consultant and sensitization and training facilitator. The principal objectives the organization had behind the offering of those training sessions was the improvement of their general quality and productivity levels and at the same time develop and implement better team-work efforts.

Included among the participants at the time of the organizational training program were the director and sole owner of the firm, the general manager, managers of production, and assembly completely in charge of their assembly plant and the managers responsible for the administrative functions required to satisfactorily operate the complete organization.

When the courses and learning simulation efforts were actually offered, most of the participants had not had close relationships with the Total Quality Management concepts. Also, they did not know the reasons why the courses had been programmed together with the firm's top executives for them to participate in or why "TQM-SOS" and "C-U NEW" was so important for the growth of the organization.

The manufacturing plants of the Technik-Air group at that point in time had not been certified by the Ford Corporate Quality Audit program

as a "Q-1" reliable supplier. In addition, it was still urgently required to improve their already accomplished quality grading averages and their communication system. These improvements were needed due to the poor grades previously obtained in different external audits performed by many of its car manufacturing customers, which included quality supplier evaluations by corporations like Ford, Chrysler, VW, GM and Nissan among others.

Also, the organization lacked the adequate team-work initiatives among the different areas constituting the industrial group or common objectives definition to work with. These two last facts did not allow the firm to operate efficiently and be able to achieve the quality results its customers were at that time demanding to receive.

During the sensitization part of the training and workshop sessions the participants were exposed to the "Esquizofrenia Administrative Manual" (Neuman, 1988) and the "Total Quality Circuit" concepts that form an inseparable part of the required "TQM-SOS" methodology training process. During training, most of the principal Modern Total Quality Management theories were analyzed, in addition to those presented to eliminate the "Esquizofrenia" sickness in their organization, allowing them to improve their daily operations on a continuous basis (Neuman, 1988). Total Quality Management theories reviewed included the teachings of such renown modern quality experts as Deming, Juran, Crosby and Ishikawa.

I also made them participate during the training activities in the "C-U NEW" where they worked with different small automobiles, trucks and planes scale models as the products required for their workshop training sessions. Those mentioned products were the ones selected for them to be analyzed and studied with the help of the complete workshop's

methodology, due to their resemblance to the products the organization manufactures and delivers to its car manufacturer's customers.

The duration of all the training sessions, which were close to 70 hours of direct facilitator contact per participant, included basic statistical process control tools, priority projects development, and implementation efforts. After the training hours offered, different team-work homework practical priority projects were also requested from the participants to turn in, besides the team-work activities that were constantly utilized throughout the workshop to promote management's unconditional involvement, participation, understanding and learning of all the presented materials and tools.

Communication, participation, and leadership traits also were analyzed during the training sessions to enhance "TQM-SOS" implementation efforts. Also, direct verbal customer needs knowledge was stressed as the most important objective that modern firms must plan to understand and try to meet on a continuous basis as part of their required Mission and reason for existence.

The workshop at Technik-Air Group took place approximately three and a half years before I programmed the interviews with some of the participants to such training sessions. The interviews I did with some of the top managers that previously participated in the workshop were performed after they and the organizations where they work developed and implemented by themselves whatever seemed important to be used by them after the training courses.

Development and real-life implementation advances and results achieved with those priority projects also were reviewed on a periodic

basis with some of the workshop participants after the training sessions ended.

#### **5.4.1 Objectives Achieved in TECHNIK-AIR and AYAREB:**

I will present here the principal achieved personal and organizational results as the same participants from Technik-Air and Ayareb firms commented in their answers to questions designed to evaluate the results of the training, sensitization, and implementation of the "TQM-SOS" and "C-U NEW" in their organization.

**1) The first objective that the methodologies intend to achieve in the organization is to define the appropriate steps required to satisfactorily use and implement "TQM-SOS" and "C-U NEW" in the organization.**

In regard to the questions asked to find out if such objectives were actually achieved in the Technik-Air Group after "TQM-SOS" and "C-U NEW" sensitizing and training efforts were performed, the participating managers interviewed to find out about such results said:

"We did not have a clear picture of how to work with common organizational objectives, that was one of the most important reasons we decided to participate in the "C-U NEW" workshop and in the "TQM-SOS" training process developed by J. Neuman."

"We were taken step by step to understand of what we were talking about and through the different concepts of Total Quality Management and how it is applied to organizations."

"I understood very clearly what is Total Quality Management: 'do it right at the first time,' to do it more practical, digestible, and pleasant to assimilate sooner all the concepts."

"The workshop helped me to know the key elements required to develop Total Quality Management. It helped me to define costs that the organization needs to control and lower, to optimize operations. It also helped us to prepare financial information that we must report to our customers."

"We were presented and given a methodology that helped us to apply and follow it in all kinds of practical activities. We have been using it since then and things are done better in the firm."

"When we needed to implement "QOS" for Ford Motor Company de Mexico S. A. We already had an idea of what a methodology to be followed is all about."

"The people that needed to get involved and practice the "C-U NEW" methodology and the "TQM-SOS" theory accepted it after participating in the workshop. That gave us also an important reassurance and support to the other things that we were already doing to improve our quality."

"After the "C-U NEW" workshop and "TQM-SOS" training sessions we improved all our work conditions, there was the impulse and motivation to learn total quality management and we achieved better communications. The workshop was the initial impulse required to do the changes that were indicated by our customers. We received a methodology in the training and in the workshop that has even helped us internally in areas such as cleanliness and

better work in all areas. We started to work with common objectives and special projects supported by team-work efforts. Better communication between managers was also achieved. Simpler flow of the information. We also delegate responsibilities among people and are more confident in our personnel now."

"We have established a complete documentation support library since 1991 with all the required information about procedures and specifications. We established new procedures in different areas. We reorganized completely our financial area (define responsibilities and functions for each administrative area) and also the links that we had with other areas that were directly affected."

**2) The second objective that "TQM-SOS" and "C-U NEW" are expected to achieve is the development and improvement of the Strategic Operative System Planning Process of the organization.**

The questionnaires asked if the participant managers wanted to obtain information about the utilization of the methodologies presented in this thesis. Also, to verify if these techniques can be recommended to improve and help the organization question itself if its current Mission Statement and the related Strategic Operative System developed from it are adequate or must be redefined and enhanced.

The questions also were defined to know if the short- and long-term strategic and operative plans available in the organization are actually helping to understand and better define the following factors:

a) Who are the main current and future customers (consumers and users) of the organization?

Managers said:

"We achieved the right state of mind about the importance of the customer."

"We serve the automotive industry and saw during the workshop basic points that we need to accomplish to satisfy our customers such as: quality control, on time delivery, etc."

b) What are their customers' current or future needs and expectations regarding to the products and services offered by the organization?

Technik-Air and Ayareb managers commented that:

"I understood that it is necessary to think about the needs of the consumer and user. Many times we did not think about the customer, but now, we are more focused in satisfying the customer and if we give him what he wants problems end. First we define what the customer wants. Second we deliver to the customer what he wants. This is what will allow us to do business. We now consider besides our final customers such as: Ford, Chrysler, Nissan and GM, also our internal customers, which are those with whom we maintain a close relationship. This is how we have been doing it after the workshop."

"We now have adequate communications between different areas of the organization. We have as principal goal to satisfy the needs of the consumer-user (required characteristics)."

"We analyzed a normal manufacturing process during the workshop to understand the requirements of our customers in a better way, too. At that time our products did not require a marketing effort as the one explained during the workshop, but that has been changing now a days. Currently it requires some negotiation to market and sale our products."

"Due to changes we are living in the automotive industry we are each day that passes pushed more by our customers to design products with our own specifications for assemblers like Ford. We are starting to have good experience for that too."

c) Another objective that the organization using "TQM-SOS" and "C-U NEW" techniques intends to achieve is appropriate knowledge about what and how the products and services that the organization generates must be actually offered in the marketplace to better satisfy its customer's current or future needs.

The questionnaire also addressed this particular objective and interviewed managers answered that in the Technik-Air Group of enterprises:

"The most important objective for the organization is now to satisfy what the customer wants with better information, better procedures, improved product distribution, enhanced team-work, and less islands (fiefdoms) of work."

"With our external customers we used to have quality problems. After the workshop there was a better understanding of the customer's requirements and we were able to achieve customer satisfaction."

"With our internal customer we achieved better communication between areas, instead of the isolated work of each area, with satisfactory common results for everybody."

"In general we improved the quality of our products. Ford and Chrysler had been also pressuring us to achieve those quality results. The moment in time that we took the workshop was the right one because all the people participated and such thing was necessary. It even had the support and involvement for the improvement process by the general director of the firm. To achieve such results we participated in meetings and talks which were quality control's responsibility to program and promote."

d) Management requires appropriate guidelines to establish how will the expected products and services required by the customers of the firm are going to be generated to satisfy their current or future needs.

The different participants were asked to answer, in regard to this organizational goal, and their personal commentaries were:

"We used to evaluate only the final product and used to forget to control and evaluate the components we needed to assemble it. We now work with all the components (parts) needed, small or large."

"We normally work with our customers specifications. But, now we review in more detail such specifications, norms, specific laboratory procedures. We even consult the technical support information systems of our customers (example: Chrysler). Before we only used to work with drawings or simple specifications. Now we want

to know in more detail what our customer needs to do it that way. We analyze better their requirements."

"Our end products were somewhat also affected. We developed better products and services to offer our customers. We programmed special meetings, developed some of our suppliers, and performed studies of different areas."

e) "TQM-SOS" and "C-U NEW" techniques are intended to induce participants to develop programming and control mechanisms for their implementation in the organization. These mechanisms must be directed to assure continuous customer satisfaction as well as the required motivation and flexibility to individually and collectively change in creative ways to improve organizational and personal quality and productivity levels continuously.

Interviewed managers responded:

"We now have dates to control the progress and the achievement of needs expressed by the customer."

"We required to use less deviations after the workshop to achieve the "Q-1" award. We use statistics in all areas (70% for presentation of results to our customers and 30% for internal usage)."

f) The principal obstacle that sometimes hinders implementation of "TQM-SOS" in an organization is personnel resistance to change. To evaluate if the "TQM-SOS" and "C-U NEW" techniques are appropriate tools to change for the better the organization's culture and related structure to achieve more efficiently its expected corporate objectives, I

asked participant managers if they perceived differences in their cultural status between the previous state of the organization and the one achieved after the training sessions.

Managers answered that in relation to organizational cultural change the following things happened:

"Before the workshop we used to wander a lot, but the methodology helped us to get involved more in the philosophy of Total Quality Management and afterwards we continued to support it."

"We studied different concerns that were present in the organization, including some related to the work climate and decided to practically solve them to achieve the expected results. The methodology helped us to standardize criteria."

"We now try to have lower levels of personnel turnover because this last signifies considerable savings in time, training, costs, etc.."

"We achieved more harmony and cooperation. Our communications improved, principally, with our internal consumers-users. We also had a slight improvement with our external consumers-users. We improved also our processes and the continuity of our required work, to adequately program the activities with our customers. We developed for this purpose the 'project agenda' per project."

"I consider that we now work more efficiently. More information and communications are received from the involved areas. We try to better accomplish our acquired compromises."

Regarding the personal attitude change aspect, participant managers interviewed commented that:

"Internally the change of attitude was felt more."

"The internal attitude improved. This last based on the cooperation achieved by the areas in which we work."

"I noticed that the relationship among persons changed. Before the workshop it was a cold environment. It helped us to get closer and to strengthen the relationship among people and its relation with our work. We started to handle concepts that were clearer. The areas got closer too: Human resources, purchasing, manufacturing, engineering, etc.. Barriers were torn down between areas and we are still improving. Human resources and quality areas have now a continuous training program in place that was developed after the workshop. They invite and involve all areas including workers, operators or administrative personnel. They even invite suppliers to participate. The training room was constructed specially for this and is continuing."

"We obtained more dedication from people to perform tasks."

Personal growth and job satisfaction are two objectives that "TQM-SOS" and "C-U NEW" attempt to achieve. Participants to the sensitizing and training sessions argued that:

"I am fine tuning the things I saw at the workshop for my particular daily workshop I do operate in the organization. We want it to work better with more order, less pressure, and more relaxed."

"Personnel turnover improved. We achieved a more agreeable job environment in the manufacturing and administrative areas of our firm."

g) "TQM-SOS" and "C-U NEW" are tools specially designed to improve design and delivery of products and services, as well as help top management define its current or future customers' and users' needs and then translate them in internal specifications.

With such things accomplished it is possible to strategically organize all operative activities of the firm and all involved areas of the organization, besides manufacturing or production areas or service generating departments to design, manufacture, build, construct, service, promote, market, sale, and deliver the products and or services required by their customers or users in a more productive and efficient way.

Top managers and middle-level managers of the Technik-Air Group commented about strategic activities:

"We involved afterwards the general management people and also the responsible people of all the areas of the organization in the process ("TQM-SOS" continuous improvement). Defined agendas for all the events required for the development of new products in many posterior meetings."

"We also gave incentives and motivation to our employees. We distributed better the activities among the people to share more responsibilities. We simplified work."

h) To improve Operations Management Process it is a must to clarify to top management what "TQM-SOS" and "C-U NEW"

methodologies are or can do for them or their firms and also what is, or should be, the top manager's principal role in organizations pursuing such quality or excellence objectives, how its complete organization must be structured and its people evaluated, recognized and compensated for all their efforts shown and done in continuously achieving "Total Customer Satisfaction." An important stepping stone to achieve this goal is leadership development and promotion within the firm.

Technik-Air managers commented that:

"We pushed everybody to get involved after the workshop in organizational quality matters. We defined quality objectives and goals. We decided after the workshop also to implement in the plant the quality circles and those are still functioning."

In relation to the expected goal of having the appropriate team-work and brain-storming development in the organization, managers answered that:

"We accomplished the objective of working as a team and to see the benefits of such type of work. Before the workshop we used to do only very few and sporadic work meetings. After the workshop we are programming meetings with closely watched and controlled follow up that include: Advances in projects, dates, and responsibilities with names attached. We saw the need of doing it that way."

"The basic improvements that we achieved were: Do more frequent meetings to work as a team, involving in those activities all the areas of the organization. We keep programming those meetings

up to date. It also helped us to have systematized written communications within the company."

"We set teams to work in some of the following problems: invoice process and warehouse control where industrial engineering, materials control and quality areas participated. Other monthly meetings of the teams were to develop the "Quality Operations System" (QOS) where our area managers are still participating."

"We had talks with the area personnel to be able to work as a team and thus obtain reliable results on time for better decision making. Before the workshop we used to have information available 20-30 days late on average. Now such information takes at least 20 days less, for the 7 organizations (businesses) that we handle in the corporate administrative office I manage. Helped to improve our work environment."

"We achieved teams' development and participation. Written communications. Involvement in ' Quality: objectives, teams and solutions through continuous Team-Work efforts.' "

"We now see how projects are handled. Talk and know everything about our projects. Develop forms to inform what projects we handle and all its related basic activities to satisfy the customer and other areas of the organization. We perform now weekly meetings to evaluate projects and prevent conditions so problems do not arise."

An important question about the importance of the techniques is: Are "TQM-SOS" and "C-U NEW" also good training tools for future understanding development and applicability in organizations?

Managers that participated in the training sessions and that have been voluntarily using the methodologies, were asked during the interviews about their possible merits and applicability levels in Technik-Air Group and afterwards answered that:

"The workshop and "TQM-SOS" training helped us as part of all organization efforts that we were already doing at that time to improve our quality. Such activities were done during various years and with a lot of people being involved."

"If you would give more preparation beforehand to the future participants of the workshop about what will be seen there, it would not work the same. 'With surprises the learning process is accomplished better.' "

"The presentation and the dynamic was clear and active since the beginning of the workshop. Even though all the participants had different points of view, everyone participated. This was necessary and many comments surfaced for further reflection about them."

"Considering our participation in the workshop everything was good: The workshop was pleasant and not monotonous. It also had already shown some demonstrated experience in other applied areas when we took it."

"I think that the form in which the material is presented is the most indicated due to the facilitator's vast experience in the offering of these type of workshops. These allows to be confident about the possible application in our work of the covered materials."

"The methodology is complete and adequate. We initiated it at a zero level and ended up with an in depth and complete analysis of the product."

"The environment in which we worked during the workshop was cordial, participating all managers and executives in an active form. The facilitator (J. Neuman) coordinated the workshop in a pleasant way for all of us."

"I think the questionnaire is complete and the questions are related. The instructor gave a pleasant course work activity, has a special form of addressing the participants. I assimilated it."

"Offer the workshop again to the new personnel we now have in the plant. The questionnaire is ambitious. Do more closed end questions. You should present the questionnaire closer to the moment of ending the workshop to have the ideas fresher. The questionnaire is adequate to what we saw in the workshop."

"The workshop was a pleasant experience and opportune. Reviewing it with this interview was refreshing and gave new ideas."

"I think the workshop was good, before I only attended to very few events like that one. It was adequate. The instructor (facilitator) is a person with the required ability to offer this type of workshops."

i) The most important objectives that "TQM-SOS" and "C-U NEW" want to achieve in any firm are to improve in general all the organization's quality and productivity results, its general efficiency, and its communications process.

This is mainly intended to better satisfy all its current and future potential consumers and users. These major goals will be better accomplished if adequate trained leaders are allowed to work with the tools mentioned in the methodologies studied here.

Top managers questioned if these objectives were achieved in their firm after participating in the "TQM-SOS" and "C-U NEW" training and sensitizing activities, answered very satisfied that:

"We obtained the "Q-1 award" presented by Ford Motor Company to certified suppliers after our participation in the "TQM-SOS" training process and the "Consumer-User Needs Evaluation Workshop. Also, Nissan presented us with the "Zero defects" recognition afterwards. Our quality grades received during supplier quality audits have been improving since then too. Good results in general. A cleaner plant was achieved too. We are now in the position of setting new objectives for our firm such as the: "TQE or Full Approval recognition."

"We started to work as teams do to improve various quality aspects of our manufacturing process: Injection scrap and rejection was close to a high 3% level. Working with preventive maintenance and manufacturing we lowered it to less than 1% after the workshop."

"We are now recognized as a good supplier. The "Q-1" award received was supported by the work we did in the workshop and the Team-Work that we learned to do there."

"We received after the workshop the "Q-1" award from Ford, the "Zero defects" recognition by Nissan, we were graded 82 points

towards the Full Approval status by Nissan and are now close to being recognized as candidates to be "TQ-1" suppliers by Ford."

"We deliver our products to our customers more on time. In general our parts returns and rejects have decreased."

"I realized the importance of communications. Not everyone in our daily activities understood what you were telling them. This pressured us to improve."

In regard to the required achievement of organizational growth in the firm, participant managers replied:

"We improved in general after the workshop. We changed first our communication process. After that, we established better processes, activities' descriptions, and developed better tools. Team-work was also employed for such purposes."

"We have been constantly growing. We have changed a lot too. We operate new equipment in our plant and have been recognized as a manufacturer of air conditioning equipment. We still need to develop a new design department which is now being required by our customers. We maintain a better market position. We are now involved in a direct project with JX-Chrysler U. S. A. . The project involves: design, manufacturing of prototypes, tests and line manufacturing, besides project control."

"We still need to work a lot. We now have twice as much work with internal information as before. Productive aspects are now pretty good too."

"After our participation in the workshop we received the "Q1" award from Ford (including Technik-Air and Ayareb, whose managers also participated in the workshop). This signifies that we worked in an adequate form in all the departments of the organization."

"We are now generating corporate financial information results with more opportunity."

"We used it to define and establish quality costs and integrated standard costs that we did not have before the workshop but that we now have. It was also used to solve some quality problems. We improved our budget and information systems and our income and expenses control."

3) Managers at Technik-Air Group, did not report in their interviews anything directly related to the Generation of "Auto purchase Decision."

4) In the Technik-Air organization "Change Resistance Reduction" was successfully achieved.

During the workshop and training sessions everybody in the organization was assured that the main purpose of "TQM-SOS" implementation process is the achievement of their internal or external customers' satisfaction with adequate products or services. These products and services must be especially designed and generated with the participation of all the involved departments with a "Quality-Productivity" continuous improvement cultural approach in their minds.

Everyone was invited to offer ideas and creative problem solutions; the results as I have shown up to this point were significant for the organization that achieved improved quality and productivity levels in the

eyes of its own customers. In relation to continuous improvement promotion within the organization, managers commented that:

"To develop the "QOS" for Ford, we the people that participated in the workshop was and still is responsible of each area, analyzed results with the operations director and the general manager. We also worked afterwards with the "SQA" system required by Ford. We now do: Internal auto-evaluations and reviews performed by our customers. We now have quality planning."

"After the workshop things have been improving continuously."

"We still have things to do. We still need to improve our Team-Work and assure that individual or area agreements are not reached any more. If everybody gets involved, projects come out right. We need more continuity."

5) During the "TQM-SOS" training efforts managers were taught "SPC" tools.

In the questionnaire I asked participants if they applied, or were continuously applying, "SPC tools." Managers answered:

"I applied the Statistical Process Control and Ishikawa tools that we learned during the previous training sessions, to have available all the required elements in the area, allowing us to go with our customers and see what are their requirements. Transmit the knowledge so everyone speaks the same language. This allows us to deliver and support products and processes which would be right and also help us to be profitable. Chrysler had been pushing us to change. They compare our product to the one done in the U. S. A.

We need to improve it to better serve the customer. The change has been similar to the one that occurred during the workshop."

"We worked after the workshop much more during our monthly meetings with the Team-Work mode learned there and also used to analyze problems the learned 5 M'S, Ishikawa's diagram (cause-effect)."

6) An important objective also achieved was the application of the small scale simulation, or analogies, used to work later on with the organization's products.

Real-life representation was achieved for the participants of the activities and they argued during the interviews that:

"The material presented in the workshop helped us to understand situations that could present to us during our daily work. It was explained in an adequate form too."

"I related the material seen in the workshop, to product engineering in one of our projects, because the material is similar to the work we do of defining: needs, suppliers, engineering drawings, technical aspects, etc.."

"We have many products. We also have assembly lines. Our team work also involves plant operators and that is similar to what we lived in the workshop."

"The mechanics of the workshop is the same of our daily work. The "Airplane" that we worked within the workshop had various components that require special handling or finishing which are

similar to the parts and products that we manufacture and assemble here."

#### **5.4.2 Comments About "TQM-SOS" and "C-U NEW" Objectives Achieved at TECHNIK-AIR and AYAREB Firms:**

Please note here, again, the important longitudinal effects and results that were achieved after the sensitization, training, and application of the "TQM-SOS" and "C-U NEW" methodologies in the firm.

The "TQM-SOS" and "C-U NEW" methodologies were presented to different high level officials which even included the owner and CEO of the corporation. The CEO directly participated in the workshop and promoted the utilization of these methodologies and concepts in his organization. I consider that the results obtained by the Technik-Air Group were significant and important for all of them on a personal basis as well as for the organization and for the improved quality and productivity levels the firm actually accomplished.

Most of the objectives that "TQM-SOS" and "C-U NEW" methodologies expected to achieve in modern organizations were also realized at the Technik-Air Group as its own top managers expressed in the personal interviews given by them. It is important also to state that the "TQM-SOS" and "C-U NEW" sensitization and training sessions generated in the organization the required level of motivation in the top managers team of the firm to freely induce them to start all the organizational cultural changes required to improve their operations in general. As was stated by participant managers, their most important objective of improving the strategic operative system planning process of the firm also was achieved. (see Figure 23).

The "TQM-SOS" and "C-U NEW" methodologies' training efforts done in the Technik-Air corporation also allowed the participants to understand and apply the "TQM-SOS" concepts in a better way. The organization also learned efficiently how to use methodologies for its own advantage. The "TQM-SOS" and "C-U NEW" methodologies also supported and helped other organizational efforts achieve improved quality products and services.

Other important results that were achieved by the Technik-Air Group are the improvement of the quality of work life, job environment, personnel rotation reduction, team-work achieved results, and the enhanced communications process through all the departments of the organization as the same managers interviewed asserted.

An important cultural change that the organization achieved was to move from product final inspection to Statistical Process Control and see the merits that this approach has for the improvement of the quality of the products and services. Customer specifications are today more deeply considered to satisfy them properly afterwards, too. Another important change achieved was the improvement of the personal attitudes toward customer satisfaction and the voluntary involvement in the achievement of such an objective by the top managers of the organization.

Continuous training efforts and priority projects development were begun in all the different areas of the organization immediately after the "TQM-SOS" and "C-U NEW" training sessions ended. Some of the areas that participated in these training and priority projects efforts were: Personnel, Invoicing, Warehouse, Industrial Engineering, Material Control, Finance, Manufacturing, Quality Control. The interviewed managers also commented that various operative and information systems were improved after the "TQM-SOS" and "C-U NEW" workshop. Some of the areas

mentioned as involved in this improvement were: Budget Control System, Information System, Income Control System, and Expenses Control Systems, among others.

Technik-Air consumers and users have also recognized the improvement efforts by the organization after its participation and involvement in the "TQM-SOS" and "C-U NEW" activities. Ford, Chrysler, and Nissan have recognized the organization's efforts offering various quality awards and certificates to the Technik-Air group.

The achieved Quality and Productivity results also were agreed upon by important customers of the organization that validated the mentioned accomplishments through different recognition documents. One is the "Q-1" recognition presented by Ford and given to the Technik-Air Group after its successful implantation and utilization of the "TQM-SOS" and "C-U NEW" teachings learned by the managers of the organization. The organization was able to improve its quality and productivity results because everybody in the firm recognized the importance that the consumer and user (customer) has for the future growth of the firm. Better understanding of the internal and external customer also allowed the organization to improve its activities across all its operative and functional areas.

It is important to mention that the principal goal of the organization has become again: "to understand and satisfy the needs of the firm's customers such as Ford, Chrysler, Nissan and General Motors among others".

The "Q-1" certification that was awarded to the plants that the Technik-Air Group has in Mexico City, after its top management participated in the "TQM-SOS" and "C-U NEW" training exercises, speaks

by itself of the merits of applying the methodologies discussed in this thesis. It is important to mention that the "TQM-SOS" and "C-U NEW" methodologies were not applied in isolation in the firm but with other strategic-planning efforts aimed at attaining such goals as those required to improve its quality and productivity in general through better Team-Work efforts.

Scrap and rejection levels also were reduced with the help of preventive maintenance and better manufacturing operations after the "TQM-SOS" and "C-U NEW" training took place. These results were achieved using various teams in charge of special priority projects to accomplish the expected reductions in the scrap and rejection levels.

Nissan also awarded the organization with the "Zero Defects" recognition afterwards. The organization also is interested in continuously improving its quality and work toward the achievement of newer recognition as a reliable supplier for the whole automotive industry.

The awards and recognition that the firm is currently working to achieve in the future are the "Full Approval" by Nissan and the "TQ-1" by Ford Motor Company.

The materials and vivid exercises done during the training sessions and in the workshop have been shown to have a direct real-life analogy to the products manufactured and sold by the organization, thus helping top management to improve all its decision-making process in a simulated or laboratory environment that will lead the organization to improve in general all its operations' quality and productivity. Managers also commented that information now flows smoother and responsibilities are better delegated because managers are more eager to trust their employees and collaborators.

Quality circles also were started in the firm to continuously help the organization improve the quality of its products after the "TQM-SOS" and "C-U NEW" sensitizing efforts took place in Technik-Air Group. The Circles are still operating. In general, the work and all the activities required to manufacture the products that the Technik-Air Group currently sales were simplified in all areas of the organization.

**5.5. INSTITUTO TECNOLOGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY, GRADUATE SCHOOL IN ADMINISTRATION AT MEXICO CITY CAMPUS. Description of Activities Performed and Achieved Results.**

The application of the "Consumers and Users Needs Evaluation Workshop" in the Graduate School of Business Administration at the Mexico City Campus of the Instituto Tecnológico y de Estudios Superiores de Monterrey was part of a "Total Quality Management Strategic Operations System" and "Statistical Process Control" course that the different participants took as part of their academic curricula to obtain the Master's Degree in Business Administration.

The participants at the time of the training program were part-time students at the institute and held different executive positions in the organizations in which they worked full-time. When the courses and learning simulation efforts were offered, the participants did not have close relationships with the subject I explained to them, the reasons why the course would include these theories and methodologies and their intended applications for the graduate school. Also, students lacked adequate team-work initiatives and common objectives definition to work with because of their different personal interests. The size of the group was seven persons.

During the sensitization and training portions of the course students were introduced to "Esquezofofrenia" and the "Total Quality Circuit." These topics form part of the required "TQM-SOS" methodology curricula. During the class program there were also analyzed current Modern Quality theories and with appropriate utilization allow them to improve daily operations on a continuous basis.

I also made all the students participate in the "C-U NEW" where they worked with different scale models of automobiles to be studied with the help of the complete workshop's methodology as the products required for their training session.

After participating in the sensitization and training portions of the "C-U NEW" methodology I requested the students to run it on their own again as a special homework assignment. This second time the students were to consider the products and services that the Graduate School is offering to its students, in order to get their feedback as direct consumers and users of such products and services, and also to obtain possible ideas for their own school's improvement, which would result in improvement projects to be later pursued by the school.

The duration of the training sessions were close to 40 hours of direct facilitator contact per participant, including basic statistical process control tools. The idea was to promote their unconditional involvement, participation, understanding, and learning of the presented materials and tools. Direct verbal customer needs knowledge was stressed as the topmost important objective that modern firms must plan to understand and try to meet on a continuous basis.

The idea of having the students learn and participate in the methodologies was to evaluate how those tools can be taught, used and improved. Student feedback is important considering their level of education and that most of them are managers, as well as show that the application of the methodology can serve to improve the quality of the products and services offered by the school, after adequate knowledge and understanding of its consumers' and users' real needs.

Students were asked to fill out two different questionnaires after their participation in both workshops; the first as: "Students" and the second one as "Consumers and Users." In both exercises students commented about the merits and applicability of the methodologies. Participants' personal and organizational results are presented next.

The answers given by the students will be divided in two sections. The first set corresponds to their participation as "Students" of the "TQM-SOS" and "C-U NEW" methodologies and the second set was obtained after I instructed them to follow the "C-U NEW" methodology, role playing the part as "Consumers and Users" of the products and services currently offered by the Business Graduate School.

#### **5.5.1. Objectives Achieved in INSTITUTO TECNOLOGICO y de ESTUDIOS SUPERIORES de MONTERREY at the GRADUATE SCHOOL in ADMINISTRATION at MEXICO CITY CAMPUS.**

The following questionnaire answers were given by the "MBA" graduate students after participating in the "C-U NEW" Workshop for the first time. The principal idea was to ask them to think about the merits of the methodology while solving the questions, its possible enhancements, and the applications of the presented techniques in their own organizations.

MBA students, answered the questionnaire to evaluate the achievement of "TQM-SOS" and "C-U NEW" objectives as follows:

**1) Define the appropriate steps required to use and implement "TQM-SOS" and "C-U NEW" methodologies in any organization (Manufacturing or Service Industries applicability):**

"The workshop helped us to understand the importance of identifying consumers' and users' needs. Also helped us to improve diagnosis, evaluation and afterwards design of the product. The workshop allows better inter-group communication and freedom of expression at the same level, and this, creates a climate for confidence and plurality. Larger capability of analysis regarding customer service was achieved also. Also helped to identify primary and secondary needs."

"The methodology can be applied regardless of the product or service to identify customer needs."

"I feel the workshop is very interesting, and can be applied to the development of any product, good or service. It can be favorably employed in quality improvement processes, for development plans, or as part of total quality management to identify customers needs and compromises. Now a days many consulting firms limit their activities to diagnosis stages and to interview executives, or, in other cases, only to observe and make suppositions of what is really happening in the organization. The way to know what our customers need is directly asking them and ourselves playing the role of consumers and users of the products or services delivered to them."

"We needed first to know the product and then we proceeded to prepare two lists of users and consumers. Having these lists ready, we prepared a list of their needs in special matrix forms."

"The dynamic done, made the group see the practical application that the methodologies' concept has in its principal basis: the understanding of the needs of others; fact that normally is not perceived."

"I think that the first idea from now on that will be popping out in the heads of the participants is: What are the needs of the customers? Afterwards, it will be required to get familiarized with the customers to satisfy their needs. Each of the participants knows his or her organization, now, each of us has available a tool that can be used to work with the required orientation to satisfy their consumers-users expectations."

"The toy used in the workshop is excellent. It is possible to look for adequate products depending of the organization. The one actually manufactured by the organization can be left as homework for the participants."

"During the workshop we saw that it was necessary to modify some of the specifications of the product. Change a bit the package, modify the model, change some of the clauses of the guarantee contract, etc.. In general, it is necessary to do all those modifications."

"Recommendations included that materials, packaging, guarantee conditions, dimensions of the product, mechanical resistance, specifications clearness and product functionality will be reviewed."

Also, modify the characteristics of the product and its package to satisfy consumers and users expectations. The package could have the scale of the model printed outside and with larger type size the recommended age for the assembler of such particular model. Feedback from customers is important. With it, it is possible to improve the product and attain re-purchases. The guarantee clauses must be more real. Add more information in the external part of the package. It is important for everybody in the organization to know what are the needs of the customers."

"For future production runs of "model cars" it is necessary to verify the models and do sampling studies of assembly with different parts."

"Stick to customers requirements. Customer's specifications are the specifications that products must cover. More than being contradictory, specifications described in the package will serve as a marketing element. Verifying that 'we accomplish compromises' will allow purchase repetition."

"The effort still must be generated. With it we will know where the organization is going and what the offered products or services must accomplish. This last meaning: The needs those products or services must cover to satisfy our customers and also help us to be ready for the future."

"In relation to the manufacturers of the "cargo van to assemble" we used in the workshop: Definitely they did not pursue an effort to develop better products, because I doubt that they ever stepped in the shoes of their customers as we did. If they would have done it, they would not have dared to manufacture such garbage. It would

be necessary to modify the general conditions of the production line and of the raw materials required to obtain better products.

"It will be necessary that the people of the firm participate in the workshop for real life product-services changes."

"After being involved in the workshop, participants must follow planning and implementation processes of corrective measures to reduce the gap between what is expected from the product and what is currently being obtained."

**2) Students commented that the sought objective of improving the current Strategic Operative System Planning Process of organizations can be achieved with the utilization of the methodologies presented in this thesis, which are recommended to improve and help the organization to continuously improve its quality and productivity.**

Participants answered each of the question regarding the major teaching and learning objectives intended with the strategic usage of the "TQM-SOS" and "C-U NEW" methodologies as follows:

a) Can the "TQM-SOS" and "C-U NEW" methodologies help organizations define: Who are the main current and future customers (consumers and users) of the firm?

"In my work it is very important to know the needs of my customer to be able to offer him an adequate product or service. I market different products and services for the foundry industry and as I see things, it is very important to know the needs of my customers, as users or consumers."

"I will use the methodology to start evaluating projects of products or services that I want to understand soon. The methodology will give me a broader vision about the needs of consumers and users of the suggested product."

b) Students participating in the workshop commented in relation to their customers' expressed current or future needs and expectations in regard to the products and services currently offered by the organization that:

"Knowing the needs of the consumer and user we can also know which of the products or services currently satisfy their requirements. We, all in the organization, must know what the customer needs, and to know it, we must be continuously informed about it. We also require to know the needs of the internal customers and merge them with the ones of our external customers."

"We realized the importance of knowing what consumers and users need. To me it became clear that first I require to know the needs of my customer to be able to offer a good product or service."

"I do offer products to the foundry industry and must know the needs of the foundry men to offer them the appropriate product. It is a shame that I or our sales area, do not always know which are all our customer needs. This is about what we really need to work. The opinion of the customer is important."

"The workshop and the material there used can be employed to build the needs matrix for consumers and users. The matrix

resulting can be used then in any study or research of any product or service."

"When we the participants role played as consumers and users we got involved and thought about the importance of defining their needs."

c) Students answered the question: What and how should the products and services that organizations generate be offered in the marketplace to better satisfy their customer's current or future needs?:

"A product or service must satisfy customer needs."

"When you start putting together the toy, you feel the need of telling the manufacturer that his product is defective, that you need additional materials to assemble it, and that the offered guarantee is not redeemable."

"The importance of identifying the needs of our customers to offer them what they need is vital. Why suppose what they really need? Why see them only as idiots that what they only do is buy and or use?"

d) The participants responded to the question: How will those expected products and services be generated to satisfy their current or future customers and their needs?, with the following very important arguments:

"I will use the methodology in two forms: 1) To practically apply the importance of identifying the needs of our customers to satisfy their expectations, that I learned in the workshop. 2) As a dynamic with

the personnel close to my area to transmit them the learning described above".

"Understand the consumer and user and the importance of defining their needs before designing and manufacturing the product or service."

"The product worked with during the workshop in itself demands the change of its manufacturing process. The article worked within the workshop can be considered as low quality. Only few of its parts satisfy the customers' wishes. In the case of being able to implement the required changes, those changes will be principally done in the design of the product and in the characteristics of the plastic materials that the product is manufactured of."

e) In relation to what steps will the students take for improving or implementing new programming and control mechanisms in their organizations, or to assure continuous customer satisfaction, and the required level of motivation and flexibility, to culturally change the firm in creative ways, and to improve also its current levels of quality and productivity, the given answers were:

"It serves to define a practical methodology to evaluate customer satisfaction due to the fact that being a qualitative procedure and an instrument which gives important frequencies measurements, it can be used for planning and control activities."

"During the exercise we role played the person that uses or consumes the product for any other objective. This allows us to obtain the needs of the direct customer, and this, will result in a better service or product."

"In a real-life organization, after the workshop, it is expected to modify favorably the specifications of products and services offered, and also, it will be needed to perform an in depth study of those characteristics that seem to be out of specifications."

f) To change for the better the organization's culture and related structure to achieve more efficiently its expected corporate objectives, it is necessary to completely understand the current and future Mission of the organization. Participants argued that:

"The methodology is useful to help me concentrate my attention in my daily work towards fulfilling the main reason of my activities".

"After participating in the workshop, I think the group will move toward a further integration process with more direct communication, where compromises are clearer. Also, move toward achievement of results and quantitative goals to fully satisfy the needs of the people which will receive 'my' work."

"We all are users and consumers of determined products or services. In the case of our organization (Metro) the consumer is also the user and is our mission to satisfy their needs of fast, sure and efficient transportation means at an adequate cost."

The MBA students argued that the applicability of the "TQM-SOS" and "C-U NEW" methodologies to promote organizational cultural change is adequate and that:

"We achieved a change in our attitude: Generate a positive attitude toward the customer, consumer and user. Try to be closer to them and feel empathy for them too."

"We achieved gradual comprehension of the importance of accomplishing our customers expectations. Somebody in our group pointed out that the establishment of the customers needs must be done with the participation of the consumers-users and not only by sitting in the desk or design table alone. There was open communication and we used the storm of ideas within the group of participants. Afterwards, we discarded each of the not accepted ideas and reached consensus. We did not recognize a formal group leader. Leadership was shared as required. Each person was responsible of the assigned tasks due to their participation in the workshop."

"With the workshop the participants began to know more each other. We now realize how we work individually and how as part of a team. If we work more as a team, our results will improve, too. Considering communication we are starting to know who talks more, who less, who gives more ideas, who polishes them, who is more creative and who organizes the activities."

Personal attitude change, personal growth, and job satisfaction must be achieved to consider satisfactorily implemented "TQM-SOS" in an organization. Participants were asked if the methodologies that they were taught helped them to achieve important personal objectives:

"The workshop also allows you to be sensitized and gain conscience about your personal work and the importance that satisfying consumer and user needs has for your organization."

"The most important thing was the enforcement of the required attitude with practice."

"It helps you to achieve the required attitude change, mainly for the ones offering products and services. Also, more favorable attitudes toward consumers and users."

"My strategies to follow next will be: 1) On a personal level, do a list of my possible consumers (employers, boy friend, friend, teachers, customers) and determine their needs. 2) Try as much as possible to find equilibrium when satisfying their and my needs. 3) On a work level: do a list of users and consumers, of their needs and establish adequate procedures to be followed continuously to detect their satisfaction, actual and latent needs, and wishes of change. 4) Establish adequate controls."

"To integrate the concepts seen in the "TQM-SOS" class, with the ones worked in the workshop, I continuously practice what I just mentioned, and rationalize, that products and services must satisfy consumer and user needs. I can apply it myself, to my person, as a product, and perform the exercise."

"I will try to improve personally in aspects such as leadership, communication, delegation of responsibilities, tasks definition, and accomplish compromises."

g) One of the principal objectives of the methodologies under study is to help top management define its current or future customers' and users' needs and then translate these expressed expectations in internal

specifications that will help them strategically improve the design and the delivery of products and services offered by the organization.

If the organization knows what these needs are, it can then organize all operative activities of the firm in all involved areas including manufacturing, production areas and service generating departments to design, manufacture, build, construct, service, promote, market, sale, and deliver the products and or services currently required by their customers or users in a more productive and efficient way.

Participating students commented in regard to this important objective that:

"I will use the methodology to do an evaluation, together with my sales force, about their knowledge of the needs of our customers. This study will be used to define projects for the different products that we have. Also, to transmit them, the technical, sales, logistics, purchasing, administrative and quality personnel, the implications of those customers' needs."

"After we applied the methodology learned in the workshop with our salesmen, we observed that they did not completely know before their customers. The strategy that we followed after was to try to involve more the salesmen in the knowledge of the needs of their customers with the usage of questionnaires and more support from the sales manager to achieve appropriate knowledge of our customers. Having done the last we were able then to classify the needs and define clear forms to address each need in the most adequate way."

"First we played the role of the consumer and the user. We thought as they would do, paid the asked price as them, and evaluated the satisfaction of their expectations.

"We were able to understand what was the objective or purpose of the product in relation to customer satisfaction."

"The exercise, as I said, was applied only in our sales area. It resulted in a good exercise for our firm, because in the questionnaire we developed, not only participated the sales area but also the sales manager, and also the technical area. We were able to have communication. The communication we achieved among us was through a dynamic storm of ideas session we had. With this we were able to realize which points the salesmen, the sales manager, or the technical people, made more emphasis on, and with that, we were able to know more each of our coworkers and also our consumers and users."

"The people who develops and sells the product are now in closer contact with consumers and users, the environment, and the organization. Communication is more dynamic and harmonic. When empathy improves toward consumers and users, better communication will be achieved and also the interest in satisfying their actual and future needs."

"We were able to better evaluate the quality standards that came out after the definition of the product was stated, and also from prioritizing the related needs. These needs, defined and fixed the expected parameters by the consumers and users."

h) Management intends to improve its Operations Management Process.

Top Management requires also to have a clear picture of what "TQM-SOS" and "C-U NEW" methodologies are or can do for them or their organizations, what is or should be the top manager's principal role when pursuing such quality or excellence objectives, how its complete enterprise must be structured, and participants be evaluated, recognized, and compensated for all their continuous efforts done to achieve "Total Customer Satisfaction."

Students argued in reference to these objectives and leadership development and promotion that:

"If the director of my previous job would have taken this exercise he would have seen many of the wrong things being done in his organization and could have had started the promotion of favorable changes in his organization."

"The group was able to integrate better. Knowledge of each of the participants improved. Responsibilities among members of the team were more precisely defined. Better organization and more effective team-work effort was realized. There was information knowledge and tasks leadership observed."

In relation to Team-Work and Brain-Storming development, MBA students of the "TQM-SOS" and "C-U NEW" methodologies commented that:

"This workshop is extremely practical and useful because it involves people, makes them think and generate ideas."

"For me the methodology was good because it involved all the persons participating in the course and everybody had the chance to give something."

"Before I almost never worked as part of a team in my work. Always my boss said what we were supposed to do. Now, I realize what means to work in a team."

"It took us some time to start playing our roles."

An important objective sought with the questionnaire given to participant students was to evaluate if the "TQM-SOS" and "C-U NEW" methodologies can be considered as appropriate training tools for real-life development and applicability in different organizations. Interviewed participants commented that:

"The methods used by the instructor-professor are excellent because you learn by doing, having fun, involving yourself, thinking, and even without you noticing it. The workshop must be done by the participants on a continuous way."

"We received first an explanation of the methodology and afterwards the information was complemented with the support of the instructor."

"The instructions for the workshop, the user and consumer concepts, and the restrictions for the required activities were well understood."

"The material was presented giving the required information in a clear and precise way. I will keep the notes of the workshop for future reference."

"The presentation was clear. We received the rules of the methodology and we were given adequate explanations of the roles we were required to play."

"The toy used is adequate to work. It may be changed for other products such as the one offered by the competitors or the own one manufactured by the organization."

"From the support material it was required to prepare a list of users and consumers to study their needs in relation to a product that was given to work with afterwards."

"I learned the difference that exists between consumer and user and the importance of team-work towards the identification of needs with the help of the storm of ideas and the methodology proposed in the workshop."

"It is very important to comment the suggested recommendations for the improvement of the products to the real manufacturer of the studied product."

"Maybe we as a team, lacked enough organization during the storm of ideas part of the methodology."

i) Can "TQM-SOS" and "C-U NEW" methodologies be considered as appropriate tools to improve in general all the organization's quality and productivity results, its general efficiency, and its communications process

to better satisfy its current and future potential consumers and users? Participants considered with respect to the mentioned questions and about the required organizational growth that:

"The workshop presents a tool and methodology that helps us learn. Its principal purpose is to know my customer and his or her needs as a consumer or user. It promotes team work and better communication. With this last you know better the people that works in the organization, and encourages us to work as a team, because it is satisfactory to accomplish objectives in a group."

**3) One of "TQM-SOS" and "C-U NEW" methodologies main objectives is to generate of "Auto purchase Decision" by most of the organizations employees.**

MBA participating students considered that:

"When you play the role of the consumer-user you understand with more accuracy their possible needs and his or her priorities."

"In the actual delivery of our service I now continuously play the role of my consumers and users to understand what they might feel in a particular moment of time."

"Be conscious about the importance of putting yourself in the shoes of the consumer and user and think about their most important needs."

"The strategies followed required from us to re-think and role play the person that acquires or receives the product. This signifies that the group activities made us move towards a search of basic

expectations about what the product must be and must accomplish."

"Understanding that we are always consumers and users. Somebody mentioned: "I would not try to sell something that not even I would buy." (It is a reminder of "auto purchase" teaching previously received from J. Neuman)."

**4 and 5) To satisfactorily implement "TQM-SOS" and "C-U NEW" methodologies in an organization it will be needed to minimize existent "Change Resistance."**

Everybody in the organization must be assured that the main purpose of "TQM-SOS" implementation process is the achievement of the firm's internal or external customers' needs satisfaction with adequately offered products and services. Products and services will be especially designed and generated respectively with the participation of all the involved departments of the organization and with a "Quality-Productivity" continuous improvement cultural approach in their minds.

Participants will be invited to offer ideas and creative problem solutions as part of top management's responsibility of promoting continuous improvement and "SPC" Tools Usage Promotion in all areas of the organization. Participants recommended that during future management participation in the "TQM-SOS" and "C-U NEW" methodologies sensitizing and training activities it is required to:

"Periodically do this type of workshop with different products. Think of our work as a game (a serious game). Think and act looking for continuous improvement."

"There were changes of vision regarding the product. It made us go back to the basic requirements that the product being studied must fulfill."

**6) Is the methodology good for real-life representation through small-scale simulation for real-life organizations?:**

"I commented the methodology I learned in the workshop with the sales manager of my organization. He said that we could do a sample trial of the methodology with our salesmen about their knowledge of their customers. Then, we applied the same methodology with our salesmen to obtain the lists of consumers and users and their potential needs."

**5.5.2 Comments About "TQM-SOS" and "C-U NEW" Objectives Achieved at ITESM-EGA-CCM with MBA Students learning the Methodologies:**

In this case the application of the "TQM-SOS" and "C-U NEW" methodologies was part of the normal course work of the Total Quality Management training program developed for the graduate students currently working on their Master's Degree in Business Administration.

The workshop helped the different participants to grasp the importance of identifying, understanding, and satisfying consumer and user needs. "It also allowed to effectively change the vision of the participants regarding the product being studied and made them reconsider the basic requirements that products and services must fulfill."

This will allow them to better design, manufacture, deliver, and service the required products or services to their current or potential

customers. The participants said the methodology is applicable for products or services offered by different organizations and that the methodologies are also applicable in strategic quality improvement planning processes for different organizations. Some of them even started similar training and implementation efforts in their own organizations.

Thorough work with the methodologies allows participants to define adequate changes of specifications related to product design, model characteristics needed, the package required, the mechanical resistance of the materials employed, and even within the guarantee terms the organization currently offers to its customers. The workshop invites the participants to "walk in the shoes" of the organization's customers so that they can better understand their needs.

If managers of different firms are invited to participate in the training dynamics, real-life product or services changes will be achieved. After the workshop is finished, participants must define adequate planning and implementation processes to reduce the gap between what is expected from the product and what is actually being obtained.

It was important to find in one of the interviews comments, of one of the participants involved in a foundry industry, currently working in the sales and distribution area, that he successfully applied all the methodologies' concepts to his firm after participating in the sensitization and training exercises. Other student also applied in a satisfactory way the concepts taught to him during Total Quality Management class in the service area he manages in the computer distribution office he works for.

It is important for the organization to understand its internal or external customers needs, in regard to the products or services offered, because with this information available, it will be possible to define if the

products or services actually measure up to those expectations and if corrective steps or improvement efforts can be programmed. It also was stated that "first it is required to know the needs of the customers to be able to offer a good product or service to satisfy him or her."

The methodologies present practical steps that can be used in real-life situations by the participants in their own daily activities. It also helps to identify consumer and user needs to satisfy their expectations later on and can be used as a training tool to transmit the subject matters and quality improvement concepts learned there.

The conclusions achieved after the workshop allows the participants to set definite plans and controls for product or service improvement in their organizations. With the help of such defined goals and objectives, firms can plan the usage of team-work efforts, which are also reviewed in the workshop, to start priority projects which will help the organization improve all its quality and productivity results. As one of the participants commented: "The live workshop is extremely practical and useful because it involves people, makes them think and generate ideas. You learn by doing, having fun, and thinking, even without you noticing it."

The level and degree of effective communications improved also within the group of participants in the workshop. The attitude of the participants toward the customer also became more positive. The integration of the group members was enhanced due to their participation in the different exercises required during the workshop.

The impact of the methodologies also was felt on a personal basis due to the fact that many participants decided to change their personal attitudes toward work and their own productivity. These last points are important because some of the students did not know each other before

the training and workshop. They also came from different backgrounds, industries, and organizations and have held various responsibilities and position levels within their particular organizational structures.

One of the most important facts that the methodologies are intending to help organizations achieve and that was clearly shown was that: "If you play the role of the consumer-user, you can understand with more accuracy their possible needs, and thus, can do a better priority analysis of those needs in order to satisfy and meet them," as the participants themselves argued during the interviews.

### **5.5.3 Students as "Consumers-Users" of the Graduate School in Business Administration (EGA); Comments after their participation in the special "C-U NEW" Workshop:**

This application of the "TQM-SOS" and "C-U NEW" methodologies had the purpose of analyzing and obtaining direct information from the students of the Master's Degree in Business Administration Program at the Graduate School of the ITESM to define if a major "TQM-SOS" effort to improve the quality of the products and services currently offered to the graduate students of the school was required.

The answers to the questions were used to develop a practical "School-Firm Workshop" project that had as the main objective to develop a "TQM-SOS" plan to be used for real-life implementation in the EGA-CCM School.

**1) Can the "TQM-SOS" and "C-U NEW" methodologies be adequately used to define the appropriate steps required to implement a "TQM-SOS" culture in any organization (Manufacturing or Service Industries applicability)?**

Consumers and users of the products and services offered at the EGA-CCM School answered to this question as follows:

"The methodology can be used as a first stage in the restructuring of a service organization."

"Education service" is a concept that we, students of the master's degree at the EGA, are already involved with."

"The service analyzed is: the offering of an academic program that pursues the formation of excellence professionals in an extremely competitive environment. I am part of the academic personnel in charge of offering such types of programs, and the results achieved with the analysis, can be extremely useful."

"The material required was clear. We only needed to know the "product" to work with and the general guidelines of the workshop to define the consumers and users, and afterwards be able to identify their needs."

"We developed an executive report summary which will be presented to the ITESM-EGA director with decision powers about the recommendations there presented. After the presentation of the report, an in depth study of the problems reviewed was authorized and a consulting project to define proper guidelines for "TQM-SOS" development for implementation at our graduate school followed."

"We had different stages in the exercise to define consumers and users of the graduate school. In one, we involved ourselves as

users and had a storm of ideas session where we all talked about who we were and what we needed. Regarding this stage there was a lot of team work. We all talked of what we expect from the EGA (graduate school of business). In other stage of the workshop we talked and defined the consumer and we put there those persons or organizations that pay our tuition in the Masters Degree Program and we thought about all that they were expecting to gain and what was convenient for them in regard to our studies. Communications were free and healthy. The subject not revealed or talked about was: What I am expecting from my company? When the time came to discuss the student problems at our school, it was clear that there are many disagreements with the EGA-CCM system, and that it does not seem to be in sight the desire or determination to correct them. We all felt that we have problems and that our complaints as customers are not heard."

**2) The main objectives sought by organizations implementing Total Quality Management Strategic Operative System Planning Process requires its top managers to answer various questions.**

The important questions to ask participants are worded to know if the utilization of the methodologies presented in this thesis are recommended to help improve the organization, its current Mission Statement, and its complete Strategic Operative System. Real-life consumers and users of the Graduate School of Business Administration program answered the next questions with the following comments:

a) Who are the main current and future customers (consumers and users) of the organization?

"We needed to prepare a consumers-users matrix related to the Graduate School of Business Administration (EGA). Such activity helped me to differentiate between consumer and user and their own needs. I also understood the importance of determining the primary needs of the customers."

b) What are the organization's customers expressed current or future needs and expectations in regard to the products and services currently offered by the organization?

"Closing the gap between us and our customers to identify their needs, obtaining feedback and offering them what they really need is better done."

"This is one of the more significant impacts I got from my participation in the workshop: 'Discovering that there are different types of customers' and that they have different needs, forces us to differentiate and to act in these cases accordingly."

"In relation to the Masters degree at "EGA" the service is important. From the matrix we can determine all the users and consumers of the service and later be able to satisfy their needs."

"The application is directed toward a first evaluation of the service currently provided at the EGA."

"We cannot continue to be from now on indifferent to the differences that exist among customers."

"Better attention and service of the needs expressed by consumers and users can be achieved."

"I will principally use the concepts learned in a better definition of the user and of the consumer needs. I have realized that my user is a high school student, somebody that needs to be informed and developed to a certain level and, that his parents are persons that expect from us that their sons or daughters will come out from high school being the best prepared as possible."

c) What and how should the products and services that organizations generate be offered in the marketplace to better satisfy their customer's current or future needs?

"Review current products specifications and adjust them to what the real needs of the customer are. 'Make as much changes as the customer requires.' At the end, the product is to be his or hers. It is suggested to use a feedback system to monitor what our customers expect and satisfy them."

"In regard to the Graduate School of Business Administration I doubt that currently there exists a functional Total Quality Management improvement program, but if it does exist, it is done without the participation of the managers of the school and due to this last, such program have large probabilities of not having practical application. To change things it is required more personnel motivation and better information support systems which will offer effective services to the students, professors and users in general. Better professors are also needed (sometimes the quality of some of them is not what it is expected), a better and up to date library is also required. More participation in simulations or real projects that will help with the development of the personal abilities of the graduate students must be programmed. Increased flexibility

in the activities of the students, which will mean, more creativity development are also suggested."

d) How will those expected products and services be generated to satisfy their current or future customers and their needs?

"Before designing the product it is necessary to identify the needs of the customers to be able to satisfy their expectations."

"The methodology is conducive to take corrective measures related to the design of the product and its conformance qualities. The changes might be related to a change in attitude toward the customer and better structural or bureaucratic problem solving"

"Define education standards. Observe the education level desired for the high school students. In relation to the workshop applied for our EGA school it is important to see: What is needed by a student of the graduate school."

e) What programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction as well as the required motivation and flexibility to change in creative ways to improve productivity continuously?

"I will program a visit to our administrative and operative units in our organization to play the role of consumer and user."

"Improvement of the service can be expected with: 1) The integration of tools and materials that would be able to really develop professional graduates with high degrees of adaptability and creativity. 2) Better attention of customers by administrative

personnel. 3) Improvement of the internal and external communication and information systems of the school."

f) How can the organization's culture and related structure be changed to achieve more efficiently all its expected corporate objectives?

Regarding understanding the Mission of the organization, consumers and users answered:

"At the time we do our job generating a product or service, everyone has customers who need to be satisfied."

"Put more interest in trying to discover whom I am serving, in discovering their needs, and in serving consumers and users as they deserve. I am more efficient when not spending energy repeating my work."

"The most radical change will be given when we start defining the expected level of education of a high school student, and in the search for better solutions to be offered to him or her during his or her stay as a Monterrey Tec student."

With respect to organizational cultural change, real customers answered that:

"The product and its specifications must be related to real customer needs and not only in the beliefs by the producer. Up to this point in time, it has not been proposed this way, but it can be possible."

In relation to personal attitude change, participants commented:

"The second time we participated in the exercise reaffirmed the change of attitude in the participants regarding the needs of consumers and users. They were better sensitized towards the consumer's and user's needs and showed better involvement because we are the real users and consumers of the products and services offered by the EGA."

"Personally I think that the definition of the customer (consumer-user) has made me change radically. I hope to be able to transmit to my director at my normal job, what this great discovery made for myself. In fact, I do not see equal any more a student or a parent in my part time teaching job."

Considering personal growth and job satisfaction EGA's consumers and users commented that:

"I believe that knowing the difference between consumers and users will allow me to know better my customers. This methodology will be helpful to me in my personal development, in better serving my customers according to their real needs and in general to be a more efficient person."

"The participants of the group enlarged the vision they had about the master's degree offered at the EGA."

"Participating a second time in the workshop helped us to grow and mature. Not only allowed us to reaffirm the taught concepts but also allowed the participants to play adequately the users-consumers role. We identified the importance of considering the needs of the customer and had a dynamic communication among us. Participants valued the priorities' aspects of planing and

designing of products but considering the expectations of the customers. Better communication, considering more involvement, and compromise, can be achieved among team participants."

g) How is it possible to improve the design and delivery of products and services offered by the organization? How can we help top management define its current or future customers' and users' needs and then translate these expressed expectations in internal specifications that will help strategically organize all operative activities of the firm and all involved areas of the organization besides manufacturing or production areas or service generating departments? How design, manufacture, build, construct, service, promote, market, sale, and deliver the products and or services currently required by their customers or users in a more productive and efficient way?

"I plan to apply what I learned in the workshop to achieve a better definition of the customer and I will do more efforts to know the students of the high school (users) and their parents (consumers)."

h) What recommendations do you have for the organization to improve its current Operations Management Process to continuously achieve "Total Customer Satisfaction"?

In relation to leadership development and promotion, consumers and users commented that:

"The way we worked was direct. We did not need a firm leader. We all knew where to go. The assigned homework among us, the participants, were almost equal and their delivery time was in general the same. Maybe the only distinction we made in the

homework assignments was the person who was supposed to type it."

"We expect better communication between users-consumers and administrative-academic personnel of the EGA school. We clarified needs never thought about them before."

"Communication must be more open because the methodology encourages it. There are some areas that require improvement. Some recommendations to be followed are: Better services such as available phones, free owned parking lot, working elevator and audiovisual projectors. In regard to ex-alumni, better services and special privileges should be provided for them too. Better current students information delivery systems. Make small study rooms available for students. Give better service and treatment to students by directives and personnel of the school. Why tuition is increasing that much if inflation has been controlled and low? Offer scholarships (not loans) to distinguished students. Increase the academic level of the professors with better learning-teaching methods, actualized material, usage of dynamics as the ones used by J. Neuman. Also, not only try to give grades, but instead help the students to really learn, innovate, and offer creative solutions to real problems. Know the needs of the internal or external EGA consumers and users. Involve more the directives of the EGA school with the students, know them more, attend to their needs and offer reasonable solutions to their problems and needs."

"The analysis we did was related to the EGA school, as part of our total quality management class, but for things to really improve, top managers there working must do their work. Only with this last, the academic excellence being sought by the institution will be

achieved. In the case of the collective transport system I work in, we just passed for a pseudo-total-quality-management-implementation-stage and great barriers exist within the personnel to establish action roads leading to true Total Quality Management in the organization. What we can do for the time being is develop work plans to be pursued within the operative unit over which I do have control and jurisdiction."

Team-work and Brain-storming development was achieved due to:

"The methodology was simple to apply in the analyzed case because we had the experience of the previous work. The activities were more complete and better structured than in my first participation in the workshop."

"The mental exercise of trying to find the needs and to whom they are related and to whom are not, allows us to search more about whom do we serve and why. The simple mental exercise by itself is positive."

"We became sensitized toward the consumers and users needs. In this last repetition of the exercise, we ourselves are consumers and users of the service provided by the ITESM-EGA institution as students, and I noted that there was larger involvement by all participants."

"We were able to see points of view not thought about before. A lot of information was shared. We had discussions during the storm of ideas in which we participated and when we prepared the report documents and requested data for this work."

"Better efficiency was basically achieved in our team-work effort. The division of responsibilities was better achieved."

"After the workshop I think there is more compromise between the involved parties and a shared preoccupation about assigned activities to the group. The group will follow its consolidation process supported on shared work and joint decisions."

"The discussion of the subject was very beneficial to integrate a good team. I think that the team of the total quality management class is a good one. This last based on the great amount of work we have done together and the size of the group (7 persons)."

Are "TQM-SOS" and "C-U NEW" appropriate training tools for future understanding, development, and applicability in different organizations?

"The methodology is very good because you practice first with one product and afterwards with another in which all the participants are currently involved as actual users and consumers of it (the education service we are receiving from the school) and also because you finish with the required reports and its evaluation."

"The methodology followed showed better efficiency in the team activities to define groups of consumers and users and their needs. Also more quickly achieved than the first time we participated in the workshop."

"I think that the methodology is very good. Maybe, discuss and feedback more about the consumers-users needs matrix when turned in."

"The changes observed can be really appreciated in the participants. Outside the class or in relation to the persons not involved in the workshop like at the EGA school or in the "Metro" system, everybody keeps doing things the same as before. I have to notice that the practice of the methodology allowed me to develop the capability of appreciating and identifying people that poses the qualities of considering the needs of their customers when doing their activities (even without having participated in the workshop). The dynamic used is excellent. The questionnaire and the executive report complement the methodology very well."

"I hope this could really be applied to our school, it would be a personal pleasure to participate in the improvement process of the services offered at this school. I feel that this first approach to quality improvement should become a real-life project for the school."

i) How is it possible to improve, in general, the organization's quality and productivity results, its general efficiency, and its communications process to better satisfy its current and future potential consumers and users?

In relation to organizational growth, consumers and users answered:

"Differentiate between consumers and users to know and identify their needs. Be personally conscious about the need of participating in this type of methodology with my fellow coworkers to help us define where we are now, and where are we currently going, and also to define where we really want to go, and see if there are differences among such objectives."

**3) Participants were asked to evaluate if generation of “Auto purchase Decision” was achieved.**

The answers obtained from participants after being involved in the different “TQM-SOS” and “C-U NEW” training and sensitizing activities were:

“Think and feel as a customer. Change of roles: Convert yourself totally in customer to fully experiment what he or she wants.”

“Walk in the shoes of your customer. Do surveys for customer opinion diagnosis.”

“The methodology is very good because it makes us feel in our own flesh the needs that exist as producers or customers (consumer-user). At a theoretic level, defining who will use the product and in which situations, made us be more conscious in searching for the satisfaction of certain needs.”

**4) Was “Change Resistance Reduction” achieved among participants?**

Regarding continuous improvement promotion actual consumers and users answered:

“If we follow an appropriate detection route to define different areas prone for improvement, we will be able to make well founded suggestions to the school, and with these, it will be possible to achieve improvements in the offered services.”

**5) SPC Continuous Tools Usage Promotion. (No answers were Reported).**

**6) Regarding the need of evaluating if the “TQM-SOS” and “C-U NEW” methodologies can convey the participants some applicability ideas through real life representation with small scale simulations the participants commented that:**

"The service studied (Master's degree at the EGA) has a lot more relationship with the activities we develop in the collective transportation system "Metro" I actually work. Both offer services to the community: Education and Transportation respectively. In both, we have direct contact with the customer, and in these particular cases, the product is being used at the same time it is being produced or generated."

"The same is sought with the methodology as in our daily work. The service is similar but on a different level of studies (Undergraduate school). Basic needs are the same. Probably the prioritizing of needs will be the same. The similitude that I found was the existence of unsatisfied customers in the graduate school where I study and in the high school where I teach part time. The needs of a graduate student and the ones of a high school student are very different, but the service that we offer them (education and formation) must have certain similar characteristics. Due to this last, the workshop that we participated in, is very much related to the needs that I have to satisfy as a worker in the education service areas."

"The analysis can help me because it allowed me to identify that the methodology can be satisfactorily applicable in service organizations to identify and satisfy the needs of our customers."

**5.5.4 Comments About "TQM-SOS" and "C-U NEW" Objectives Achieved at ITESM-EGA-CCM with Students Playing the Role of CONSUMERS-USERS of the Products and Services Offered by their own Graduate School:**

In this case the application of the "TQM-SOS" and "C-U NEW" methodologies was performed immediately after the normal course work of the Total Quality Management training program I developed for the same graduate students that previously took the course, and are currently working on their Master's Degrees in Business Administration. The idea was for them to apply the methodology they previously learned and use it to evaluate as direct consumers and users of the products and services offered to them by the Graduate School.

After this exercise, the students were asked to present their comments and recommendations to actually improve the products and services offered to them, as they saw fit, with the sole purpose of satisfying their education needs. The results are equivalent to an organization's customer survey and diagnosis about the products and services currently offered by the graduate school in the marketplace.

As expected, the participants commented that the application of the methodologies is possible in service industries. It can be part of the first stage required to define and perform a change of structure towards improving the organization performance.

In the case of the Graduate School the final conclusions and suggestions after the development of the workshop were presented to the dean of the graduate school and included recommendations for a future "TQM-SOS" and "C-U NEW" implementation effort after thorough considerations of the presented report would be finished by the principal directives of the Business School. A special task force was then authorized for in-depth study of the recommendations and about the possibilities of "TQM-SOS" and "C-U NEW" future implementation in the Graduate Business School.

Several of the participants that were directly involved in superior education institutions commented that the methodologies and the results achieved with them can be successfully applied in their own service organizations. They participated also and role played the parts of consumers and users of the services offered by the graduate school and were able to see and feel differences between what students expect to receive and what actually is being delivered to them by the school.

Consideration also was given to all possible consumers and users of the services offered by the graduate school, including the different organizations that pay the tuition of the students they are currently sustaining in the graduate school programs.

The workshop also allowed customers (students) to express their feelings about the school and all the supporting services they were receiving from it besides the education they were expecting to obtain. These commentaries can help organizations, as they helped the graduate school to start a "TQM-SOS" planning effort to improve the current quality levels of the products or services offered to its consumers and users. The methodologies can also help "close the gap between the organization and

all its customers by identifying their needs and afterwards offering them what they really need and expect to obtain."

Organizations also can realize that "there are different types of customers (consumers-users) with different needs and that this forces the organization to act accordingly." It is important to note that at the end the product or service will be owned by the consumer-user, so why not deliver the products or services as the customer expects them to be delivered or used?

To offer an adequate product or service it will be necessary to design, manufacture, and deliver the products and services as the customer verbally expressed that requires them.

The participants also commented that they personally applied the different concepts and ideas learned during their participation in the workshop in their job environments that they thought will lead to improve quality and productivity in their own organizations. "The simple mental exercise by itself is positive: Defining who will use the product or service and in which situations or environments, made the participants become more conscious in the adequate process of searching the actual satisfaction of certain needs and expectations expressed by the customers."

As participants "walked in the shoes" of the consumers and users and changed roles to convert themselves to customers of the products and services offered by the organization, the lack of satisfaction was immediately perceived, thus prompting the generation of improvement suggestions and recommendations, as the "Auto Purchase" philosophy suggests.

The "TQM-SOS" and "C-U NEW" methodologies are conducive to think, plan, decide, and perform evaluative, corrective, preventive, and improvement activities related to the current levels of service, quality, and productivity of the organization. The changes that must follow the learning, sensitizing, and implementation process requires the involvement of management and also a meaningful change in their attitudes.

Understanding the differences between the consumer and user definitions helps participants better understand and satisfy their current or future customer needs. The students that participated in the workshop offered important and valid suggestions to improve the products and services they needed from their own Graduate School of Business Administration.

### **5.6 Content Analysis of Obtained Answers.**

In this section, the content analysis performed on the different answers given to the open-ended questions obtained after interviewing the participants to the "C-U NEW" workshop and the "TQM-SOS" training activities will be presented. The content analysis included the answers given by the interviewed participants of the firms where the methodologies were applied.

As mentioned before, some of the participants were interviewed four and three years after being directly involved in "C-U NEW" workshop and the "TQM-SOS" training activities (Ford and Technik-Air respectively) and other participants immediately after such activities concluded (EGA exercises). These last ones were the MBA students that received the workshop and "TQM-SOS" training as part of their course-work activities at the ITESM-CCM graduate school.

The number of people that participated in the three different exercises that are reported in this thesis were:

<b>FORD MOTOR COMPANY DE MEXICO :</b>	<b>40 PARTICIPANTS.</b>
<b>TECHNIK-AIR CORPORATION :</b>	<b>30 PARTICIPANTS.</b>
<b>CCM-ITESM-EGA (TRAINING) :</b>	<b>6 PARTICIPANTS.</b>
<b>CCM-ITESM-EGA (CUSTOMERS) :</b>	<b><u>6 PARTICIPANTS.</u></b>
<b>TOTAL :</b>	<b>82 PARTICIPANTS.</b>

The number of participants interviewed after the three different exercises were:

<b>FORD MOTOR COMPANY DE MEXICO :</b>	<b>5 PARTICIPANTS.</b>
<b>TECHNIK-AIR CORPORATION :</b>	<b>4 PARTICIPANTS.</b>
<b>CCM-ITESM-EGA (TRAINING) :</b>	<b>3 PARTICIPANTS.</b>
<b>CCM-ITESM-EGA (CUSTOMERS) :</b>	<b><u>4 PARTICIPANTS.</u></b>
<b>TOTAL :</b>	<b>16 PARTICIPANTS.</b>

The total percentage of participants per company was:

<b>FORD MOTOR COMPANY DE MEXICO :</b>	<b>12.50 %</b>
<b>TECHNIK-AIR CORPORATION :</b>	<b>13.33 %</b>
<b>CCM-ITESM-EGA (TRAINING) :</b>	<b>50.00 %.</b>
<b>CCM-ITESM-EGA (CUSTOMERS) :</b>	<b><u>66.66 %.</u></b>
<b>TOTAL PERCENTAGE :</b>	<b>19.04 %.</b>

The general participant data obtained during the interviews (Figures 18 and 19) shows that:

a) The job seniority (cumulative time worked for the organization) of the majority of the interviewed participants in the "C-U NEW" workshop and in the "TQM-SOS" training activities is more than 12.5 years with an average of 11.73 years. (Figures 19 and 20).

b) The position seniority (cumulative time worked for the organization in the position, when interviewed) of all the interviewed participants in the "C-U NEW" workshop and in the "TQM-SOS" training activities is more than 1.75 years with an average of 4.5 years. (Figures 19 and 21).

c) The age distribution of all the participants interviewed after their participation in the "C-U NEW" workshop and the "TQM-SOS" training activities is more than 27.5 years with an average of 38.5 years. The ages of the majority of the participants were between 27.5 and 41.5 years of age. (Figures 19 and 22).

Analyzing in depth the answers obtained during the interviews, it is also possible to argue that:

d) The current activities of the participants interviewed after their participation in the "C-U NEW" workshop and in the "TQM-SOS" training activities is somehow related to decision making, managerial, supervisory, and operative tasks. Also, most of the participants hold a professional degree and some of them are currently involved in higher degree levels of education. Participants have a proven record in their firms and to a large extent have assumed important responsibilities. (Figures 18, 19, 20, 21, and 22).

e) The types of answers obtained do not change significantly even though the questionnaires were applied four or three years after managers participated in the workshop or immediately after participants were involved in the "C-U NEW" workshop and the "TQM-SOS" training activities. The answers are very consistent over time after participating in the "C-U NEW" and "TQM-SOS" exercises. The methodologies appear to have induced a positive effect on participant attitude toward continuous improvement and change.

f) Implementation in large and established organizations of new systems or methodologies may cause resistance to change by "old-timers" and different managers. The answers obtained showed that such effect was minimized in the case of the "C-U NEW" and the "TQM-SOS" methodologies and that the participants got personally involved with the "TQM-SOS" philosophy, and also in the organization's products and services continuous improvement.

g) Participants also made positive comments about how the "C-U NEW" and the "TQM-SOS" methodologies and its application helped them personally and their organizations to improve the quality and productivity levels of their areas, products, and services.

h) The principal objectives that both the "C-U NEW" and the "TQM-SOS" methodologies were expected to achieve were previously stated in sections 3.4 and 4.1. The content analysis of all the answers given by the interviewed participants, show that more or less all of the important objectives that the "C-U NEW" and the "TQM-SOS" methodologies were expected to achieve were actually attained.

The general objectives that were achieved by participants and their organizations after being involved in the "C-U NEW" workshop and the "TQM-SOS" training activities (expressed in order of importance by the number of positive comments observed in the answered questionnaires), for each of the two sections 3.4 and 4.1 are:

For Section 3.4., the general "TQM-SOS" and the "C-U NEW" expected objectives were realized in the following order:

1. Present an improved methodology to enhance "TQM" implementation process in interested organizations, regardless of the product or service offered in the marketplace.
2. Offer an appropriate methodology for understanding customer (consumer-user) needs.
3. Help organizations to become more productive and better satisfy their customers (consumers and users)" (Figures 23 and 24).

For Section 4.1 (Figures 23, and 24), the expected objectives were achieved in the following order:

1. Improve the Strategic Operative System Planning Process: The utilization of the methodologies presented here is recommended as a means of evaluating and improving an organization's current Mission Statement and Strategic Operative System.
2. Define the appropriate steps required to use and implement "C-U NEW" and "TQM-SOS" methodologies in any particular organization (Applicability in Manufacturing or Service Industries).
3. Real Life Representation through Small Scale Simulation: Each participant works during "C-U NEW" workshop with products and services that are similar to those that he/she currently manufactures

and delivers within their daily operations for training and practice purposes.

4. Generation of "Auto Purchase Decision" = Total Customer Satisfaction = Total Quality-Productivity Cultural Attitude in the Organization.

5. Change Resistance Reduction.

6. SPC Continuous Tools Usage Promotion.

In regard to the particular objectives sought with the development and application of the "C-U NEW" and the "TQM-SOS" methodologies in different organizations, help them to implement the "TQM-SOS" methodology, and also to improve the Strategic Operative System Planning Process, participants commented that they achieved in order of importance:

For the first objective (Figures 23 and 25): "Improve the Strategic Operative System Planning Process", participants commented that the strategic sub-objectives that they felt were better achieved by them and their firms were (in order of importance):

1. Help the organization to Improve Operations Management Process: Clarify "TQM-SOS" and "C-U NEW" methodologies to top management and what it can do for them and the firm. Furthermore, clarify what is or should be a top manager's principal role in an organization pursuing such quality or excellence objectives. Then how its complete organization must be structured and its people evaluated, recognized and compensated for all their efforts done in achieving "Total Customer Satisfaction."

The different factors expected in this point (1) were achieved in the following order (Figures 23 and 26):

- a. Good training tool for "TQM-SOS" and "C-U NEW" future understanding development and applicability in the firm.
- b. Team-work and Brain-storming development.
- c. Leadership: Development and Promotion.

2. Define changes that are necessary for the betterment of the organization's culture and structure. This would allow it to achieve more efficiently all its expected corporate objectives.

The different factors asked in this point (2) were achieved in the following order (Figures 23 and 27):

- a. Personal growth and Job Satisfaction.
- b. Organizational Cultural change.
- c. Personal attitude change.
- d. Understanding the Mission of the organization.

3. Definition of what are customers' expressed current or future needs and expectations in regards to the product and service currently offered by the organization.

4. Help them to improve in general all the organization's quality and productivity results. Also investigate its general efficiency and its communications process to better satisfy consumers and users. This last point is accomplished if adequately trained leaders are allowed to work with the tools mentioned in the methodologies here being studied. One prime objective sought here is organizational growth.

5. Definition of what and how the products and services that organizations generate should be offered in the marketplace to better satisfy their customer's current or future needs.

6. Definition of how those expected products and services will be generated to satisfy their current or future customer's needs.

6. Help them to improve design and delivery of products and services. After top management defines their current and future consumers', and users' needs, help them translate such expressed expectations in internal specifications that will help strategically organize all operative activities of the firm. All areas must be organized in a more productive and efficient way, including areas in charge of designing, manufacturing, building, constructing, providing service, promoting, marketing, selling and delivering the products and services currently being required by the customer.

7. Definition of who are the main current and future customers (consumers and users) of the organization.

7. Definition of what programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction as well as the required motivation and flexibility to change in creative ways to improve productivity continuously.

For the objective ranked second in importance (Figures 23 and 25): "Define the appropriate steps required to use and implement "TQM-SOS" and "C-U NEW" methodologies in any organization (Manufacturing and Service Industries applicability)", participants commented that the methodologies represent an appropriate tool to evaluate current or future consumer and user needs and to implement newer approaches to develop

"TQM" in interested organizations. This is important if we consider that today there exist not well proven tools applicable for traditional "TQM" implementing purposes.

i) Participants in the workshop and training activities also commented that the main contributions these types of new methodologies can offer to their organizations (Figures 23 and 28) are :

1. Considering the following important objectives that the "TQM-SOS" and "C-U NEW" methodologies were expected to achieve:

a. Improve the Strategic Operative System Planning Process: including the definition of who are the main current and future customers (consumers and users) of the organization and of what are the customers' expressed current or future needs and expectations in regards to the product and service currently offered by the organization.

b. Generation of "Auto Purchase Decision" = Total Customer Satisfaction = Total Quality-Productivity Cultural Attitude in the Organization.

It was identified that these important objectives were approached in a very different way or not even considered by other researchers. This last means that for these types of objectives the "TQM-SOS" and "C-U NEW" methodologies contain a complete different approach to asses and define customer needs. Then "TQM-SOS" and "C-U NEW" methodologies can be carefully thought about as a completely new approach to generate this type of knowledge.

2. The "TQM-SOS" and "C-U NEW" methodologies use a different approach to evaluate the most important part of the organization; "The customer (consumer-user)". These methodologies helped management to identify who are the current and future internal and external customers of the firm. They also helped participant organizations to understand their current or future consumers and users needs and expectations. Also, they established how to define and obtain such customer needs in a clear way.

3. "TQM-SOS" and "C-U NEW" methodologies are appropriate tools to promote organizational culture change. The exercises done with both methodologies help organizations to develop better team work efforts to improve job satisfaction and improved employees' communication. The workshop, as participants themselves commented, helped them to grow personally, professionally, and in the organization.

4. When the organizations focus their strategic activities toward the customer (internal and external) and his or her needs, internal growth and market results were attained by participants individually and their firms.

5. The methodologies encourage participating people to think about two different roles: The consumer and the user of the products and services being studied and their potential different needs.

Figures 23 and 28 highlight these results in comparison of "TQM-SOS" and "C-U NEW" methodologies with other approaches.

j) Figure 29 shows other objectives that various researchers have stressed as important, but that were considered as unrelated to the objectives that were studied for the "TQM-SOS" and "C-U NEW" methodologies.

## CHAPTER 6

### SUMMARY AND CONCLUSIONS.

#### 6.1 "TQM-SOS" and "C-U NEW" Final Justifications.

"Everything is possible, but only if you desire it" (Tapie, 1986).

To implement in a satisfactory way the "TQM-SOS" and successfully apply its "C-U NEW" methodology in an organization, there needs to be a real requirement to do so. To obtain the expected results it will be required continuous managerial support and leadership to achieve it.

To attain these objectives, well thought out and developed training tools are required. In this thesis, I argued and showed, after actual practical applications, that the "TQM-SOS" and "C-U NEW" methodologies presented and proven in this research effort can be satisfactorily used to achieve those important corporate objectives and that both techniques can be considered good training tools for these important purposes.

One of the most important points that also is addressed in this thesis is the applicability of the methodologies as appropriate learning tools. I want to add that even though the methodologies have been satisfactorily used in different organizations, modifications can be required if continuous improvement is sincerely sought by top management in their organizations.

Achievement of all the mentioned principal organizational objectives can be efficiently attained using the "TQM-SOS" and "C-U NEW" methodologies. The techniques proposed can be appropriate tools for the achievement of the expected results as I showed in the results section. Such affirmation was confirmed after reviewing the objectives achieved by participant organizations, which were expressed in the interviews performed for such reason.

I also argued that the "TQM-SOS" and "C-U NEW" methodologies can be also used to directly address all the important strategic planning factors pertaining to the organization. Top management will have an easier time in the development of the improved process of strategic operations system planning implementation if real life implementation of the "TQM-SOS" and "C-U NEW" processes is supported.

Some of the objectives' accomplishments will require the organization to develop better team-work capabilities and use all the efforts invested by these groups to continuously improve the organization's performance level. Today's tough competition, requires that organizations consider that team-work is a must, and it must be practiced by all departments and areas of the firm.

Teamwork will be accomplished and enhanced by integrating interdisciplinary teams at all corporate and organizational levels to achieve better quality-productivity results and with all these improved consumer-user satisfaction. To achieve an efficient "TQM-SOS" implementation in any organization personal attitude changes, ethical personal growth intentions, and increased job satisfaction will be required. One of the most difficult tasks, or challenges, faced when intending to accomplish a satisfactory "TQM-SOS" implementation is a change in the attitudes of its participants and in those of the organizational culture.

The application of "TQM-SOS" and "C-U NEW" methodologies, using their different tools and dynamics, will allow organizations to improve probabilities of succeeding in their implementation efforts through proper cultural changes. Results showed that the organizations that were subjected to particular sensitizing, training, and implementation efforts in which both "TQM-SOS" and "C-U NEW" methodologies were used, clearly improved and that the managers that participated in such efforts improved as well.

In general it is mandatory today to improve the organization's quality and productivity results, its general efficiency, and its used communications process to better satisfy its current and future consumers and users. This will be achieved only if managerial leaders are allowed to work with the tools mentioned in the "TQM-SOS" and "C-U NEW" methodologies and become adequately trained.

Priority projects will first be recommended and defined, and later on, solved by special groups or teams formed with people of the different areas involved to continuously improve the quality of the products and services offered by the organization. These priority projects will initially offer management short-term applications and small-size results to the firm. The initial scale or size of the first priority projects will be a manageable one, while managers are learning and achieving the required beginner's level of experience and expertise with all "TQM-SOS" and "C-U NEW" required tools.

I hope that all the findings presented in Chapter 5, will motivate the people managing and working in different firms to concentrate their efforts and use their energies and intelligence in the required activities to define, design, build, manufacture, and offer specialized products or services that

will better satisfy those customers' or users' current or expected needs. Proper tools also are offered for top management to accomplish the intended strategic operative system strategy.

In this thesis, I have shown that the "TQM-SOS" and "C-U NEW" methodologies can help organizations obtain the required commitment and involvement by top management when strategically planned to achieve the expected survival and growth of the enterprise. Remember that "For successful leadership to occur there has to be a fusion between positive self-regard and optimism about a desired outcome" (Bennis & Nanus, 1985).

The organization should take advantage of the opportunity to improve the quality level of its products and services. If the firm does not consciously believe that it is somewhat endangered by its actual status and level of operational conditions in such a way that the organization promotes a self-generated pressure to change, the organization will not be able to define the expected new objectives and processes. Objectives must be part of the required future strategic operative systematic planning that is indispensable to achieve improved quality and productivity results and goals.

I believe that modern organizations must understand what their customers' needs are to generate the "TQM-SOS" planning efforts. If organizations know these needs, it will be easier to help the enterprise be in the competitive position of offering the required products or services that directly derive from these consumer or user needs. If organizations continue to forget, as has happened many times, that only the customer can evaluate the quality of the offered product or service, economic results will continue to be erratic.

It also was shown that those organizations that have even partially used the "TQM-SOS" and "C-U NEW" methodologies, with the sole purpose of improving the quality of their products or services, are much better off today. If more organizations would plan special implementation efforts of the "TQM-SOS" and "C-U NEW" obtained results and experiences, I am sure they could improve, too, and further related research and improvements of the methodologies would be feasible.

Regarding the requirement for top management involvement and participation suggested in the "TQM-SOS" and "C-U NEW" methodologies as well as in other different implementation efforts of various quality and productivity improvement systems, Tapie (1986), commented:

A boss is not only the one that gives the orders but the one that preaches with the example. Knows to listen to everybody and knows how to be heard by everybody. Any organizational philosophy that does not consider the human factor as its most valuable capital, condemns itself sooner or later, to a sure decadence (Tapie, 1986).

Bennis and Nanus (1985) add that in a successful real-life organization that they have dealt with, disguised in their book with the pseudonym of "Jordan Manufacturing," actually operates with the following strategic guidelines embedded in daily operations:

- 1) Competitive Strategy is based on Quality and Service.
- 2) Build trust between employees and owners.
- 3) Formal explicit organization philosophy statement:
  - a. People want to do a good job and be associated with success!
  - b. People will do a good job if:

- \* They understand the need!
- \* They are provided with:
  - Facilities and equipment.
  - Procedures.
  - Material
  - Know-how.
  - Management that leads.
- \* Their efforts are recognized and appreciated.
- \* We attach no blame to "failure".
- \* Everybody assumes responsibility for the product.
- \* We leave workers alone and allow them flexibility.

It is important to remark that "TQM-SOS" and "C-U NEW" methodologies cannot be just another set of efforts that stand alone or in isolation but principal guidelines of the new expected cultural philosophy of the complete organization. "TQM-SOS" and "C-U NEW" methodologies are deliberately designed to influence all the various ways of currently doing business and operating from now on and more so in the future of modern organizations (see Figure 1). This last therefore enforces and compromises the future of modern organizations and requires managers' continuous commitment and involvement, it also obliges top management to review the scope of the current mission statement of the organization in order to redefine and state adequate corporate policies. The mission statement can be written similarly to:

The organization must always offer the intended value to its Consumers-Users, with Products-Services done right at the first time, which are supplied at the adequate price level that can satisfy the current and future needs of the actual or potential customers (consumers-users), while achieving adequate benefits for all the personnel (internal customers) and all participants and stakeholders

(internal-external) involved in an efficient and profitable operation of the organization (Operational definition given in section 1.2).

Remember that by adequate price level, we mean a price that gives the manufacturer, or service provider, a profitable level of business and to the purchaser it will represent a cost that will be equivalent to the value that he or she will receive for the amount of money originally paid for the product or service involved during all its expected usage and service life.

The proposed general mission statement reviewed above is the one supported and recommended throughout this thesis as having a possible clear format, which I expect will be useful for different organizations in manufacturing or service industries. It can also be used as a possible benchmark for various organizations to establish their own mission statement at the required moment in time.

For this purpose the interested firm will only need to expressly define the exact types of products, services, participants, consumers, and users involved in its current daily operations or in the future ones to be performed, to be completely composed and implemented.

I think that it is also important to review here, for clarification, an example of the mission statement and corporate guidelines behind the strategic intent of a particular successful Mexican organization, the Bimbo Organization. The purpose behind this review is to show the similarities of some of the points in both statements and to confirm that such intent might lead to appropriate organizational results. Bimbo is internationally well known, regarded and considered by most of its consumers and users as doing a good job in satisfying their needs and that has been a known fact since it was founded, when the organization began offering quality products and services in the Mexican consumer market:

If somebody would ask me to state in a few words the vital objectives that led and motivated our actions, I would say that were and still are, our products, our customers and our personnel. The constant care for the product in the organization is a daily obsession. The fight for quality and freshness is a continuous fight. Production is a fundamental activity in our enterprise and we dearly love our trade and the products we manufacture. I have selected four indispensable elements to achieve excellency: Productivity, Quality, Participation and New Technologies.

The customer - we have said that many times - is the true boss of the organization (Servitje, President of the Management Board of Organización Bimbo, 1985).

The idea of presenting such an enlightening statement lies in the fact that today it is still required to have similar mission statements to properly guide the major strategic steps required to achieve the important objectives of any organization. Such a mission statement is needed providing the organization intends to be successful in the future, and also, to note the operational similarities that this statement has with the mission statement operationally suggested in this thesis.

The globalization of the business world pushes even more now than ever organizations to open their eyes to various challenges and opportunities needing immediate consideration.

Management can improve also its current normal or traditional "TQM" implementation process if proper reviewing and studying of the "TQM-SOS" and "C-U NEW" approaches and methodologies are done. After this important task is completed, the organization might decide to consider its possible implementation as other enterprises and managers

have decided to pursue including all the required efforts and continuous involvement.

I feel that the "TQM-SOS" and "C-U NEW" methodologies can be an important choice to help managers that plan to follow more productively any of the available guidelines for traditional "TQM" implementation.

"TQM-SOS" and "C-U NEW" are methodologies that top management can follow to better design, manufacture, market, and deliver improved products or services to its current or potential customers, consumers, or users, considering that their needs are already known. After such activities are accomplished the expressed consumer and user needs are principally utilized to redefine the new mission statement of the enterprise and with it, all its required complete strategic operation system planning effort to achieve it.

Such needs, I contend, can be satisfactorily defined with the usage of the "C-U NEW" methodology presented in this thesis. The methodologies known here as "TQM-SOS" and "C-U NEW" can also be used too as adequate tools that will improve the quality of the information inputs required, even before the "QFD" technique is employed to translate customer needs to technical working specifications for engineering and manufacturing purposes.

The important results obtained after different organizations such as Ford Motor Company, Technik-Air and MBA students from the Graduate School of Business Administration of the ITESM participated in the "TQM-SOS" and "C-U NEW" activities allows me to recommend these methodologies for other real-life applications in different organizations.

Organizations and top managers that have had the opportunity to be directly exposed to sharing and using "TQM-SOS" and "C-U NEW" ideas with their own particular traditional "TQM" implementation plans, also improved significantly both personally and organizationally.

## **6.2 Major Implications.**

"TQM-SOS" and "C-U NEW" guidelines were originally developed to be part of a suggested process to achieve improved "TQM's" Philosophy training and implementation in any organization.

In this dissertation I intend to show, suggest, and recommend that both "TQM-SOS" and the "C-U NEW" methodologies can and must be used as guiding tools for any organization wanting to offer better products and services to its current or potential customers. The organization needs to learn how to obtain and use the "Consumer-User Needs" information at the beginning, during, and after the process of implementation of the "TQM-SOS" is employed to help management achieve "Total Consumer-User Satisfaction."

Current and reliable information about consumers' and users' needs helps review the basic reasons for being in business and update accordingly the organization's future Vision and Mission statements.

The prepared materials and vivid exercises performed during the "TQM-SOS" and the "C-U NEW" sensitizing and training sessions must have a real-life analogy to the products currently manufactured and sold by the organization, thus helping top management to improve its decision-making process in a simulated or laboratory type of environment which will

lead the organization to improve its operation's quality and productivity levels.

To enhance the effectiveness of "C-U NEW" sessions, selected personnel participation is required. In these activities, actual consumers and users of the firm can participate, or even principal organizations' suppliers, can be invited to concur. Done this it will be possible to completely redefine the required new products, services, objectives, goals, policies, rules, and procedures conforming to its new "TQM-SOS" strategic plan, which will be required to productively operate the firm now and in the future.

The organization also can use any additional complementary information gathered from other surveys. This information can be obtained from special focus groups or "NGT" applications for customer needs assessment. The reason behind the utilization of these exercises also can be the improvement of the firm's current products and services.

I do not want to say that all these other types of needs research methodologies, besides "TQM-SOS" and "C-U NEW," are something new for existing firms to consider or use, but only that many firms have also forgotten the application of these tools to review their basic reason for existing and only have confounded their strategic goals with "making money."

I believe that the best way of making money today is through continuous customer satisfaction, and that this major objective requires the delivery of continuously improved products and services that meet customer's expressed needs. "TQM-SOS" and "C-U NEW" techniques have been shown to be appropriate tools to achieve improved customer satisfaction.

To manufacture and deliver the required products or services organizations must first change their cultural attitudes and behaviors and want to listen to what their customers express as actually needing and understanding what customers really expect to receive. If this is thoroughly promoted on a continuous basis by top management and supported by all the collaborators of the organization, the delivery of such goods or services will be a never ending design, purchasing, manufacturing, sales, marketing, service, and post sales service set of interrelated exercises. Do not forget that such activities must be done with the required level of efficiency, excellence and quality right on the first time as the main organizational strategic and operative top priorities.

Having accomplished this, decisions can be made and actions may be taken to better satisfy consumer's and user's current and future needs. This can be fulfilled using the principal guidelines discussed that must be included as part of the organization's new general Strategic "TQM-SOS" intended way of continuously operating to achieve "Total Consumer-User Satisfaction." The described "TQM-SOS" and "C-U NEW" methodologies also can be applicable for any kind of entrepreneurial activities and new business developments as suggested while preparing its new business operations plan.

Strategic operations system planning can require proper Mission Statements revision and modifications when deemed necessary. Corporate objectives can then be better developed and the required plans prepared to achieve them. Operative and strategic plans can be set in place to be worked on by appropriate teams of people directly involved in the complete "TQM-SOS" process. After the organization's objectives are defined, the related priority projects can be developed for their immediate establishment in the organization.

With a definition of the "Consumer and User verbally expressed needs" accomplished within the workshop, a list of the required product's or service's main attributes and characteristics will be available. It is also recommend that a similar approach, using teamwork efforts with the participation of various area managers. Knowing consumer and user needs will help the organization describe the activities that will follow. This information will help management with the process of improving all administrative and operative steps required to manufacture better products or services, respectively.

Using the directly expressed requirements, attributes, expectations, and product's or service's characteristics which can be freely verbalized by their current or potential consumers and users, allows the organization to increase its market share and customer satisfaction results.

Organizational Marketing and Management objectives will then be better accomplished if the people of those concerned areas directly and continuously participate with all the other involved sections of the organization and are motivated to work as a team. Proper teamwork efforts will lead the firm to achieve an improved "Organizational Quality and Productivity Culture for Total Consumer-User Satisfaction." Voluntary participation in different teams and teamwork must be continuously encouraged, promoted, supported, and recognized by top management.

One of the major impacts that I expect the "TQM-SOS" and "C-U NEW" approaches will have in an organization that wants to offer better products and services to its consumers and users is the improvement of the general communication process and its required information distribution channels.

If the "TQM-SOS" recommended implementation steps are followed by everyone in the organization, including top managers that must function as the guiding force in the implementation process, I expect that all the stepping stones of the Vision and Mission statements of any modern organization will be better satisfied. These leading top organizational objectives and guiding principles, known as the Vision and Mission statements of the firm, will surely enhance the opportunities of Total Quality Management and Excellence achievement. Remember that the mission statement must always be worded and expressed on similar terms to the statement presented in section 1.2 and at the beginning of this chapter.

In the different teamwork exercises used during the "C-U NEW," which also must be followed step-by-step to completely define current and future needs of the consumer-users of the product and or service, participants will try to define their future needs and expectations. This must be done within some accepted margins of error, to better state future corporate strategy and the strategic goals to be followed by the organization.

The defined consumer and user expressed needs should be used later on for long-term planning of the corporation and the tools ("TQM-SOS" and "C-U NEW") will help better achieve these important organizational objectives. With this most important objective attained by the organization (the definition of customers' expressed needs), top management will hopefully be closer to the achievement of the required customer satisfaction objectives and in the continuous road to Quality, Productivity, and Profitability improvement that is expected by all stakeholders of the organization.

It's important to remind the interested managers that "The Marketing Concept" proposed by professor Kotler and other marketing experts, also will be better satisfied and accomplished if proper generation of products and services is achieved by the organization. Also, recall that "Needs" were operationally defined as: "Expressed and verbalized wants or expectations by the current or future customers of the organization" in section 1.2. Kotler (1984) defined the Marketing Concept as:

The key to achieving organizational goals consists in determining the needs and wants of target markets and delivering the desired satisfactions more effectively and efficiently than competitors.

Kotler, also argued that:

The Marketing Concept starts with the company's target customers and their needs and wants; the company integrates and coordinates all the activities that will affect customer satisfaction; and the company achieves its profits through creating and maintaining customer satisfaction.

I truly believe that the time has come when an organization's top management can be more receptive to the different ideas here presented for actual implementation in their fields of activity without any additional cost to the interested reader.

I also feel that total customer satisfaction actually begins the moment we approach them and sincerely ask the following simple question (but difficult later to perform activity): "What is it that you really want or need in a product or service? and afterwards we open our ears to listen to what he or she really has to say and start designing exactly what

consumers and users said they expect to receive in the future from the organization!"

Next, adequate procedures and techniques are used to analyze all the actual answers that were given by the customers (consumers-users) and the obtained information is better utilized to design, support, manufacture, and lastly offer products or services that will match these not very often remembered customers' requests, businesses will be better off as well as its stakeholders and participants. This last point, will guarantee at the end: Appropriate Total Consumer-User Satisfaction, Corporate Mission Achievement and Organizational Survival First, and Organizational Potential Growth Afterwards.

With the improved procedures described for successful "TQM-SOS" and "C-U NEW" implementation, the probabilities that any organization will be able to better meet its quality and productivity objectives and goals can be significantly increased.

### **6.3 Methodological Considerations.**

#### **6.3.1. Strengths:**

The successful application in various industries, or organizations offering different products or services, of the "C-U NEW" methodology and all the principal guidelines that the "TQM-SOS" procedures, has been demonstrated.

These important results were achieved after several organizations were exposed to the methodologies described here and had learned from previous organizational experiences. This allows me to state the

importance of the merits, their real-life applicability, and the potential magnitude of the principal results that can be achieved with the adequate utilization of the "TQM-SOS" and the "C-U NEW" methodologies.

It is important to state that the combined knowledge achieved by reading scholarly related materials, participating in various traditional "TQM" implementation efforts and thinking about the problem of how to improve "TQM's" implementation guidelines, supported and encouraged the development of the two methodologies that were presented as "TQM-SOS" and "C-U NEW." Although the three practical applications presented here cannot be considered statistically valid, the purpose of this thesis was to document the methodologies and their merits.

The organizations where the implementation and utilization of the methodologies occurred have a majority of Mexican workers and can be considered as traditional Mexican enterprises. Ford Motor Company de Mexico is an international firm that has manufactured cars in Mexico for many years, but its operative structure is controlled and managed by its international policies and guidelines. The objectives pursued by the methodologies were in general satisfactorily achieved in the assembly plant of Ford Motor Company de Mexico; nevertheless, more time and research will be required to completely confirm this statement.

The Technik-Air Group also is a conglomerate of different Mexican firms, where most of its current customers are automobile manufacturers such as Ford, Chrysler, General Motors, Nissan, and Volkswagen, and I can also argue that the results, including the "Q-1" quality recognition received in the organizations after applying the "TQM-SOS" and "C-U NEW" methodologies are significant. More research and posterior auditing and questionnaires to evaluate future results can be used to

confirm the long-term application and implementation of the methodologies in the firm.

The modest results achieved at the EGA-CCM-ITESM Graduate School are still not clear, even though the approved consulting priority project to develop the Graduates School's Total Quality Management Strategic Operations System is still going on.

### **6.3.2 Weaknesses:**

Sometimes it is stated in different articles that the time required to fully implement traditionally known "TQM" approaches in an organization will depend on its size, actual structure, product, service, resistance to change, top management involvement, and participation in the complete implementation process. It is also mentioned that top management's leadership and communications skills are continuously required by managers and supervisors as well to attain quality and productivity objectives.

All this can be taught to management and programmed after appropriate implementation efforts are performed, but if the customer and his or her needs are forgotten, traditional "TQM's" implementation will be more like a dream than a reality for the organization.

That is one of the main reasons I have to urgently recommend top managers to define first consumers' and users' needs and afterwards proceed to do their required jobs: "Right from the first time and according to those expressed as specified and expected consumer and user needs." Each organization, after its own consumers' and users' needs are

completely understood, defined, and specified, will set an appropriate pace in the right direction in order to achieve the expected results.

No specific time frames or clear cut rules were found in the literature review for an in-depth implementation recommendation, but only some general guidelines as the one presented by the Construction Industry Institute. These time frames were obtained after the Construction Industry Institute reviewed various construction industries' implementation efforts and observed the actual results achieved by some of its organizational members (THE CONSTRUCTION INDUSTRY INSTITUTE, 1990).

It also was mentioned in various referenced papers that cookbook recipes are not offered as available for a better "TQM" implementation due to the variability of organizations that exist in the real world. Still, many references offer useful guidelines to help business people achieve those intended goals (Slater, 1991). The problem with those suggested procedures is that some are not complete or adequate for Mexican enterprises that will require them to adapt to their Mexican culture and appropriate speed of implementation.

It also is important to remember that the "TQM-SOS" and "C-U NEW" techniques mainly develop and employ various "Teamwork Processes" during the sensitizing, training, and application stages, which also supports its possible recommended usage in interested organizations. The "TQM-SOS" and "C-U NEW" methodologies can be used in any organization expecting to achieve Total Quality-Productivity for Consumer-User Satisfaction, regardless of the type of organization.

These suggested applications are solely based on personal comments or on the ones expressed by the different participants to the

specialized "TQM-SOS" and the "C-U NEW" techniques' training efforts. It is important to mention that participants were working in the involved organizations or in all kinds of industries and service providing organizations while studying their MBA Master's Degree. Thus "TQM-SOS" and the "C-U NEW" methodologies can be properly recommended to top management to effectively define and afterwards satisfy, consumers' and users' needs for practical utilization in their organizations.

"TQM-SOS" methodology's activities will surely also help top management from various organizations in their quest to improve their current corporate strategic position in the marketplace and help them establish adequate organizational plans to achieve the intended organizational objectives and goals after the required results attained during the participation in the "C-U NEW" are available for their in-depth review.

Top management also must participate in the analysis and definition of consumers' and users' expressed need, making it possible to continue the development of the complete strategic-planning process for the entire organization.

As mentioned, "QFD" technique's tools can be only used afterwards to define the required complete engineering specifications for operations or manufacturing purposes of the different processes needed to manufacture or generate the expected products or services. Product's and service's specifications required for adequate customer satisfaction will be better met if a preventive versus corrective type of attitude is promoted and allowed to exist in the organization. This requires a complete organizational culture change within the minds of all its participants and collaborators.

#### **6.4 Recommendations for Future Research and for Improvement of the "TQM-SOS" and "C-U NEW" Methodologies:**

Considering the results observed in the content analysis performed to the data obtained in the questionnaires, further study and research must be programmed to improve the objectives that were not clearly achieved with the previous applications of the "TQM-SOS" and "C-U NEW" methodologies (Figures 23, 24, 25, 26 and 27):

1. Improve the process of defining and specifying the expected products and services for future generation and manufacturing to properly satisfy their current or future customer's needs. This is mainly related to the translation of needs into products' or services' specifications process.

2. Improve the definition process of what and how the products and services must be offered in the marketplace to better satisfy their customer's current or future needs.

3. Help management improve the design and delivery of products and services processes. After top management defines current and future consumers', and users' needs, help managers translate such expressed expectations in internal specifications that will help strategically organize all operative activities of the firm. All areas must be invited to work in a more productive and efficient way, including areas in charge of designing, manufacturing, building, constructing, providing service, promoting, marketing, selling, and delivering the products and services required by the customer.

4. Improve the definition process of who are the main current and future customers (consumers and users) of the organization.

5. Improve the definition process of what programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction, as well as the required motivation and flexibility to change the organization in creative ways to continuously improve productivity.

The last questions that need to be studied and researched further are:

6. Are the ideas behind the "TQM-SOS" and "C-U NEW" methodologies appropriate to improve the implementation process of the traditional Total Quality Management work system in any type of existing, or a new organization, or should they be enhanced even more?

This question must be answered only after applying and using the "TQM-SOS" and "C-U NEW" methodologies in a larger sample of organizations than in the present study.

7. How would I prove the improved process to implement the Total Quality Management Strategic Operative System is usable across various organizations without large modifications?

The answer to this research question will come only after application of the methodologies to more interested organizations is done and the results achieved are properly researched and analyzed.

8. What enhancements are still possible to the "C-U NEW" and "TQM-SOS" methodologies to make them even better management tools?

If more applications are performed of the "TQM-SOS" and "C-U NEW" methodologies in other organizations, improvements and

recommendations for their enhancement will be available. Such improvements will come only after performing the following activities:

a) Relate and compare the methodologies' results to information gathered with other research tools, such as Focus Groups, to obtain better and broader results.

b) Compare the lists of needs given by consumers and users obtained with the "C-U NEW" methodology with the results obtained after doing a larger survey of consumer and user needs where using a massive instrument that gives a broader picture of a larger population in which the determination and identification of similar lists of needs are intended. The combination of both types of research results will give a more consistent and richer definition of the customers' actual and future needs in the marketplace.

c) Before computing the final priorities of the obtained expressed needs using the "C-U NEW" workshop use a broader survey instrument for market research and then finalize the preparation of the needs versus consumer-user matrixes. Perform an exhaustive analysis of both types of obtained results to verify the exact order of needs (priorities) expressed and observed from the studies performed. This can be done applying the Pareto Principle methodology.

9. Are the methodologies here described useful as planning and training tools for various new enterprises development?

An interesting research project can be developed if a new organization is planned and started since its beginning, from scratch, with the "TQM-SOS" and "C-U NEW" methodologies' culture embedded in its corporate and management officers.

It is also my belief that many other organizations from different industries can also use or enhance the "TQM-SOS" and "C-U NEW" methodologies already described above according to their particular culture and their internal or external customers' needs, and be more effective and successful in their own intentions of also implementing the "TQM-SOS".

10. Compare the effectiveness of the "C-U NEW" approach by evaluating its results (description of consumers' and users' needs) with those that other research tools provide with similar samples of current and potential consumers and users.

In general, both "TQM-SOS" and "C-U NEW" methodologies can still be improved after further research and enough applications are programmed and performed with them.

#### **6.5. Epilogue: Final Comments.**

"Why do people who don't have time for quality always find the time to do their work over again?" George Ellington

The "TQM-SOS" and "C-U NEW" methodologies presented here address those Mexican (personal or organizational) traits and characteristics that are important to observe in order to achieve a successful Mexican "TQM-SOS" implementation process.

Some of those same particular characteristics also exist in many other people and organizations around the world. The usage of the

models studied in this dissertation, besides their applicability in Mexico, can be tried also in other organizations in different countries wishing to consider them as possible tools or guidelines to implement "TQM-SOS" for Total Customer Satisfaction in their regional environments. This objective can be achieved if local cultural traits are also adequately considered and then appropriately modified or enhanced "TQM-SOS" and "C-U NEW" methodologies are employed.

International quality and productivity experts, well known consultants, service business's related scholars, and "TQM" professors, recommend and suggest to top management the usage of various personal tools and techniques to analyze, develop, and control operations, processes, and activities, to prevent or minimize implementation errors and mistakes, hopefully leading to improve the organization's current levels of quality or productivity of the manufactured and distributed firm's products and services to all types of customers.

With all these vast sources of available data, information, and recommendations, top management gets confused when trying to develop its special and adequate implementation map to achieve quality, and productivity within the firm. This confusion sometimes arises because cookbook recipes are not available, or recommended, to achieve such palatable goals and also that each organization is quite different.

The number of sources for information or research that top managers must evaluate and study is enormous and is getting larger. All those sources seem to hold an important part of the truth. Their references and examples also offer advice and important guidelines accordingly. Some of them even offer adequate cost-benefit analysis of the importance for our industries (manufacturing or service) to achieve international levels of quality and productivity that are acceptable and

viable. Other sources just seem to repeat endlessly what others said before.

With all this knowledge presented, studied, reviewed, analyzed, considered, weighted, and assimilated by top management, it should be easier and possible that corporations would be able, without many problems or complications, to implement the adequate measures, controls, procedures, and steps to offer its customers the products or services expected and needed by them.

This should be accomplished by top management in an adequate span of time, after implementation is first economically justified and duly authorized by the organization's stockholders. Then, it must be personally driven by the top executive of the firm. Lack of managerial support, as the different quality and productivity experts argue, becomes a central limiting factor for the achievement of the quality objectives of the organization (see various tables summarizing different theories and philosophies in the appendixes).

It is also important to offer top management the appropriate tools to manage and lead the improved "TQM" implementation process in an adequate form since the beginning of these meritorious efforts.

Sometimes the time or effort required to achieve customer satisfaction is not planned for or completely considered by top management because of all the possible problems of involvement and other difficulties that will surely arise when trying to change the minds of top, middle, or bottom-level executives to get them involved in the continuous process of improvement. More so, if the organization is a traditional one, or shows great inclination toward the bureaucratic model of

work, the implementation process can be heroically resisted by many "collaborators" of the firm.

It is also necessary to offer advice to top management about recommended actions on those occasions when the expected objectives or results start not coming as quickly as the experts would like to happen. Please do not allow impatience to become the pusher for more efforts that are not yet required and may hinder at the end the overall process of implementation. On such occasions, it seems it is easier to forget the implementation efforts.

Top management knows from its daily interaction with the customer, the supplier, and all its internal operative people, if they are adequately performing their jobs, that sometimes the term "quality" or even "customer needs" or "expectations" are difficult to define in an understandable way, or even state them exactly. Then other "quality" experts come along and recommend to "ask and listen to the customer about what he or she really wants," in order to exactly program all the organization's activities to do all that is required regarding current products or services.

How then is it possible to control the achievement of special results that cannot be fully or clearly defined or to do it in places where no team-work efforts are continuously seen in action or lack of adequate communication exists?

It is then required, as suggested in this thesis, the immediate usage of special techniques, methodologies, and tools that will efficiently help top managers in the process of defining in the most exact possible way what their customers want or need.

Also, top management was provided in this thesis with techniques to help his or her organization improve the quality of its products or services, and in the process of defining, designing, and manufacturing or delivering to its current or future consumers and users, those products or services they are actually looking for or expecting to receive to satisfy their needs in the market.

It might be argued that these two suggested models and methodologies ("TQM-SOS" and "C-U NEW") will become part of the vast useless academic traditional "TQM" literature, which sometimes is accused of lacking any real-life applicability. In these particular cases I can comment that I do not plan to say that such remarks are not false or true. I will prefer that time and followers show the potential merits of the methodologies presented in this thesis.

The tools introduced here and reviewed for any managers' use, were presented in a step-by-step, simple to follow pattern that should help top management in its efforts to implement Quality-Productivity for Total Customer Satisfaction in their organizations. I think that "TQM-SOS" and "C-U NEW" are adequate tools and are exercises that top managers must follow in their efforts to generate more customer satisfaction and obtain better "quality-productivity" results for the organization.

The methodologies studied in this thesis will help managers understand, as any teaching aid intends to do, what is expected from them at the end and how they should get involved in the complete "TQM-SOS" development and implementation processes in order to guarantee better organizational results. Also, management will have available adequate tools that in simple and applicable terms explains to them all the nuts and bolts of the "TQM-SOS" implementation process, that other experts make sound magical or mystical.

"TQM-SOS" and "C-U NEW" techniques will also be useful for top managers in the process of inviting, involving, coordinating, and selecting the appropriate people to help them guide all the required efforts to implement "TQM-SOS" within their organizations. If these objectives are realized, it will be possible to achieve faster the expected organizational level of Quality-Productivity for Total Customer Satisfaction and, at the same time, rejuvenate the organization. This will help management realize the improvements that would insure first the firm's survival under tough international competition and then attain the desired growth in those same areas.

Last but not least, top managers that use these methodologies will become "Total Quality Management Strategic Operations System for Total Customer Satisfaction" experts and nobody in or out of the organization, would be able to fool them about what are the most important requirements needed now, or in the future, in the products or services to be offered by the organization to achieve a recognized international quality level.

I believe that if a better approach is developed to improve the current "TQM" implementation process, such as the one presented in this thesis, the "Total Quality Management Strategic Operations System," a lot of frustration and resources will be saved. This also will help top management in its efforts to increase productivity levels faster while achieving higher personnel commitment and participation.

I see in the long run a place for organizations where the "TQM-SOS" working system operation is effectively performing, a place where job enrichment, quality-productivity, Sociotechnical systems, and team-work building and participatory environment are concepts that work

together for the benefit of the organization's stakeholders and are mainly directed at the customers (internal and external) of the organization, who for a while, were almost relegated to a second class status by many enterprises that now are no longer in business.

Competitors are not idle and time is not waiting for anyone to catch up! So whether you like it or not, the "TQM-SOS" and "C-U NEW" methodologies can help your organizations improve. Such important goals can be achieved by using the simple and logical techniques as proposed, or after enhancement or improvement is done by the interested parties.

Organizations today need to improve the quality and productivity of their numerous operations, products or services to stay in business. Information overflow regarding quality products or services, or productivity's importance for the firm, and the way to achieving them is occurring on a large scale.

Many of the current definitions in the references and their suggested applications or the lack of classification or organization of such enormous amounts of data, may not help top management in the short or long run in defining the appropriate process to achieve the required levels of quality or productivity or what are the best appropriate steps recommended to do it. Decision making by top management about "TQM" implementation procedures is not a simple task to address.

To conclude, I will argue that if organizations follow the "TQM-SOS" and "C-U NEW" methodologies and processes presented here, they will greatly enhance their procedure to define the different alternatives available to them to manufacture or deliver goods (products or services) to their actual or future customers. This last suggestion is based on the

comments and results already achieved by those organizations that tried these ideas and their related methodologies and implemented them along with other tools. Such efforts helped those organizations achieve important industrial and customer recognition and awards, sales growth, and improved quality levels.

These tools should be considered priceless. And I feel that consumer-user needs evaluation is the necessary step that any company should begin with and follow, without any delays, to develop faster its Total Quality Management Strategic Operations System.

Remember that the last Strategic Operative System part of the name of the methodology, or appended designation, was suggested in this work for two principal reasons: First, it is important to consider for an efficient operation of the firm the interrelationship between strategic and operative issues. Secondly, the capitals S. O. S. should remind us the urgency of doing and implementing "TQM-SOS" and "C-U NEW" in the organization as soon as possible!

Top management is, then, cornered to make vital strategic decisions regarding which points or tools or techniques would be suitable for their particular type of business or market or people, how or when to use them and how to train its people to do exactly what everybody is preaching as foolproof or effective for them.

I mention this last because I feel that even corporations that have achieved Global Quality level standards, regardless of the procedure used to evaluate the quality of their products and services, still can and must also continue improving their operations and activities to offer even better products and services, as the true spirit of the "Total Quality Management System" addresses or as the renown quality experts they currently employ

as consultants, are teaching them. This objective will be accomplished if organizations consider the application of the simple tools and ideas reviewed and presented in this thesis.

This is also based on the many current debates and arguments that: "The Malcom Baldrige National Quality Award Criteria has been arousing lately by various scholars, people and "gurus" like Philip Crosby (Placek, 1991)." Placek argued that Crosby commented:

The award requires self nomination, meaning that an entry calls for a lot of time and money. 'We should let the customer nominate those whom they feel have served them well.' Those nominated can then supply objective information (Placek, 1991).

Even though the same Placek, argued that:

Much of the criticism was aimed more at Cadillac's winning one of the 1990 awards and to how General Motors used the award in its advertising rather than at the award itself...

and that,

Perhaps the most telling evidence for the widespread acceptance of the award are the number of companies adopting its criteria as a template for internal quality process evaluation and review independent of the award itself. In fact, some firms have applied for the award primarily to get an evaluation of their quality systems (Placek, 1992).

Cyndee Miller also comments that Phill Crosby argued also that:

I don't see companies delivering defect-free products or services 100% of the time. They should be working on that instead of trying to win an award.

Miller also adds that Hammond, co-author of the book "Beyond Quality," once commented that:

The irony of the award is that it was necessary to get companies to do what they should have been doing any way (Miller, 1992).

The same feelings are currently felt by the 1990 winners of the Malcom Baldrige Award. Through representatives of some of those organizations they agreed that winning the award:

Is a step along the way--a giant step and one that gives a huge motivational push to the winners to keep going, to reach higher in pursuing the elusive goal of total quality in their products, services and overall business practices-- but still, only a step (King, 1992).

The GAO report ["The Conference Board, Inc., New York, 1990. GAO, "U. S. Companies Improve Performance Through Quality Efforts" (General Accounting Office, 1991)"] that I discussed in Chapter Two, even mentioned and discussed that:

Senior quality executives from 12 U. S. companies recognized for the excellence of their products and services, interviewed by The Conference Board, Inc., New York, a business research group, had consensus on the following points:

1. Total Quality is the "Strategy of choice" for assuring the economic position of the U. S. firms in the global marketplace.
2. Quality improvement is a long-term process.

3. At many companies, concerns remain over the lack of top-level involvement in quality programs.

It has been established empirically that the same people performing direct tasks or activities of any type, administrative or operational, know better than anybody within the organization, if the product-service or even the operation in itself is free of errors or by the contrary, what are the involved principal problems with such products-services or all their involved processes. If this is so, then why not organize the people around the problematic area and all their required activities in such a way that their suggestions are welcomed, their participation to solve problems is motivated, permitted, allowed and rewarded accordingly afterwards.

Many of the ideas presented Chapter Two, seemed complete and self-supported, but improvements about the definition of customer needs were still required and I proceeded to include these definitions in the Chapter One under the section of operational definitions (see Table 2). The improved methodologies to define such consumer and user needs can be able to use them later on to implement Total Quality Management Strategic Operations System planning in an organization were also presented and discussed there.

The workshop presented too: the "Customer-User Needs Evaluation Workshop," in which I showed the merits of the application in real-life settings of a suggested and established procedure to improve the development of the understanding and definition of these needs and their possible evaluation measures were also reviewed. I did it with a specified methodology that will help top management in its strategic intent to improve the normal or traditional "TQM" development and implementation.

I also showed in Chapter Five that the "TQM-SOS" and "C-U NEW" methodologies explained will also help top managers achieve the main objectives of the "TQM-SOS" system to improve the organizations' performance, and at the same time, achieve the objectives mentioned earlier in this section. It may seem repetitive but it is and must be clearly stated all its importance and that it will be of great usage for top management's future Strategic Planning exercises and for the Chief Quality Officers in charge of implementing "TQM-SOS" in their organizations.

In this thesis I discussed the "TQM-SOS" and the "C-U NEW" techniques which were designed for and empirically validated in different Mexican organizations.

The procedures presented here helped top managers achieve the significant quality and productivity results their organizations intend to attain and do it more efficiently than other firms.

The literature review showed that despite the modest improvements achieved in some industries, in general, "Although consumers believe product quality has improved since 1991, they are not necessarily more satisfied." This last remark was obtained when different "customers" were surveyed by "Quality Strategies," and the results obtained were published in the Quality Management Forum Newsletter (1992); also, researchers reported that "American-made automobiles, auto repair and maintenance, hotels/motels and frozen food items product or service quality has increased," but those same consumers, as reported in the survey, said: "Only 46% of consumers that purchased American-made household appliances in the 12-month period, perceived improvement in quality, down from 52% last year."

In general, there is still a lot to do to improve the current status of most of the organizations currently operating in Mexico and in the world.

"TQM-SOS" and "C-U NEW" techniques are available for this purpose. For interested organizations, I summarize here the objectives that these methodologies can offer interested organizations.

The order in which the following "TQM-SOS" expected objectives are stated represent a recommended sequence of achievement and is the result of a special priorities analysis. It is required that all of them will be sought and achieved in due time. A successful "TQM-SOS" implementation requires the appropriate achievement of the following objectives within the organization:

1. Top Management involvement and participation in the complete development process, including sensitization stages of the "TQM-SOS" methodology. Appropriate leadership and example is continuously required.
2. Complete elimination of "ESQUEZOFRENIA" type of attitude in all kinds of persons and organizations (Neuman, 1988).
3. Interiorization of the importance of internal-external consumer-user satisfaction of their expressed needs with the expected generated products-services. Application of the "C-U NEW" methodology.
4. Comprehensive strategic review, and diagnostic of the organization status. This requires thorough review of the Mission and Vision statements of the organization. Continuous strategic operations systems planing is needed to do things only one time, the first time.
5. Development of team-work environment culture considered in the "TQM-SOS" philosophy. Creativity promotion.

6. Continuous analysis and improvement of problematic areas. (Use appropriate Statistical Process Control tools).
7. Economic justification of planned investments to solve all kinds of problematic situations with specialized priority projects.
8. Implementation of a prevention culture versus a corrective one.
9. Continuous participant sensitizing, training, motivation and efforts recognition. (Use the required technical and administrative modern tools).
10. Continuous improvement of "Quality-Productivity levels."
11. Organizational flexibility promotion by never ending challenge of the "status-quo" and the "current level of success" of the organization.
12. Good Luck.

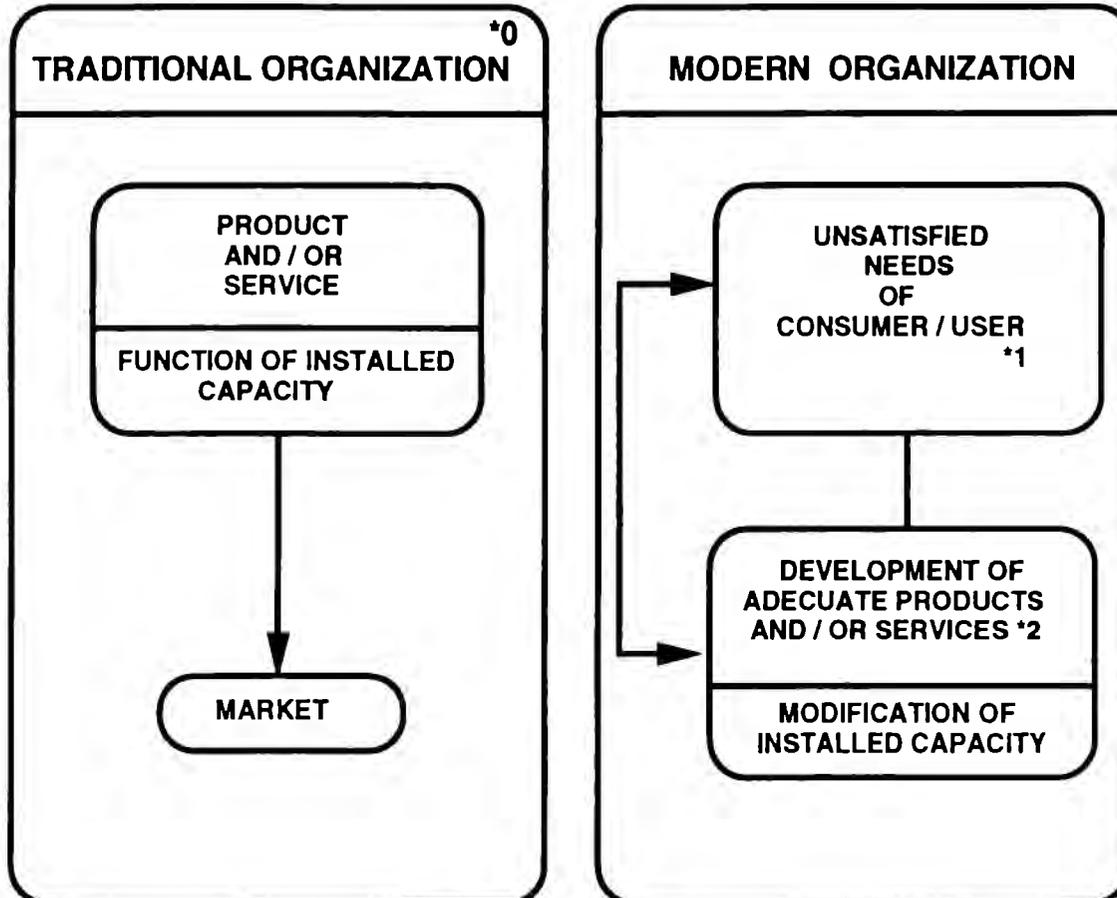
**THANKS!**

## Figures

Figure 1: Organization's Philosophies.....	390
Figure 2: Total Quality Circuit.....	391
Figure 3: Current vs. Future Value Systems Comparison.....	392
Figure 4: Current Value System vs. Current Technology Sub-system Comparison.....	393
Figure 5: Current vs. Future Needs Sub-systems Comparison. ....	394
Figure 6: \$ = Authorization to Operate a Business. ....	395
Figure 7: Total Quality Management Strategic Operations System Planning. ....	396
Figure 8: Strategic Evaluation of the Organization. ....	397
Figure 9: Ishikawa's Diagram.....	398
Figure 10: Sampling Chart. ....	399
Figure 11: Relative Accumulated Frequency Analysis.....	400
Figure 12: Pareto's Diagram .....	401
Figure 13: Correlation and Regression Chart. ....	402
Figure 14: Control Chart.....	403
Figure 15: Integrated Process Management Model. ....	404
Figure 16: "TQM-SOS" Training and Implementation Stages.....	405
Figure 17: "C-U NEW" Activities Chart. ....	406
Figure 18: General Data of Interviewed Participants. ....	407
Figure 19: Data Summary of Age, Job, and Position Seniority of the Respondents. ....	408

Figure 20: Job Seniority Histogram. ....	409
Figure 21: Position Seniority Histogram. ....	410
Figure 22: *Age Histogram. ....	411
Figure 23: Number of Positive Comments per Objective. ....	412
Figure 24: Frequency of Positive Answers of the expected Objectives. ....	418
Figure 25: Improve Strategic Operative System Planning Process. ....	419
Figure 26: Improve Operations Management Process. ....	420
Figure 27: Change the Organization Culture. ....	421
Figure 28: General Objectives Comparison. ....	422
Figure 29: Not Matching Objectives. ....	428

# STRATEGIES FOR QUALITY IMPROVEMENT



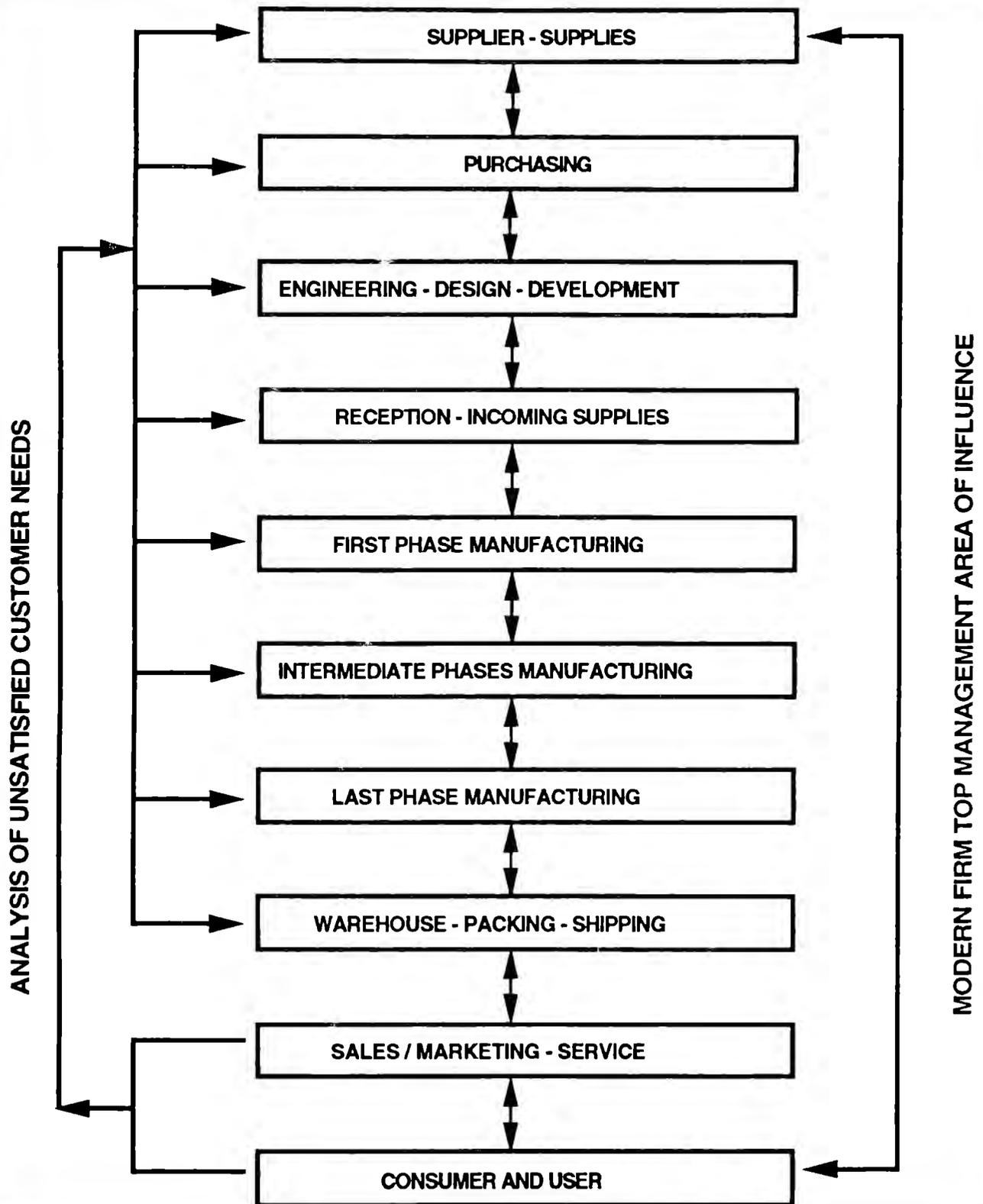
**\* 0 " ESQUEZOFRENIC ORGANIZATION  
IF IT SERVES GOOD!  
IF NOT, SOMEBODY WILL WANT IT.  
THAT'S THE WAY WE HAVE DONE  
IT ALWAYS!**

**\*1 INNER/OUTER (IS IT FASHION?)**

**\*2 WITH MY HELP, WORK, SUPPORT,  
INTELIGENCE AND COOPERATION  
WITH THE ORGANIZATION!**

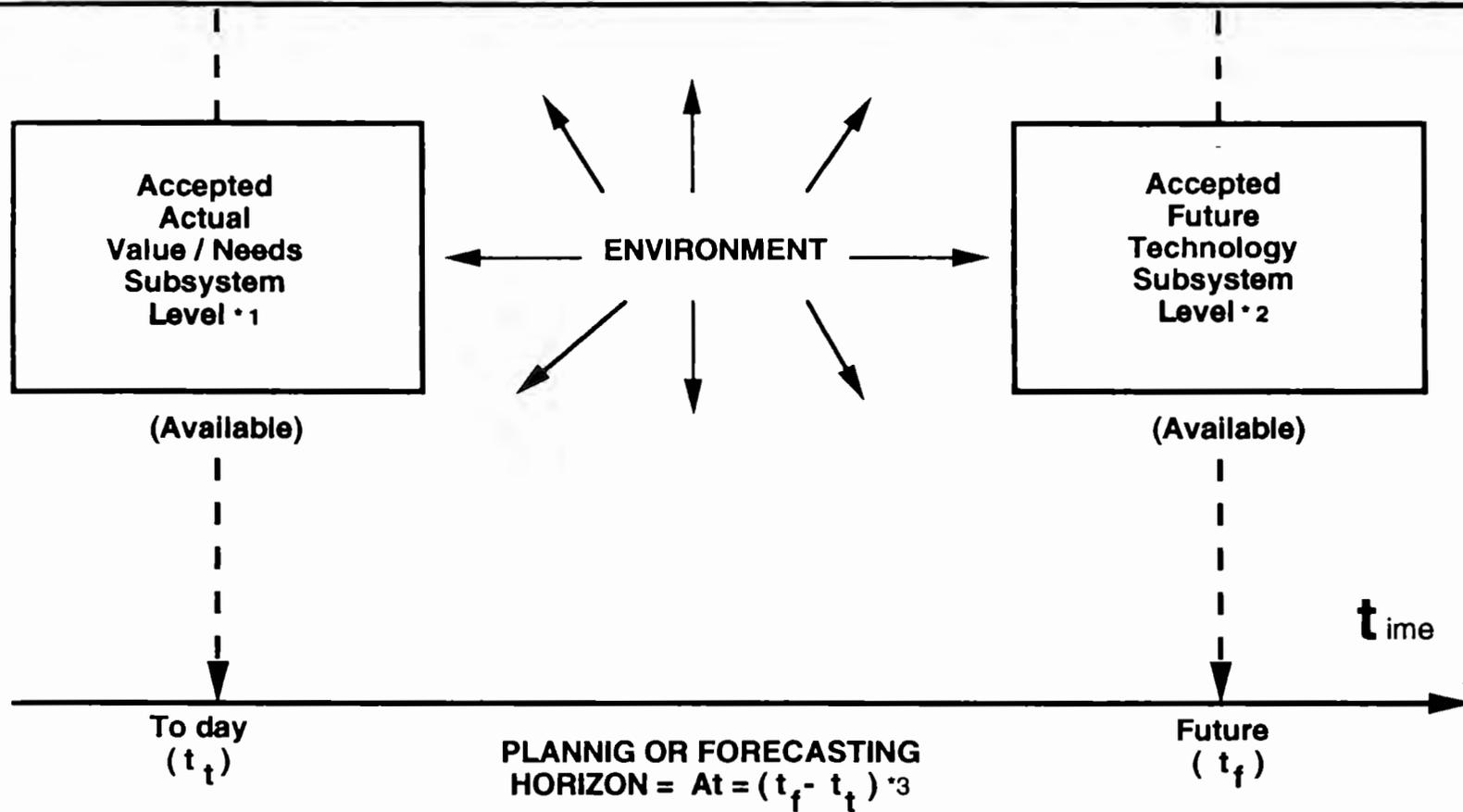
**FIGURE 1: ORGANIZATION PHILOSOPHIES**

# STRATEGIES FOR QUALITY IMPROVEMENT



**FIGURE 2: TOTAL QUALITY CIRCUIT**

# STRATEGIES FOR QUALITY IMPROVEMENT



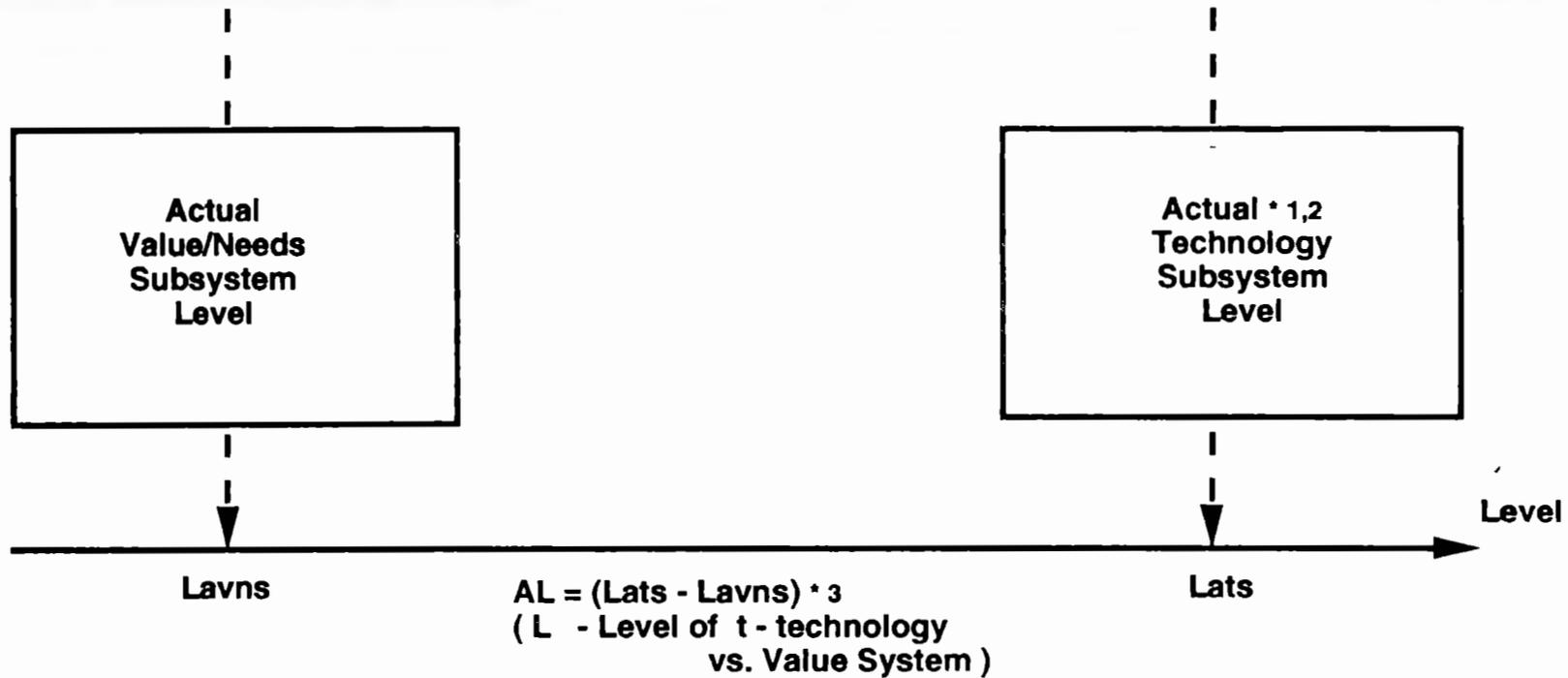
\* 1: From value system surge the following subsystems: Needs, Norms, Behaviors, Cultures.

\* 2: Technology is a direct result and function of the existent culture.

\* 3 if:  $A_t = 0 \Rightarrow$  No change in values  
 $A_t > 0 \Rightarrow$  Change forward in values  
 $A_t < 0 \Rightarrow$  Change backward in values

FIGURE 3: CURRENT VS. FUTURE VALUE SYSTEMS COMPARATION

# STRATEGIES FOR QUALITY IMPROVEMENT



393

\* 1: If technology advances much faster than the value system along the time, the products or services such technology can generate will not yet be needed due to lack of norms, behavior and values to allow their usage in such case.

\* 2: Technology must move forward according the velocity of movement of the value system.

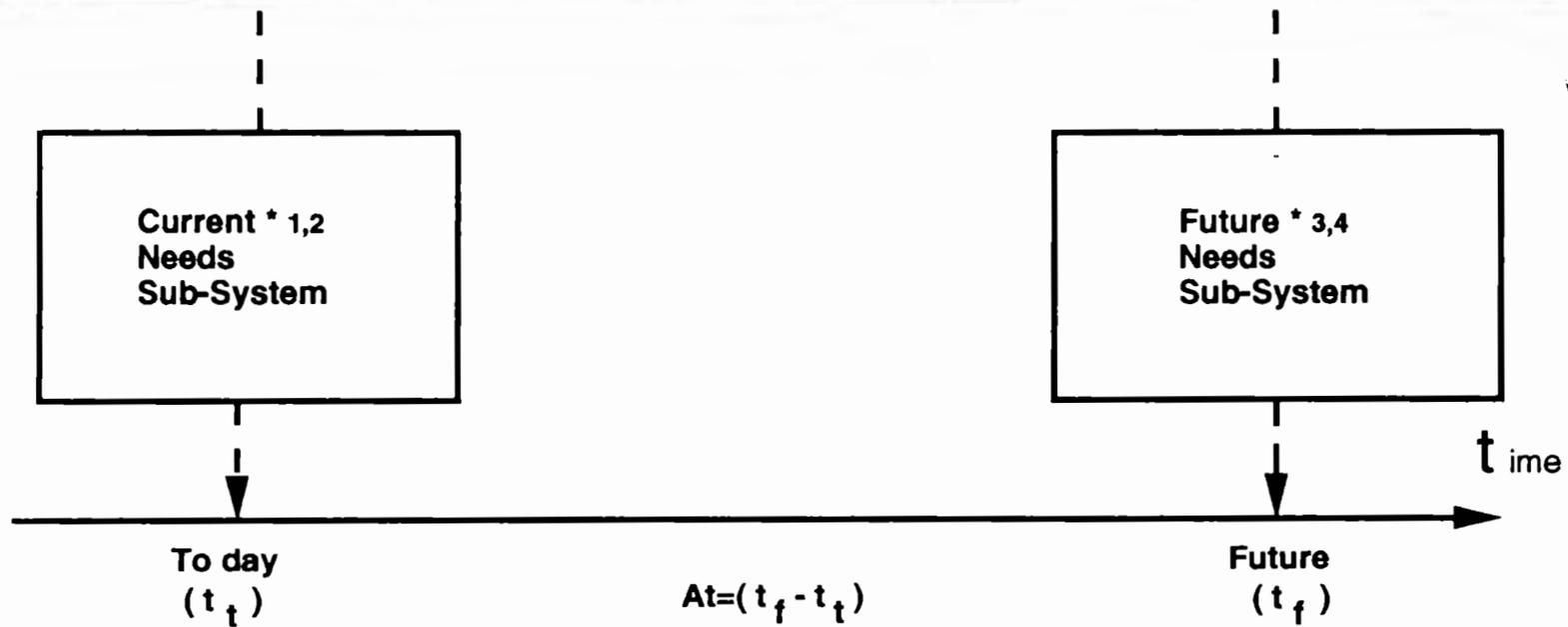
\* 3: If:  $AL = 0 \Rightarrow$  Products/Services can be/will be used by consumer/user

$AL > 0 \Rightarrow$  Products/Services will not be demanded

$AL < 0 \Rightarrow$  Product/Services can not be manufactured offered and delivered yet.

FIGURE 4: CURRENT VALUE SYSTEM VS. CURRENT TECHNOLOGY SUBSYSTEM LEVELS COMPARATION

## STRATEGIES FOR QUALITY IMPROVEMENT



\* 1: A Value system generates a series of expected needs in their consumers/ users and a related level of technology.

\* 2: The needs to be satisfied require a particular set of products and services to be generated with the available level of technology.

\* 3 : Sometimes needs can be satisfied properly other times not.

\* 4 : Norms & Behaviors allow Products & Services to be manufactured/generated and also used in such culture due to available technology in the value System available.

**FIGURE 5: CURRENT VS. FUTURE NEEDS SUB-SYSTEMS COMPARATION**

# STRATEGIES FOR QUALITY IMPROVEMENT

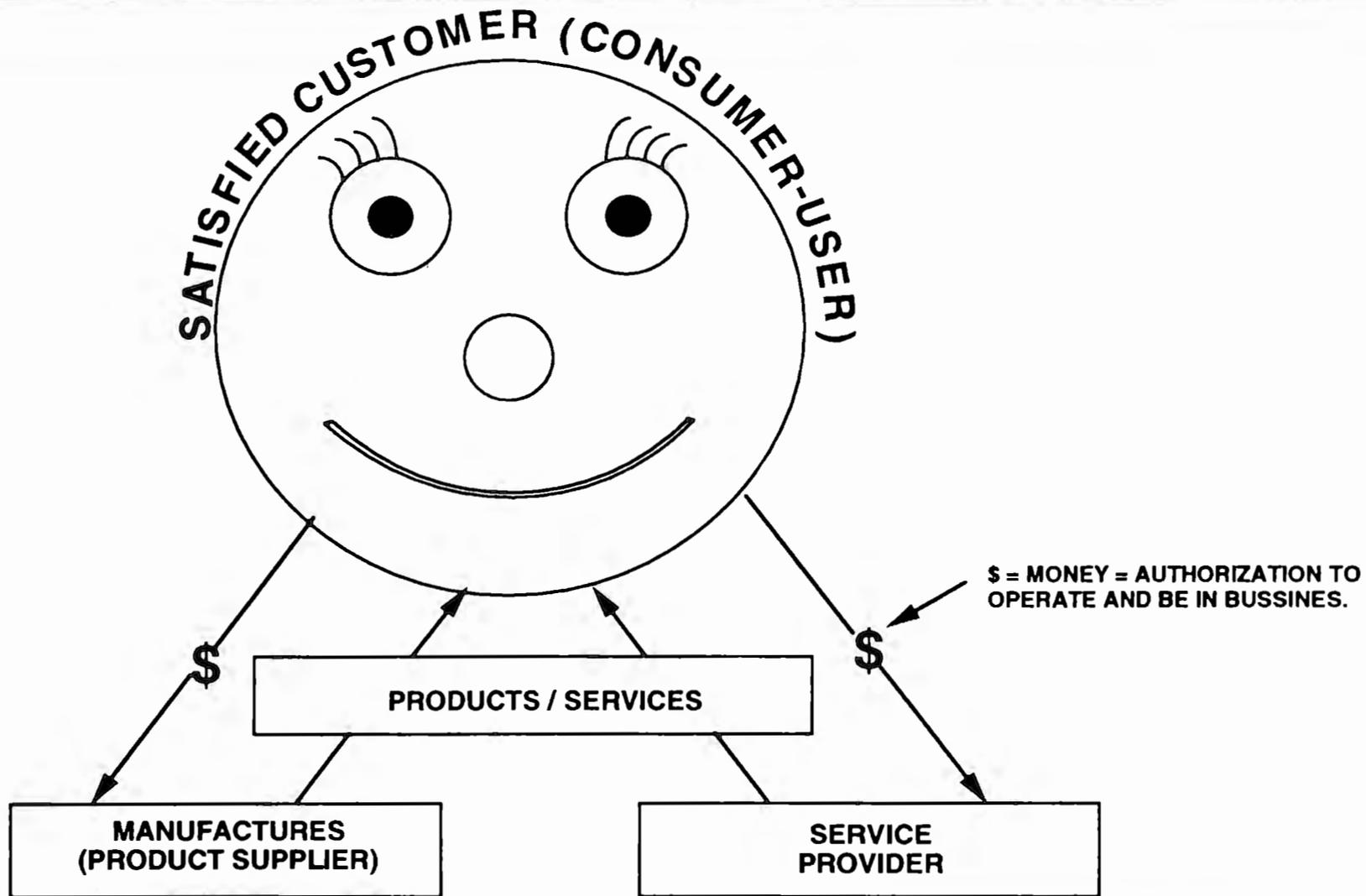


FIGURE 6: \$ = AUTHORIZATION TO OPERATE A BUSSINES.

# STRATEGIES FOR QUALITY IMPROVEMENT

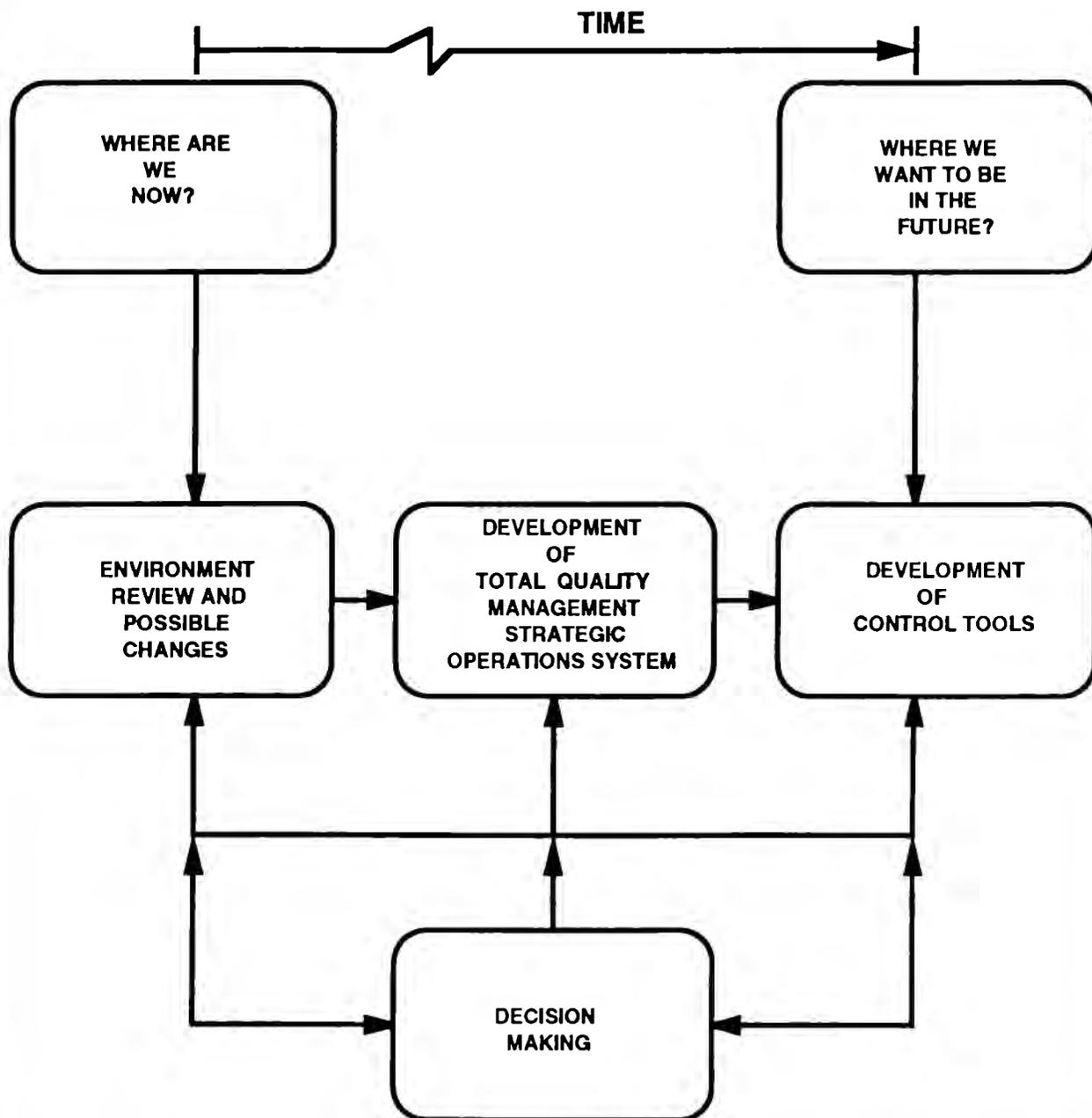
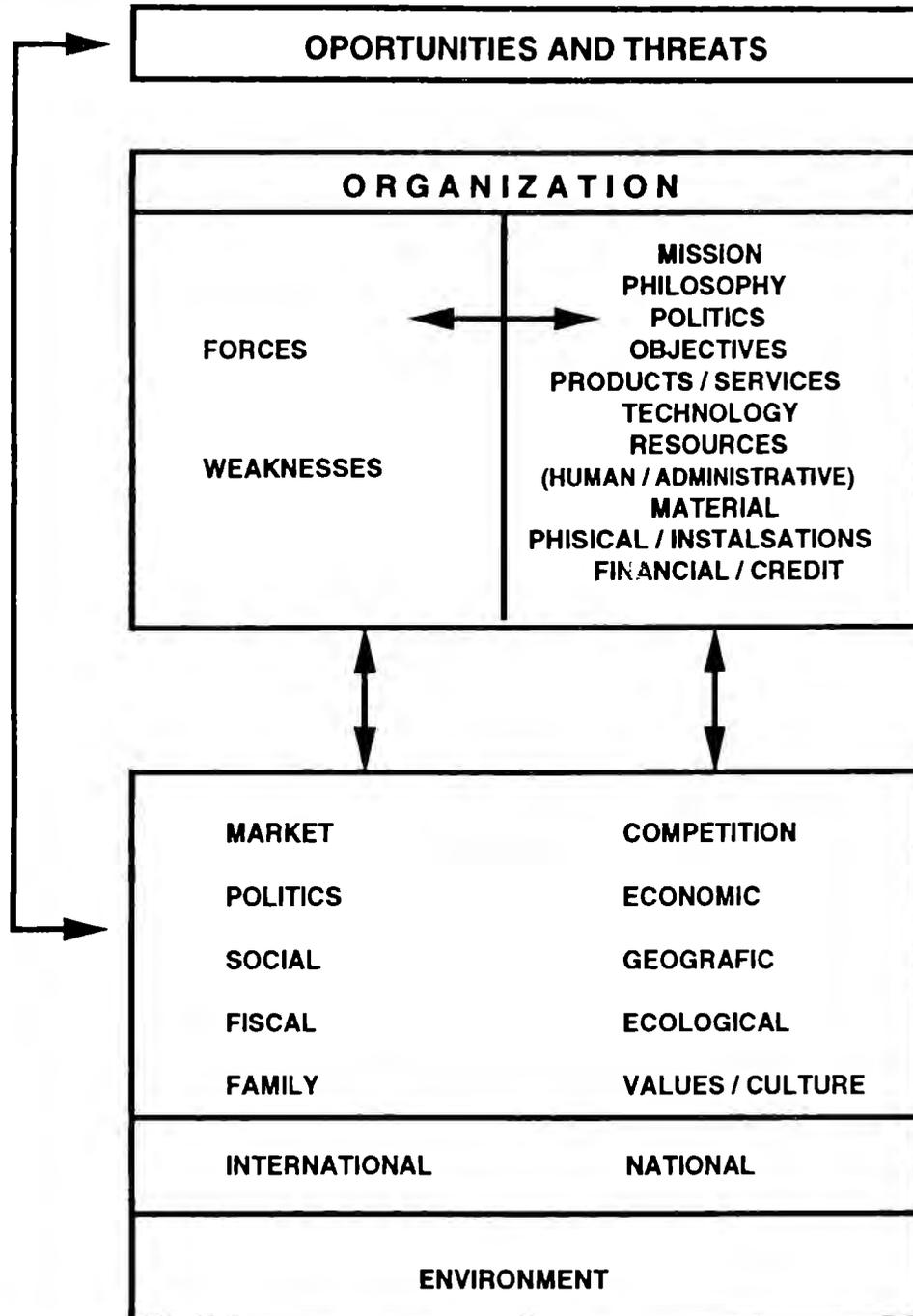


FIGURE 7: TOTAL QUALITY MANAGEMENT STRATEGIC OPERATIONS SYSTEM PLANNING \*1

\*1 ( ADAPTED FROM HUSE (68) )

# STRATEGIES FOR QUALITY IMPROVEMENT



**FIGURE 8: STRATEGIC EVALUATION OF THE ORGANIZATION**

# STRATEGIES FOR QUALITY IMPROVEMENT

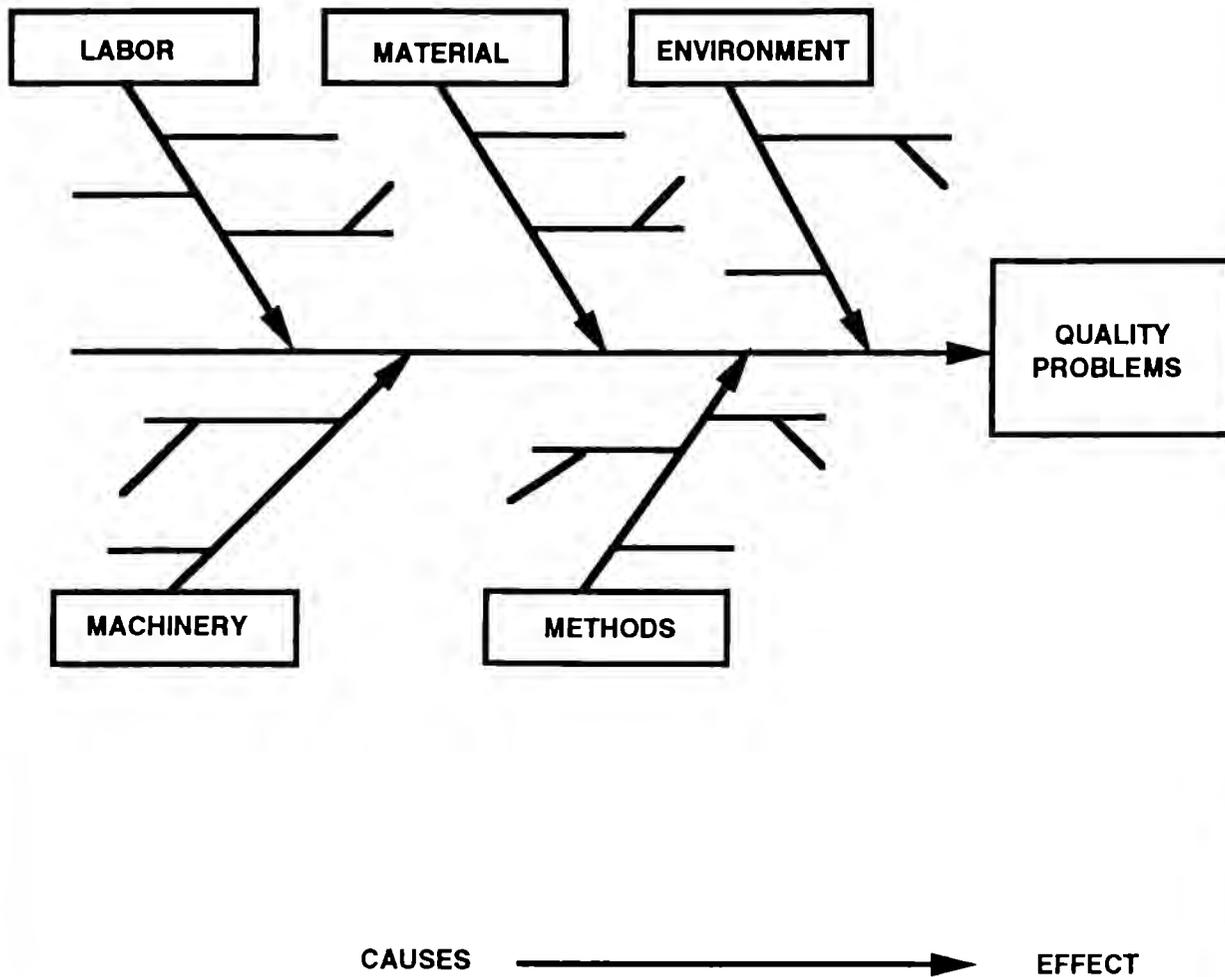


FIGURE 9: ISHIKAWA'S DIAGRAM (CAUSE-EFFECT)

## STRATEGIES FOR QUALITY IMPROVEMENT

FROM DATE:

TO DATE:

	CODE	FACTOR	NUMBER OF OBSERVATIONS	TOTAL
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
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24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
			<b>TOTAL</b>	

**FIGURE 10: SAMPLING CHART**

# STRATEGIES FOR QUALITY IMPROVEMENT

DEPARTMENT / AREA : \_\_\_\_\_  
 PROBLEM: \_\_\_\_\_

DATE: \_\_\_\_\_  
 PAGE: \_\_\_\_\_

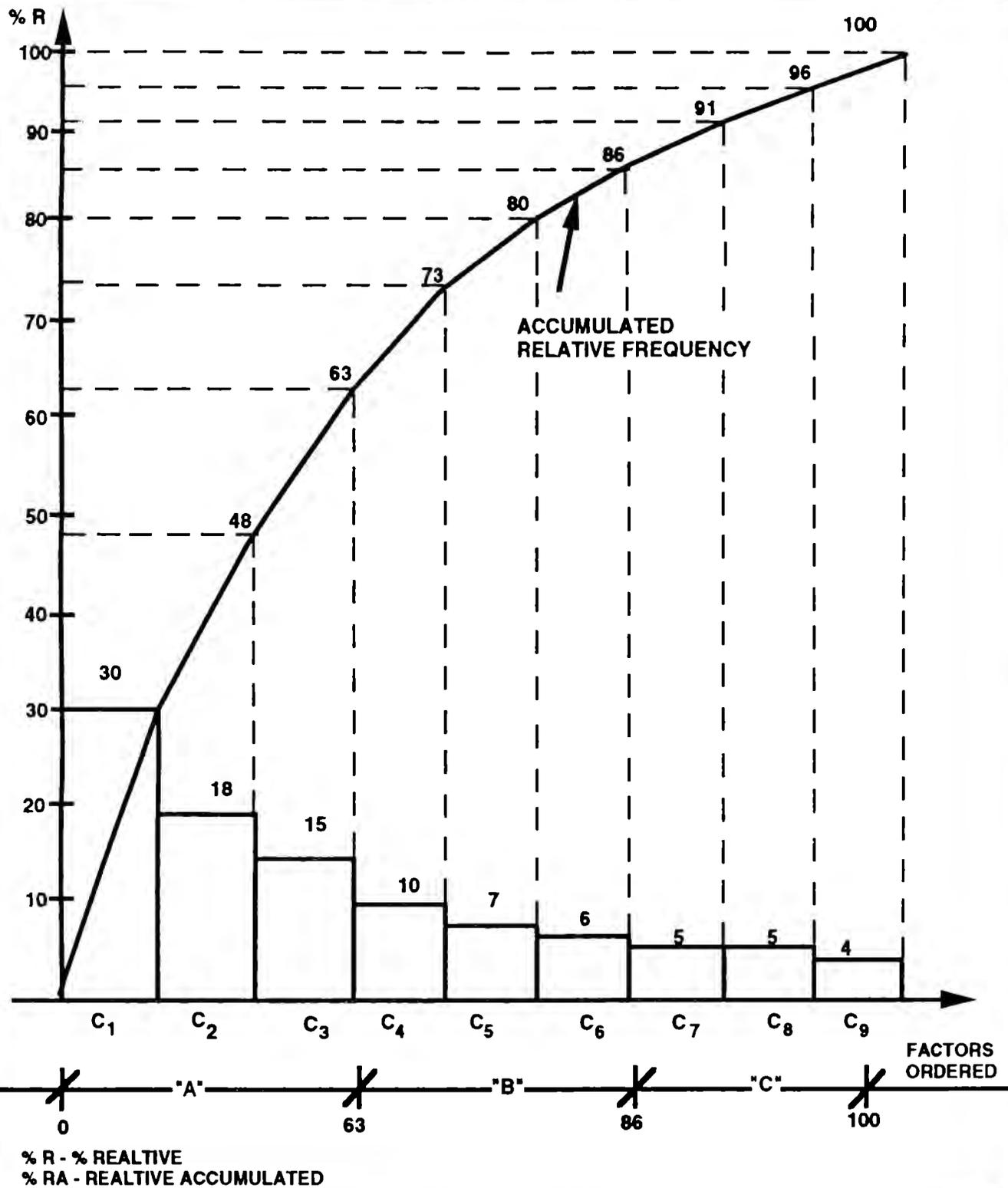
	* 1 CODE ( CI )	* 1 FACTOR	Nº OBSERVATIONS ( FI )	% RELATIVE ( 100 FI/T )	%RELATIVE ACCUMULATED	CLASSIFICATION: (A); (B) OR (C)
1						
2						
3						
4						
5						
6						
7						
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31						
32						
33						
34						
35						
		(T) TOTAL				

\*1 CODES AND FACTORS  
 ALREADY ORDERED  
 FROM GREAT TO LOW  
 NUMBER OF OBSERVATIONS

A: UP TO 65-75%  
 B: 75-90 %  
 C: >90%

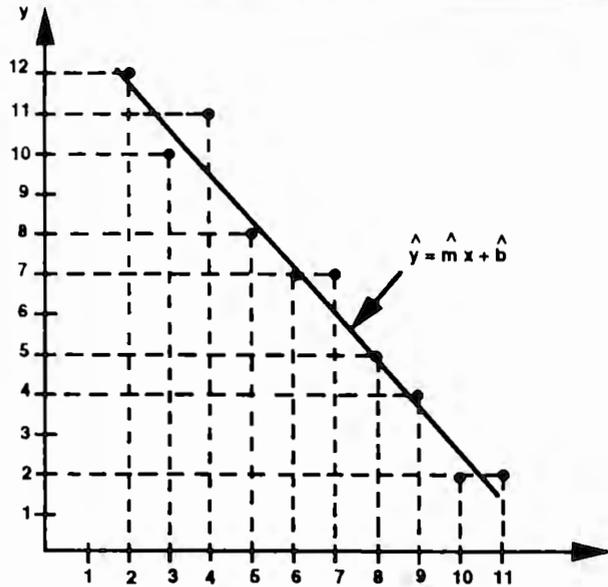
**FIGURE 11: RELATIVE ACCUMULATED FREQUENCY ANALYSIS**

# STRATEGIES FOR QUALITY IMPROVEMENT



**FIGURE 12: PARETO'S DIAGRAM**

# STRATEGIES FOR QUALITY IMPROVEMENT



$n_i$	$x_i$	$y_i$	$x_i y_i$	$x_i^2$	$y_i^2$
1	2	12	24	4	144
2	3	10	30	9	100
3	4	11	44	16	121
4	5	8	40	25	64
5	6	7	42	36	49
6	7	7	49	49	49
7	8	5	40	64	25
8	9	4	36	81	16
9	10	2	20	100	4
10	11	2	22	121	4
T	65	68	347	605	576

$$\bar{X} = \frac{\sum_{i=1}^n x_i}{n} = 6.5$$

$$\bar{Y} = \frac{\sum_{i=1}^n y_i}{n} = 6.8$$

$$r = \frac{\sum_{i=1}^n (x_i y_i) - n \bar{X} \bar{Y}}{(n-1) s_x s_y} = -0.9813$$

$$\bar{X}^2 = \frac{\sum_{i=1}^n x_i^2}{n} = 50.5$$

$$\bar{Y}^2 = \frac{\sum_{i=1}^n y_i^2}{n} = 57.6$$

$$\hat{m} = \frac{\sum_{i=1}^n (x_i y_i) - n(\bar{X})(\bar{Y})}{\sum_{i=1}^n x_i^2 - n(\bar{X})^2} = -1.15152$$

$$(\bar{X})^2 = \left(\frac{\sum_{i=1}^n x_i}{n}\right)^2 = 42.25$$

$$(\bar{Y})^2 = \left(\frac{\sum_{i=1}^n y_i}{n}\right)^2 = 46.24$$

$$\hat{b} = \bar{Y} - \hat{m} \bar{X} = 14.2848$$

$$s_x = \sqrt{\frac{n}{n-1} (\bar{X}^2 - (\bar{X})^2)} = 3.03$$

$$s_y = \sqrt{\frac{n}{n-1} (\bar{Y}^2 - (\bar{Y})^2)} = 3.55$$

$$\hat{y} = \hat{m} x + \hat{b} = -1.15152 x + 14.2848$$

### Quality Problem.

Find out if there is any correlation between maintenance training hours for 10 groups of plant maintenance personnel and the hours of machine down time per week in the production area.

$x$  = Training Hours,  $y$  = Machine Down time per Week,  $n$  = Sample Size = 10

Comment: The  $r$  value indicates a strong inverse correlation between the training hours and machine down time. the model  $y = -1.15152 x + 14.2848$  can then be used to predict the variable "y" in terms of "x" within the range of values considered.

**FIGURE 13: CORRELATION AND REGRESSION CHART**

# STRATEGIES FOR QUALITY IMPROVEMENT

$$LSC_{\bar{X}} = \bar{X} + A_2 \bar{R}$$

$$LIC_{\bar{X}} = \bar{X} - A_2 \bar{R}$$

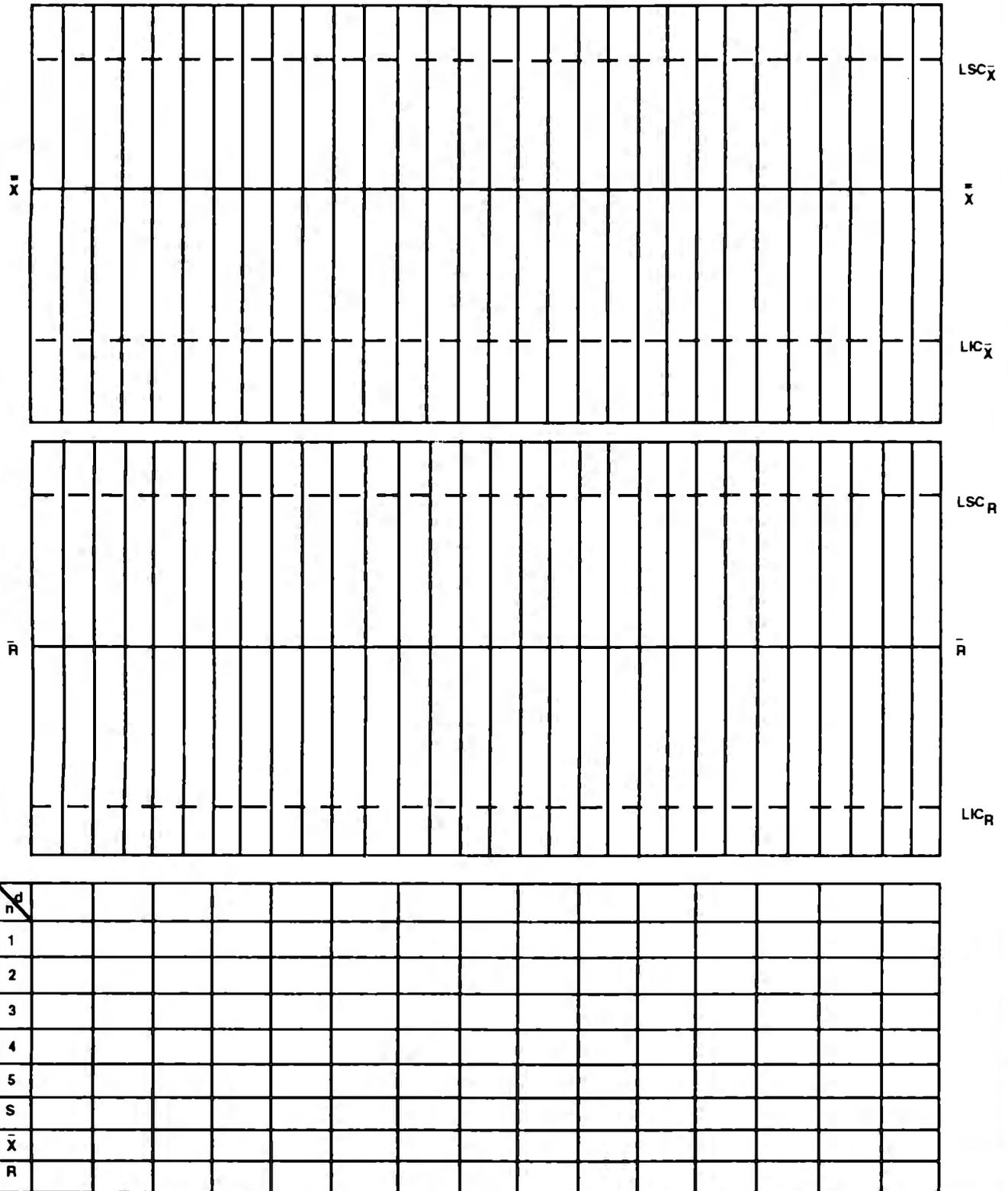
$$LSC_R = D_4 \bar{R}$$

$$LIC_R = D_3 \bar{R}$$

$$FORN = 5: A_2 = 0.58$$

$$D_3 = 0$$

$$D_4 = 2.11$$



**FIGURE 14: CONTROL CHART ( $\bar{X}$ -R)**

# STRATEGIES FOR QUALITY IMPROVEMENT

A recap of the six-step model

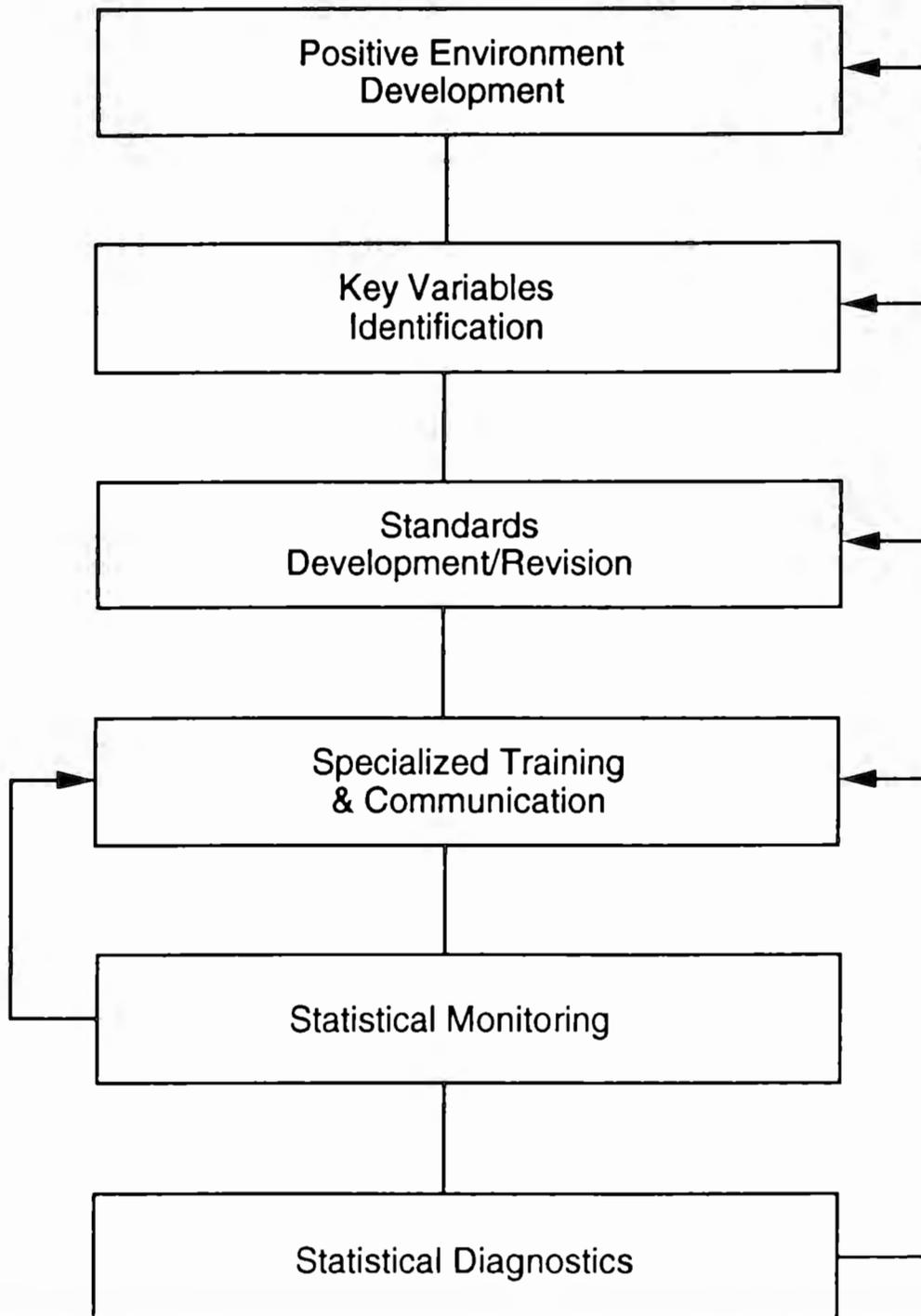


FIGURE 15: INTEGRATED PROCESS MANAGEMENT

Reference: Roger Slater; McGraw Hill; 1991

# STRATEGIES FOR QUALITY IMPROVEMENT

Theoretic and Practical Sensitizing and Training " TQM-SOS " Activities	Strategic Operations System Data Gathering, Analysis and Planning Activities	Priority Projects Definition and " TQM-SOS " Real Life Implementation Activities.
<p>1.- Preliminary Organizational Diagnosis.</p> <p>2.- Sensitizing and Basic Training:</p> <ul style="list-style-type: none"> <li>• " TQM - SOS " Philosophical Sensitization.</li> <li>• " C-U NEW " Training.</li> <li>• Basic "SPC" Tools.</li> </ul> <p>3.- Sensitizing and Intermediate Training :</p> <ul style="list-style-type: none"> <li>• Intermediate " SPC " Tools.</li> <li>• Teamwork Development Training.</li> <li>• Leadership Training.</li> </ul> <p>10.- " TQM-SOS " Sensitizing and Avanced Training.</p> <ul style="list-style-type: none"> <li>• Advanced Operations Management Training.</li> <li>• Advanced Marketing Management Training.</li> <li>• Advanced " SPC " Tools Utilization Workshop.</li> <li>• Advanced Topics in Business Administration.</li> <li>• Advanced Topics in " TQM-SOS ."</li> </ul>	<p>4.- "TQM-SOS" in depth Internal Organizational Diagnosis</p> <ul style="list-style-type: none"> <li>• Internal " C-U NEW. "</li> <li>• " TQM-SOS " Detailed Corporate Status Diagnosis and Information Analysis.</li> </ul> <p>5.- "TQM-SOS" Objectives Definition and Strategic Operations System Planning Activities.</p>	<p>6.- " TQM-SOS " Priority Projects Development.</p> <p>7.- " TQM-SOS " Required Organization Structural and Operative Changes.</p> <p>8.- " TQM-SOS " Implementation.</p> <ul style="list-style-type: none"> <li>• " SPC " Implementation.</li> <li>• Priority Projects Implementation.</li> </ul> <p>9.- " TQM-SOS " Continuous Improvement (Go to 10 and 4).</p>
Thinking Phase.	Thinking, Planning and Deciding Phase.	Thinking, Planning, Deciding, and Acting Phase.

**FIGURE 16: " TQM-SOS " TRAINING, PLANNING, AND IMPLEMENTATION STAGES.**

# STRATEGIES FOR QUALITY IMPROVEMENT

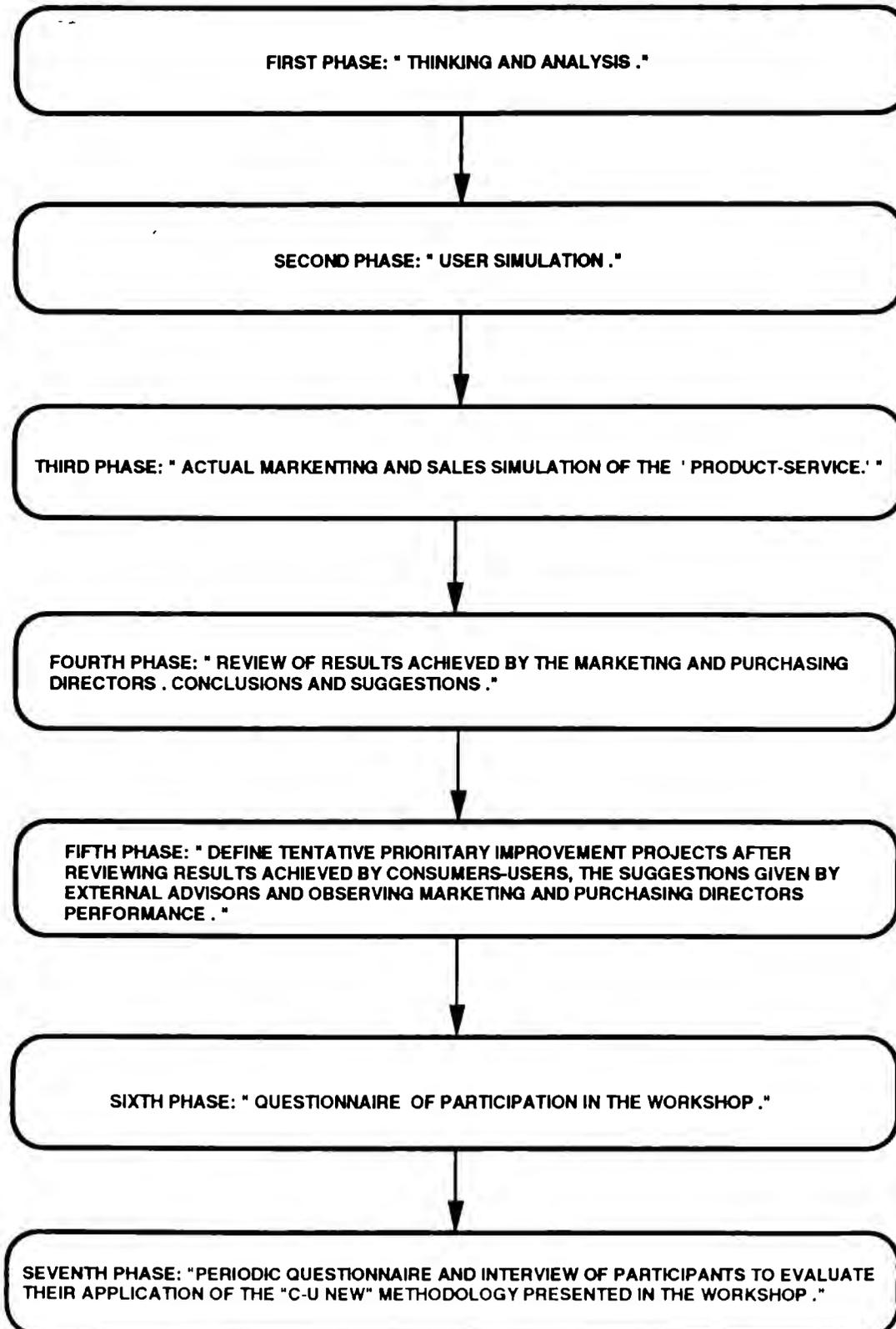


FIGURE 17: " C-U NEW " PHASES CHART

## CONTENT ANALYSIS

CODE	PARTICIPANT	COMPANY	DEPARTAMENT	POSITION	LEVEL	JOB SENIORITY	POSITION SENIORITY	AGE
F1*	Ford	Assembly Plant		Assembly Manager	Management	15	2	41
F2*	Ford	Quality Engineering		Quality Superintendet	Management	15	2	Not reported
F3*	Ford	Manufacturing Engineering		Engine Manufacturing Manager	Management	14	2	36
F4*	Ford	Materials Handling		Materials Handling Manager	Management	18	3,5	42
F5*	Ford	Manufacturing		Operations Manager: Painture	Management	14	2	Not reported
* This data was obtained four years after the respondents participated in the workshop								
T1**	Technik Air	Direction		General Manager	Management	9	9	61
T2**	Technik Air	Product Engineering		Manager Product Engineering	Management	7	5	37
T3**	Technik Air	Cost and Budgeting		Manager	Management	10	9	43
T4**	Technik Air	Management		Manager	Management	13	7	55
**This data was obtained three years after the respondents participated in the workshop								
E1***§	ITESM	Student			Management			29
E2***§	ITESM	Student			Management			28
E3***§	ITESM	Mechanical and Hydraulic Facilities		Unit Manager	Management	7	4	30
A1***§	ITESM	Student			Management			29
A2***§	ITESM	Student			Management			28
A3***§	METRO	Mechanical and Hydraulic Facilities		Unit Manager	Management	7	4	30
A4***§	ROSECO	Technical Departament		Product Manager	Management	1,5	0,5	28
***The questionnaire was filled immediately after participating in the workshop								
§ This group was formed with students of the ITESM-CCM-EGA. When they answered the questionnaire, all of them were holding management positions. Unfortunately, not all of them reported their actual organizational level.								

FIGURE 18: GENERAL DATA OF INTERVIEWED PARTICIPANTS

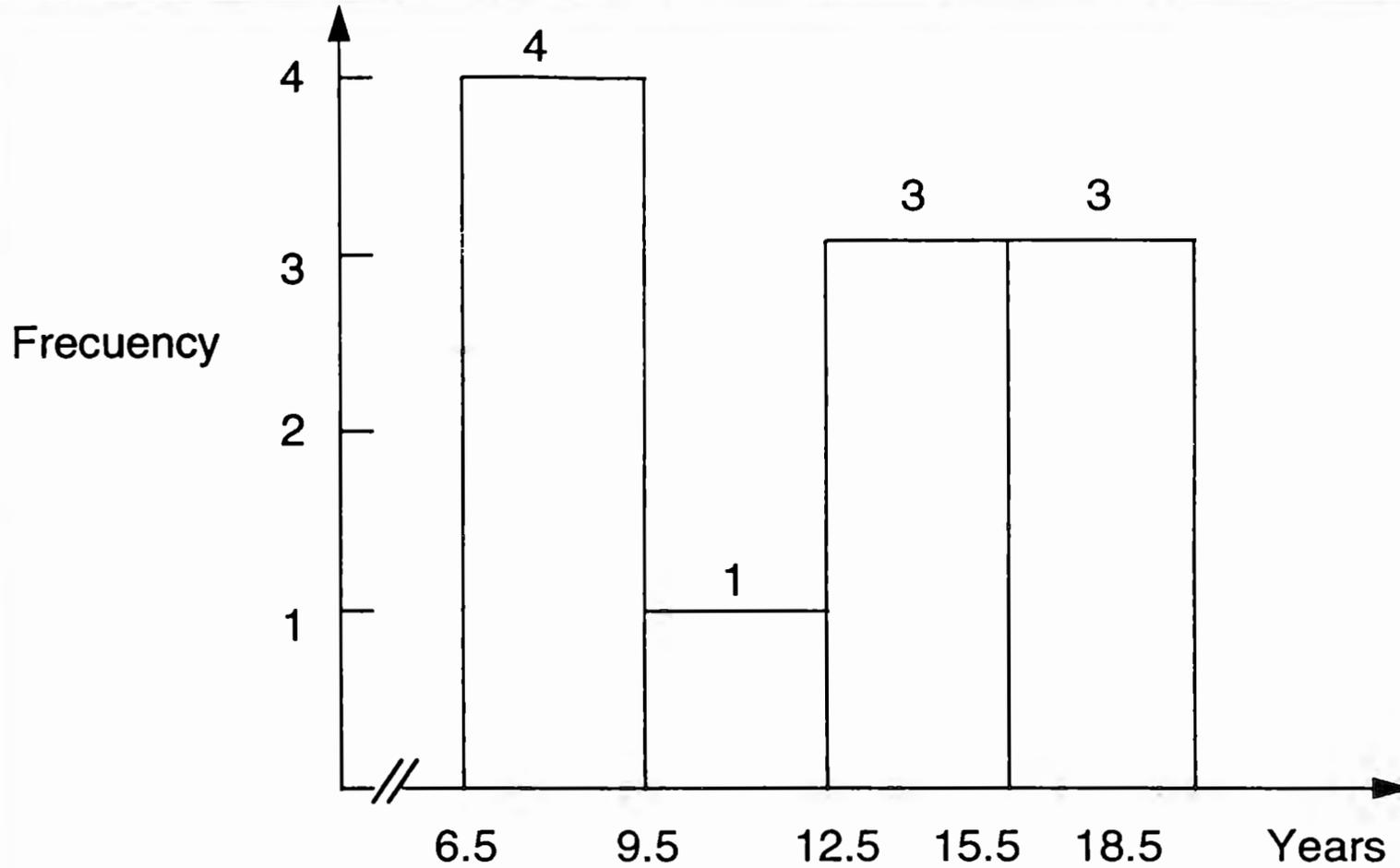
## CONTENT ANALYSIS

	Job seniority	Position seniority	Age
	15	2	41
	15	2	36
	14	2	42
	18	3,5	61
	14	2	37
	9	9	43
	7	5	55
	10	9	29
	13	7	28
	7	4	30
	7	4	29
	1,5	0,5	28
			30
			28
<b>Averages*</b>	11,73	4,50	38,25

\*In the analysis of the job and position seniority data, there were not included the values of 1.5 and 0.5 years, because those participants were considered as offering not representative data.

**FIGURE 19: DATA SUMMARY OF AGE, JOB AND POSITION SENIORITY OF THE RESPONDENTS**

# CONTENT ANALYSIS

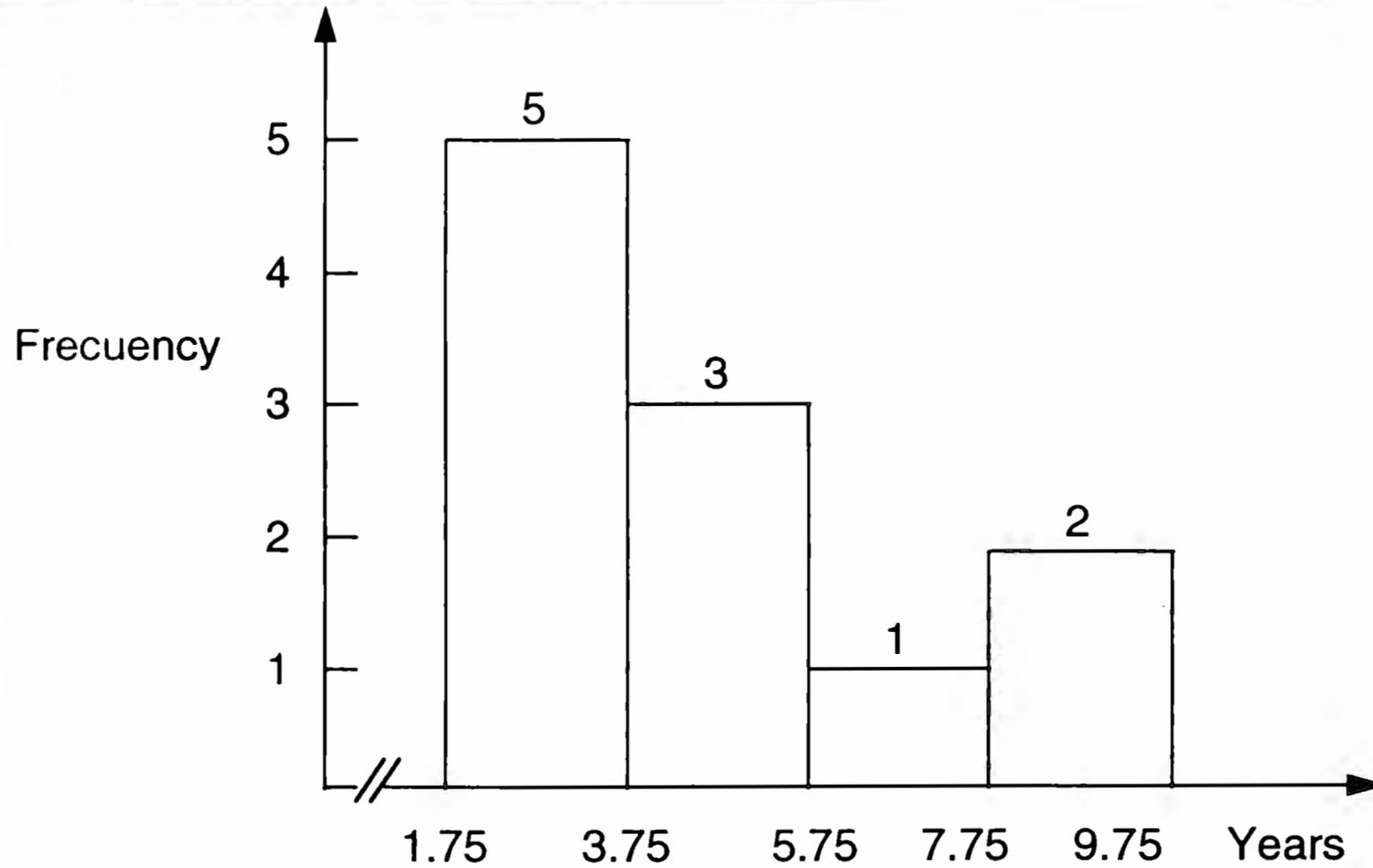


Average = 11.73 years

Job Seniority of the majority of the respondents is larger than 12.5 years.

**FIGURE 20: JOB SENIORITY HISTOGRAM**

# CONTENT ANALYSIS

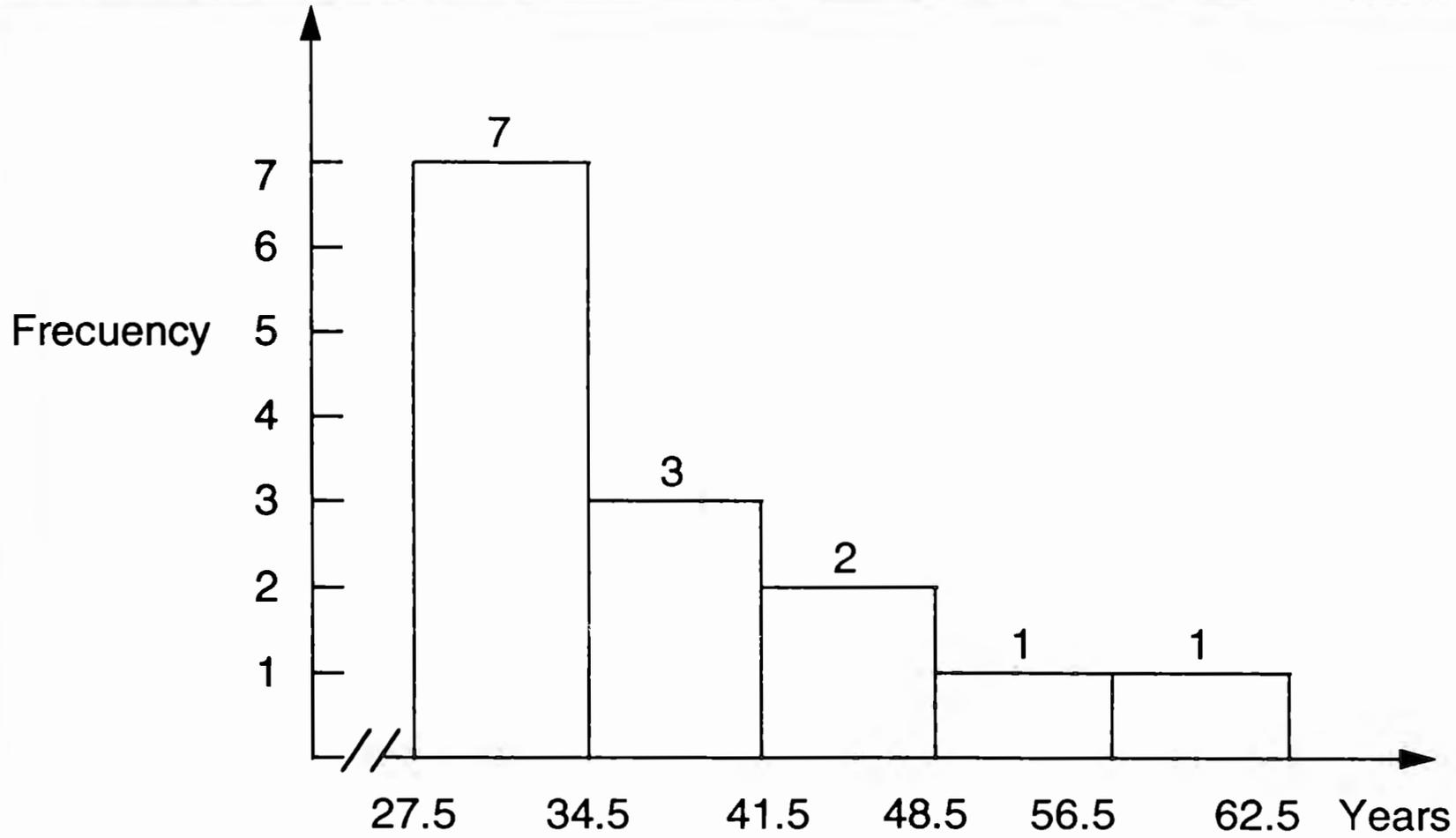


Average = 4.5 years

Position Seniority of the majority of the respondents is smaller than 5.75 years.

**FIGURE 21: POSITION SENIORITY HISTOGRAM**

# CONTENT ANALYSIS



Average = 38.25 years

The ages of the majority of the respondents is between 27.5 and 41.5 years.

**FIGURE 22: AGE HISTOGRAM**

## CONTENT ANALYSIS

No.	"TQM-SOS" and "C-U NEW" methodologies objectives.	Ford Motor Company Mexico S. A. de C. V.	Group Technik Air Mexico S.A. De C.V.	Mexico City Campus of the ITESM (Instituto Tecnológico y de Estudios Superiores de Monterrey). General results achieved after applying "TQM-SOS" AND "C-U NEW" methodologies in the graduate school of business in the Mexico city campus of the ITESM.	Mexico City Campus of the ITESM (Instituto Tecnológico y de Estudios Superiores de Monterrey) with students participating as "Consumers/Users" the graduate school in business administration (EGA-CCM-ITESM).	Total
1	Define the appropriate steps required to use and implement "C-U NEW" and "TQM-SOS" methodologies in any organization (Manufacturing or Service Industries applicability).	4	9	15	6	34
2	Improve Strategic Operative System Planning Process: The factors recommended to be improved are:	52	60	53	42	207
	a) Who are the main current and future customers (consumers and users) of the organization?	2	2	2	2	8
	b) What are their customers expressed current or future needs and expectations in regard to the products and services currently offered by the organization?	5	4	5	6	20
	c) What and how the products and services that organizations generate must be offered in the marketplace to better satisfy their customer's current or future needs.	2	4	3	2	11

**FIGURE 23: NUMBER OF POSITIVE COMMENTS PER OBJECTIVE**

## CONTENT ANALYSIS

	d) How will those expected products and services be generated to satisfy their current or future customers and their needs?	<i>1</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>10</i>
	e) What programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction as well as the required motivation and flexibility to change in creative ways the organization to improve productivity continuously?	<i>1</i>	<i>2</i>	<i>3</i>	<i>2</i>	<i>8</i>
	f) Change for the better the organization's culture and related structure to achieve more efficiently all its expected corporate objectives:					
	* Understanding the Mission of the organization.	<i>3</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>10</i>
	* Organizational Cultural Change.	<i>5</i>	<i>5</i>	<i>3</i>	<i>1</i>	<i>14</i>
	* Personal attitude Change.	<i>4</i>	<i>3</i>	<i>4</i>	<i>2</i>	<i>13</i>
	* Personal Growth and Job Satisfaction.	<i>10</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>16</i>
	* Organizational Quality-Productivity Goals.					
	Subtotal (f)	<i>22</i>	<i>10</i>	<i>12</i>	<i>9</i>	<i>53</i>

**FIGURE 23: NUMBER OF POSITIVE COMMENTS PER OBJECTIVE**

# CONTENT ANALYSIS

	<p>g) Improve Design and Delivery of Products and Services. Help top management define their current or future customers and users' needs and then translate such expressed expectations in internal specifications that will help strategically organize all operative activities of the firm and all involved areas of the organization besides manufacturing or production areas or service generating departments to design, manufacture, build, construct, service, promote, market, sale and deliver the products and or services currently required by their customers or users in a more productive and efficient way.</p>	<b>2</b>		<b>7</b>	<b>1</b>	<b>10</b>
	<p>h) Improve Operations Management Process: Clarify to top management what "TQM-SOS" and "C-UNEW" methodologies are or can do for them or their firms, what is or should be the top manager's principal role in organizations pursuing such quality or excellency objectives, how its complete organization must be structured and its people evaluated, recognized and compensated for all their efforts shown and done in continuously achieving "Total Customer Satisfaction."</p>					
	<p>• Leadership: Development and Promotion.</p>	<b>3</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>13</b>

**FIGURE 23: NUMBER OF POSITIVE COMMENTS PER OBJECTIVE**

## CONTENT ANALYSIS

	• Team-Work and Brain-Storming Development.	3	7	4	7	21
	• Good training tool for "TQM-SOS" and "C-U-NEW" future understanding development and applicability in the firm.	6	12	11	5	34
	Subtotal (h)	<i>12</i>	<i>23</i>	<i>17</i>	<i>16</i>	<i>68</i>
	i) Improve in general all the organization's quality and productivity results, its general efficiency and its communications process to better satisfy its current and future potential consumers and users: This will be accomplished if adequate trained leaders are allowed to work with the tools mentioned in the methodologies here being studied:	3	6	1	1	11
	• Organizational Growth.	2	6			8
	Subtotal (i)	<i>5</i>	<i>12</i>	<i>1</i>	<i>1</i>	<i>19</i>
<b>Total (2)</b>		<i>52</i>	<i>60</i>	<i>53</i>	<i>42</i>	<i>207</i>
3.	Generation of "Auto Purchase Decision = Total Customer Satisfaction = Total Quality-Productivity." (Neuman, 1988): This effect was previously defined as: "If the people individually or as a team working in the organization are willing to use (paying for it or even free) the product/service they themselves generate, then we can say that the product or service has the required quality on the eyes of the customer and user."	<i>1</i>		<i>5</i>	<i>3</i>	<i>9</i>

**FIGURE 23: NUMBER OF POSITIVE COMMENTS PER OBJECTIVE**

## CONTENT ANALYSIS

4.	<p>"Change Resistance Reduction": If everybody in the organization is assured that the main purpose of "TQM-SOS" implementation process is the achievement of their internal or external customers satisfaction with adequate products or services which are especially designed and generated with the participation of all the involved departments with a "Quality-Productivity" continuous improvement cultural approach in their minds all the time, and everybody is invited to offer ideas and creative problem solutions, the results will be significant and very useful for the organization and all its participants, providing adequate evaluation and recognition policies have already been also implemented:</p>	2				2
	<ul style="list-style-type: none"> <li>• Continuous improvement promotion.</li> </ul>		3	1	1	5
	<ul style="list-style-type: none"> <li>• Participation and involvement.</li> </ul>					
	<ul style="list-style-type: none"> <li>• Total (4)</li> </ul>	2	3	1	1	7
5.	<p>"SPC Continuous Tools Usage Promotion": With regard to this subject, "SPC" group training sessions are specially programmed in which the incipient teams just organized are taught how to analyze and solve particular practical problems with the help of the basic and advanced "SPC" Tools. The vivid simulations and practical exercises developed for training purposes will also help the participants to understand and better apply the explained and taught concepts to all their daily activities.</p>		2	1		3

**FIGURE 23: NUMBER OF POSITIVE COMMENTS PER OBJECTIVE**

# CONTENT ANALYSIS

6.	<p>Real Life Representation through Small Scale Simulation: The sensitizing and training activities of the "TQM-SOS" and the "C-U NEW" methodologies must be planned and done with products and services that are directly related to the products or services currently offered by the firm.</p> <p>It is important to remember that the learning and actual application process of the "C-U NEW" methodology's results will help the organization achieve the following crucial objectives (CH IV PP: 22):</p> <ul style="list-style-type: none"> <li>• Definition of internal-external consumer-user.</li> <li>• Definition of consumer-user verbally expressed needs.</li> <li>• Definition of adequate products and services expected by the consumer-user to satisfy his/her expressed needs.</li> <li>• Definition of quality-productivity problems due to current existence of differences between what the consumer-user expects to receive and what he/she actually receives.</li> <li>• Definition of Priority improvement projects to solve existing quality-productivity problems.</li> <li>• Definition of adequate Strategic Operations System planing, which will help review current organizational and management culture, personnel attitudes, operations quality and productivity, marketing and sales strategies and all the required activities to continuously achieve total customer satisfaction and with it appropriate business profitability.</li> </ul>	2	4	1	3	10
		61	78	76	55	270

**FIGURE 23: NUMBER OF POSITIVE COMMENTS PER OBJECTIVE**

## CONTENT ANALYSIS

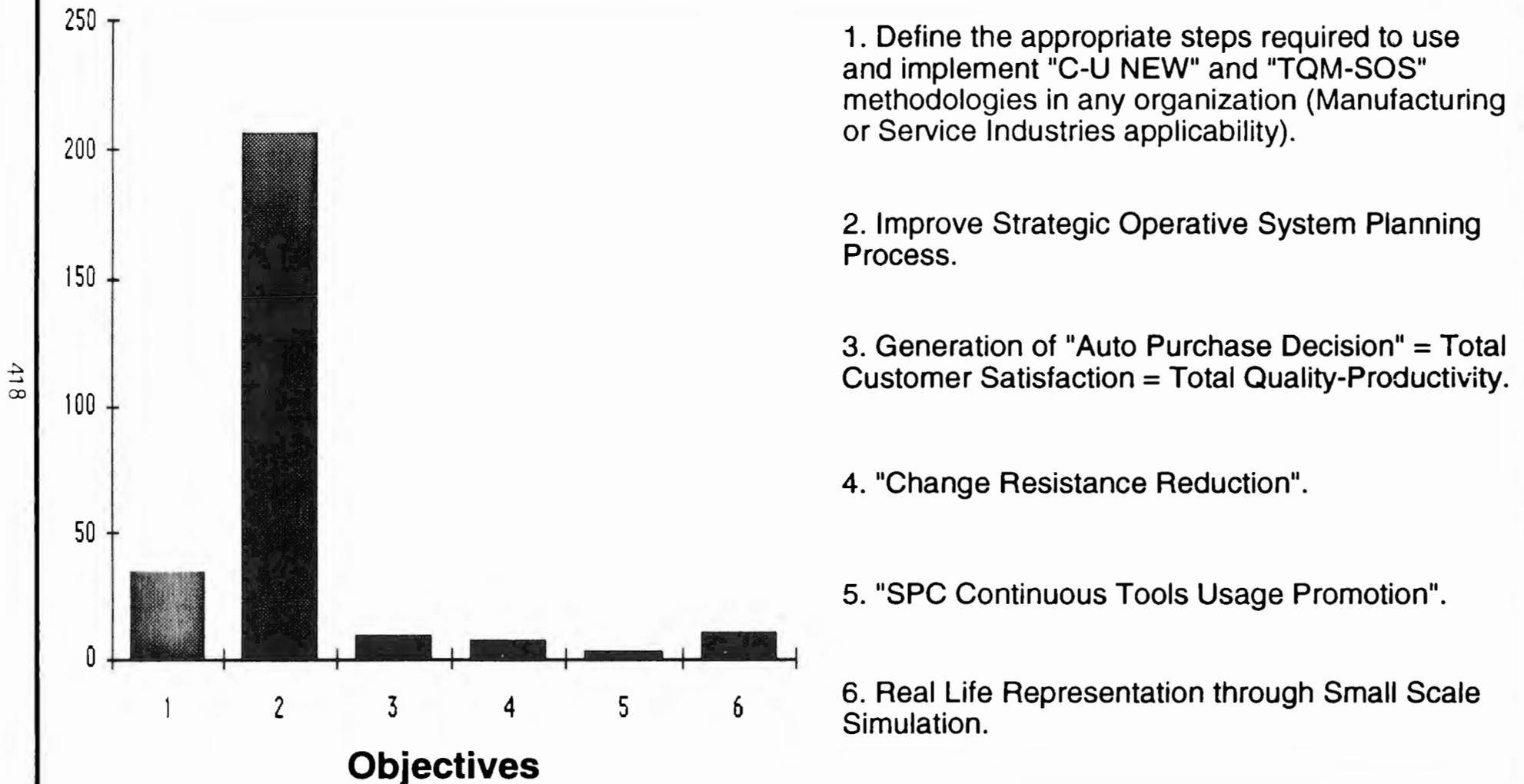
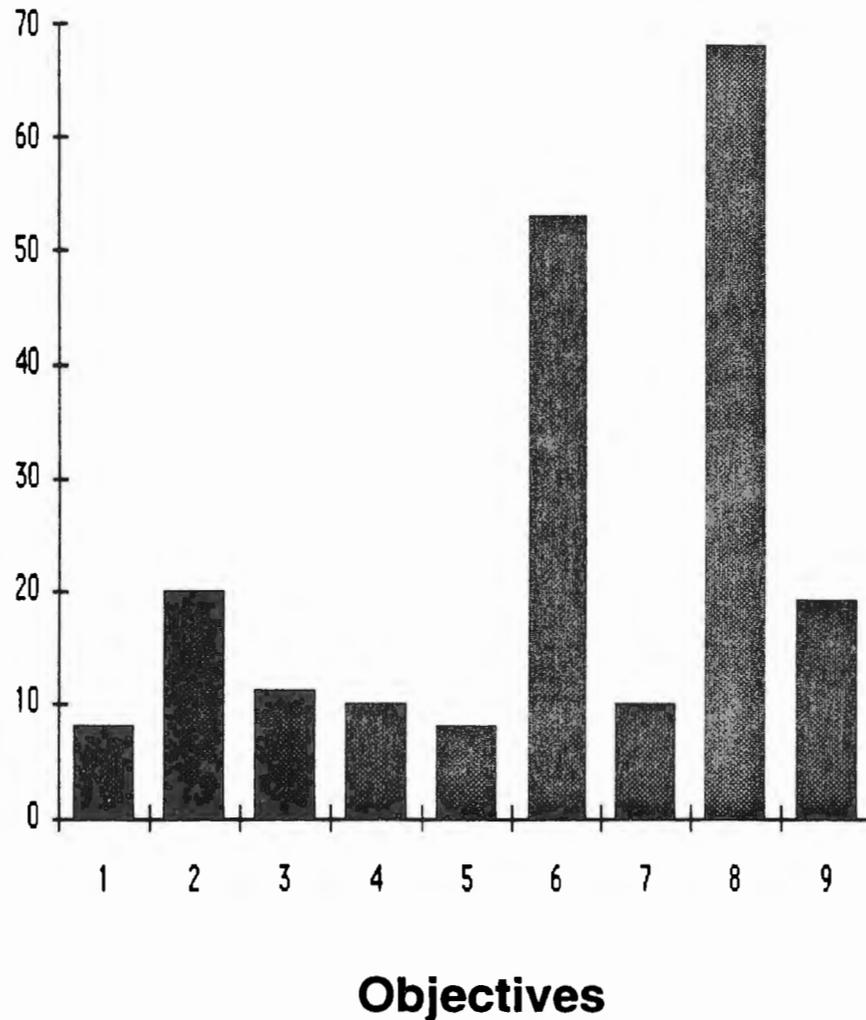


FIGURE 24: FREQUENCY OF POSITIVE ANSWERS TO EACH OF THE EXPECTED OBJECTIVES

## CONTENT ANALYSIS

419



1. Define who are the main current and future customers (consumers and users) of the organization.
2. Define what are their customers' expressed current or future needs and expectations in regard to the products and services currently offered by the organization.
3. Define what and how the products and services that organizations generate must be offered in the marketplace to better satisfy their customer's current or future needs.
4. Define how will those expected products and services be generated to satisfy their current or future customers and their needs.
5. Define what programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction as well as the required motivation and flexibility to change in creative ways the organization to improve productivity continuously.
6. Change for the better the organization's culture and related structure to achieve more efficiently all its expected corporate objective.
7. Improve Design and Delivery of Products and Services.
8. Improve Operations Management Process.
9. Improve in general all the organization's quality and productivity results, its general efficiency and its communications process to better satisfy its current and future potential consumers and users.

FIGURE 25: IMPROVE STRATEGIC OPERATIVE SYSTEM PLANNING PROCESS

# CONTENT ANALYSIS

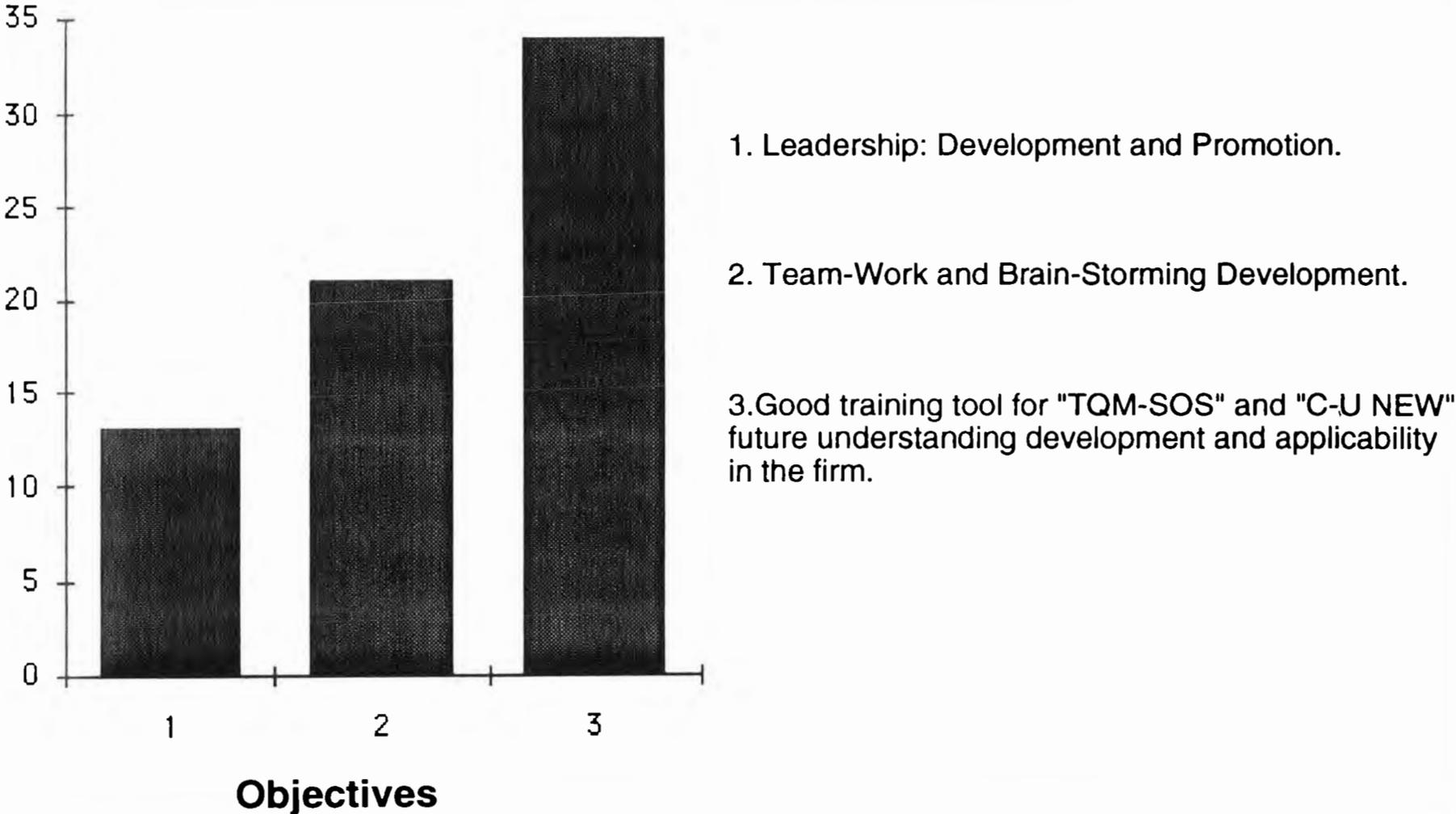


FIGURE 26: IMPROVE OPERATIONS MANAGEMENT PROCESS

## CONTENT ANALYSIS

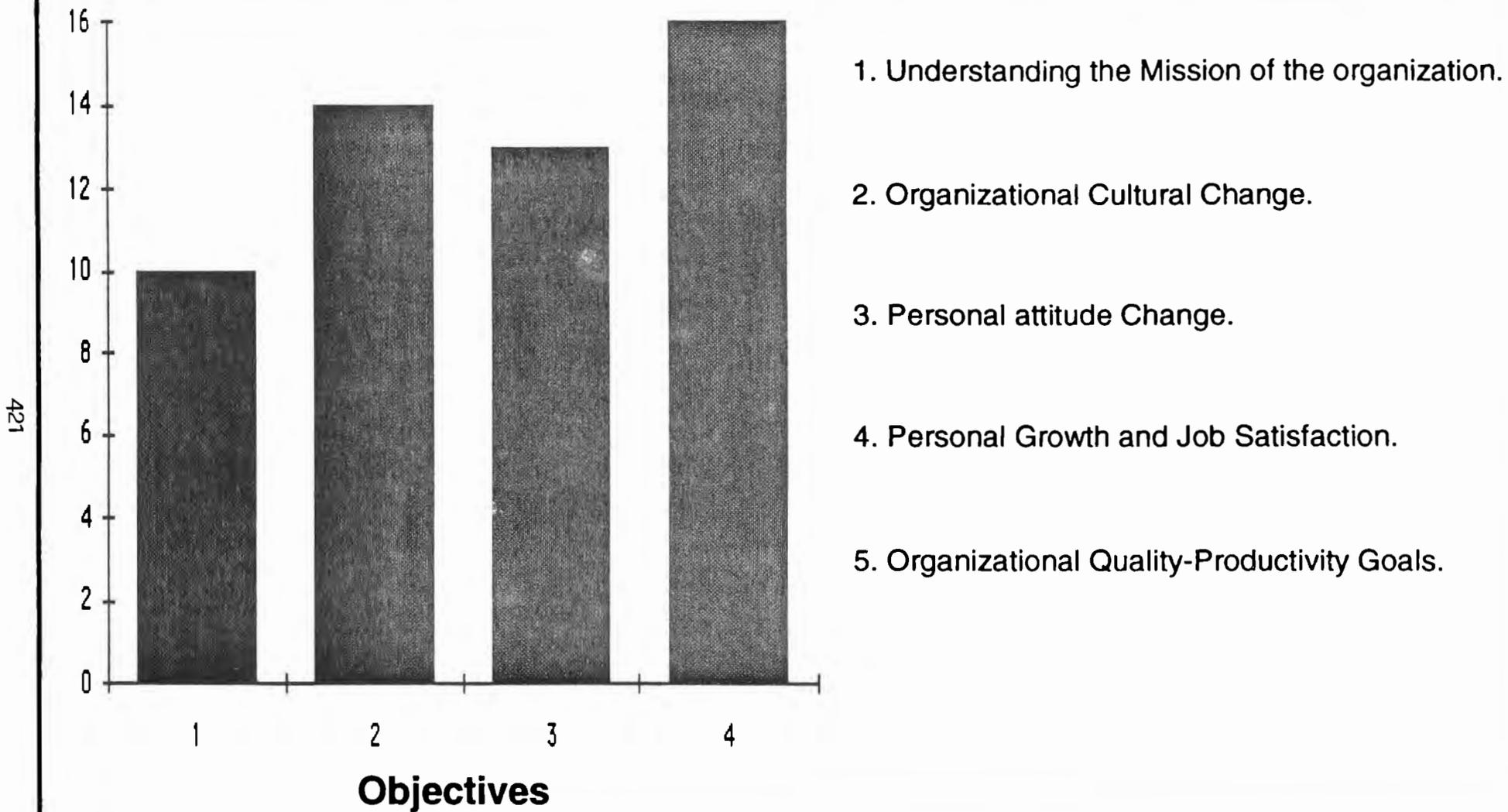


FIGURE 27: CHANGE THE ORGANIZATION CULTURE

# CONTENT ANALYSIS

No.	"TQM-SOS" and "C-U NEW" methodologies objectives.	K. Ishikawa objectives	GAO objectives	Oswald and Buratt objectives	Dean and Bowen objectives	Frequency of positive answers
1	Define the appropriate steps required to use and implement "C-U NEW" and "TQM-SOS" methodologies in any organization (Manufacturing or Service Industries applicability).			<ul style="list-style-type: none"> <li>• There is no universal, "cookbook" approach, although there is a general sequence of implementation phases which seem to produce the best results.</li> <li>• The progress or speed of TQM implementation is enhanced if systematic processes are established and integrated in the organization to foster continuous improvement. E&amp;C companies have learned from other industry companies who "went before," but only by means of informal and fragmentary research. These guidelines should assist additional organizations to implement TQM even more efficiently.</li> </ul>		34
2	Improve Strategic Operative System Planning Process: The factors recommended to be improved are:					207
	a) Who are the main current and future customers (consumers and users) of the organization?					8
	b) What are their customers expressed current or future needs and expectations in regard to the products and services currently offered by the organization?					20
	c) What and how the products and services that organizations generate must be offered in the marketplace to better satisfy their customer's current or future needs.	<ul style="list-style-type: none"> <li>• Good market information is received more quickly.</li> <li>• Sales routes expand.</li> </ul>				11
	d) How will those expected products and services be generated to satisfy their current or future customers and their needs?	<ul style="list-style-type: none"> <li>• New-product development speeds up and improves.</li> <li>• Products of world beating quality can be made.</li> </ul>	<ul style="list-style-type: none"> <li>• Greater Customer Satisfaction was accomplished. Many companies have changed their traditional view that quality involves merely meeting technical specifications. They now recognize that quality is defined by the customer and that companies must focus on meeting customer needs and expectations.</li> </ul>			10

122

**FIGURE 28: GENERAL OBJECTIVES COMPARATION**

# CONTENT ANALYSIS

423

	<p>e) What programming and control mechanisms will be implemented in the organization to assure continuous customer satisfaction as well as the required motivation and flexibility to change in creative ways the organization to improve productivity continuously?</p>				<p>• Dean and Bowen (1994) argue that traditional "Total Quality" consists of three major principles: "Customer Focus, Continuous Improvement and Teamwork." They also comment that two of the principal areas required by the Baldrige Quality Award evaluation, "Customer focus and Management of the Quality Process are seldom covered in Management literature." They go on to mention that: "It is difficult to identify any major organization in which quality issues are not in their agenda. Furthermore, many leaders of these organizations have begun to question why management research and education have not yet incorporated TQ to any great degree (Robinson et al., 1991). Given its importance in practice, we risk losing our credibility as management theorists by ignoring TQ in our research." (Dean and Bowen, 1994).</p>	8
	<p>f) Change for the better the organization's culture and related structure to achieve more efficiently all its expected corporate objectives:</p>					
	<ul style="list-style-type: none"> <li>• Understanding the Mission of the organization.</li> </ul>					10
	<ul style="list-style-type: none"> <li>• Organizational Cultural Change.</li> </ul>	<ul style="list-style-type: none"> <li>• The corporate culture is improved.</li> <li>• The organization becomes trusted.</li> <li>• People begin to speak a common language and understand each other better.</li> </ul>		<ul style="list-style-type: none"> <li>• Senior management personally and persistently leads the building of Quality values into the company's operations. (This single finding eclipses all the rest. If this does not happen, Quality Improvement does not happen).</li> </ul>		14
	<ul style="list-style-type: none"> <li>• Personal attitude Change.</li> </ul>					13
	<ul style="list-style-type: none"> <li>• Personal Growth and Job Satisfaction.</li> </ul>		<ul style="list-style-type: none"> <li>• Somewhat better employee relations were realized. Employees in the companies GAO reviewed experienced increase job satisfaction and improved attendance; employee turnover also decreased. Other factors also studied were: safety and health and, number of suggestions made to improve quality and/or lower costs, which showed improvement too.</li> </ul>			16

FIGURE 28: GENERAL OBJECTIVES COMPARATION

# CONTENT ANALYSIS

	<ul style="list-style-type: none"> <li>Organizational Quality-Productivity Goals.</li> </ul>			<ul style="list-style-type: none"> <li>Employees are suitably trained, empowered, and involved in continuously improving Quality and reducing costs.</li> <li>TQM is truly a bottom-line issue. The organization's "shareholder value" is enhanced by the improvement of its processes. Allows improved customer satisfaction, reduced cycle times, cost savings and more satisfied work forces.</li> </ul>		
	Subtotal (I)					53
	<p>g) Improve Design and Delivery of Products and Services. Help top management define their current or future customers' and users' needs and then translate such expressed expectations in internal specifications that will help strategically organize all operative activities of the firm and all involved areas of the organization besides manufacturing or production areas or service generating departments to design, manufacture, build, construct, service, promote, market, sale and deliver the products and or services currently required by their customers or users in a more productive and efficient way.</p>	<ul style="list-style-type: none"> <li>Reliability increases, confidence in the products improves and customer's trust is obtained.</li> <li>Total Costs decrease. Unit costs improve, and value-added productivity increases.</li> <li>Research and development is speeded up and made more effective.</li> <li>Research investment becomes more rational.</li> <li>Plant and equipment repair and expansion can be done rationally according to priority.</li> <li>Quality (in its narrow sense) is raised, and the number of defective products decreases.</li> <li>Quality becomes more uniform and the number of complaints decreases. Complaints are dealt more quickly, and effective action is taken to prevent their recurrence.</li> <li>Wasteful work disappears, rework decreases and efficiency improves.</li> <li>Inspection and testing costs decrease.</li> </ul>	<ul style="list-style-type: none"> <li>Corporate attention was focused on meeting customer requirements.</li> <li>Companies that adopted quality management practices experienced an overall improvement in corporate performance. In nearly all cases, companies that used Total Quality Management practices achieved better employee relations, higher productivity, greater customer satisfaction, increased market share, and improved profitability. The principal indicators that were used to define a company's performance were: Employee relations, Operating procedures, Customer satisfaction and Financial performance.</li> <li>In regards to Operating Procedures the report shows: Improved quality and lower cost were attained. Companies increased the reliability and on-time delivery of their product or service and reduced errors, product lead time, and their cost of quality. Some experts estimated that manufacturing costs could be reduced by over 30 percent simply by eliminating scrap and rework that occurs from correcting defects in the manufacturing process. The other factors studied under this section also included: Order processing time and Inventory turnover.</li> </ul>	<ul style="list-style-type: none"> <li>Corporate attention is focused on meeting customers' requirements.</li> </ul>		10

424

FIGURE 28: GENERAL OBJECTIVES COMPARATION

# CONTENT ANALYSIS

	h) Improve Operations Management Process: Clarify to top management what "TQM-SOS" and "C-U NEW" methodologies are or can do for them or their firms, what is or should be the top manager's principal role in organizations pursuing such quality or excellency objectives, how its complete organization must be structured and its people evaluated, recognized and compensated for all their efforts shown and done in continuously achieving "Total Customer Satisfaction."					
	• Leadership: Development and Promotion.		• Senior management led the way in building quality values into company operations.	• Senior management personally and persistently leads the building of Quality values into the company's operations. (This single finding eclipses all the rest. If this does not happen, Quality Improvement does not happen).		13
	• Team-Work and Brain-Storming Development.	• Relationships and the flow of information within the organization become smoother.				21
	• Good training tool for "TQM-SOS" and "C-U NEW" future understanding development and applicability in the firm.	• The whole of the company can be rationalized, and department managers, section managers, supervisors, and foreman become able to work more effectively. • Technology is established, engineers can be employed in their true capacity, and technology improves. Ways of employing people, particularly engineers become more rational.				34
	Subtotal (h)					68
	i) Improve in general all the organization's quality and productivity results, its general efficiency and its communications process to better satisfy its current and future potential consumers and users: This will be accomplished if adequate trained leaders are allowed to work with the tools mentioned in the methodologies here being studied:	• Rationalization of all aspects of the organization's management.	• Systematic processes were integrated throughout the organization to foster continuous improvement." (General Accounting Office, 1991).	• 1. Strategic Implications of TQM: a. Survival in an increasingly competitive world. b. Better service to its customers. c. Enhancement of the organization's "shareholder value." d. Improvement of the overall quality and safety of our facilities. e. Reduced project duration and costs. f. Better utilization of the talents of its people.		11

FIGURE 28: GENERAL OBJECTIVES COMPARATION

# CONTENT ANALYSIS

426

	<ul style="list-style-type: none"> <li>Organizational Growth.</li> </ul>	<ul style="list-style-type: none"> <li>Consumers, employees (including top management), and shareholders profit."</li> </ul>	<ul style="list-style-type: none"> <li>All employees were suitably trained, empowered, and involved in efforts to continuously improve quality and reduce costs.</li> </ul>			8
	Subtotal (i)					19
3.	<p>Generation of "Auto Purchase Decision = Total Customer Satisfaction = Total Quality-Productivity." (Neuman, 1988): This effect was previously defined as "If the people individually or as a team working in the organization are willing to use (paying for it or even free) the product/service they themselves generate, then we can say that the product or service has the required quality on the eyes of the customer and user."</p>					9
4.	<p>"Change Resistance Reduction": If everybody in the organization is assured that the main purpose of "TQM-SOS" implementation process is the achievement of their internal or external customers satisfaction with adequate products or services which are especially designed and generated with the participation of all the involved departments with a "Quality-Productivity" continuous improvement cultural approach in their minds all the time, and everybody is invited to offer ideas and creative problem solutions, the results will be significant and very useful for the organization and all its participants, providing adequate evaluation and recognition policies have already been also implemented:</p>	<ul style="list-style-type: none"> <li>Employees' humanity is respected, personnel development becomes possible, and workplaces become more cheerful.</li> <li>Human relations improve, and barriers between departments are broken down.</li> <li>People become able to talk frankly and openly.</li> <li>Meetings go more smoothly.</li> </ul>				2
	<ul style="list-style-type: none"> <li>Continuous improvement promotion.</li> </ul>	<ul style="list-style-type: none"> <li>Decision making is speeded up, and policy deployment and management by objectives improves.</li> </ul>				3
	<ul style="list-style-type: none"> <li>Participation and Involvement</li> </ul>	<ul style="list-style-type: none"> <li>The entire company works together, and a system of cooperation is established.</li> </ul>				
	Total (4)					7

FIGURE 28: GENERAL OBJECTIVES COMPARATION

# CONTENT ANALYSIS

5.	<p>"SPC Continuous Tools Usage Promotion": With regard to this subject, "SPC" group training sessions are specially programmed in which the incipient teams just organized are taught how to analyze and solve particular practical problems with the help of the basic and advanced "SPC" Tools. The vivid simulations and practical exercises developed for training purposes will also help the participants to understand and better apply the explained and taught concepts to all their daily activities.</p>	<ul style="list-style-type: none"> <li>• Talent-spotting becomes possible, and people are able to exercise their full capacities.</li> <li>• A quality assurance system is established, and the trust of consumers and customers is obtained.</li> <li>• All departments understand the idea of dispersion and becomes able to utilize QC techniques.</li> </ul>				3
6.	<p>Real Life Representation through Small Scale Simulation: The sensitizing and training activities of the "TQM-SOS" and the "C-U NEW" methodologies must be planned and done with products and services that are directly related to the products or services currently offered by the firm.</p> <p>It is important to remember that the learning and actual application process of the "C-U NEW" methodology's results will help the organization achieve the following crucial objectives (CH IV PP: 22):</p> <ul style="list-style-type: none"> <li>• Definition of internal-external consumer-user.</li> <li>• Definition of consumer-user verbally expressed needs.</li> <li>• Definition of adequate products and services expected by the consumer-user to satisfy his/her expressed needs.</li> <li>• Definition of quality-productivity problems due to current existence of differences between what the consumer-user expects to receive and what he/she actually receives.</li> <li>• Definition of Priority improvement projects to solve existing quality-productivity problems.</li> <li>• Definition of adequate Strategic Operations System planing, which will help review current organizational and management culture, personnel attitudes, operations quality and productivity, marketing and sales strategies and all the required activities to continuously achieve total customer satisfaction and with it appropriate business profitability.</li> </ul>					10
Total						270

427

FIGURE 28: GENERAL OBJECTIVES COMPARATION

# CONTENT ANALYSIS

No.	"TQM-SOS" and "C-U NEW" methodologies objectives.	K. Ishikawa objectives	GAO objectives	Oswald and Buratt objectives	Dean and Bowen objectives	Frequency of positive answers
x			<ul style="list-style-type: none"> <li>2. Each of the companies studied developed its practices in an unique environment with its own opportunities and problems.</li> </ul>			
x			<ul style="list-style-type: none"> <li>3. Many different kinds of companies benefited from putting specific Total Quality Management practices in place. However, none of these companies reaped those benefits immediately. Allowing sufficient time for results to be achieved was as important as initiating a quality management program.</li> </ul>	<ul style="list-style-type: none"> <li>"Companies must institute TQM or become noncompetitive in the national and international construction and engineering markets in the next five to ten years." (The Construction Industry Institute, 1990).</li> </ul>		
x		<ul style="list-style-type: none"> <li>Products can be sold at higher prices.</li> </ul>	<ul style="list-style-type: none"> <li>7. Improved Market Share and Profitability were attained. As measured by several ratios widely used in financial analysis, the impact of an organization's quality management practices was: Improved profitability, Sales per employee, return on assets and return on sales, that also increased in general for the sample being studied." (General Accounting Office, 1991).</li> </ul>	<ul style="list-style-type: none"> <li>Traditional reservations about the practicability of TQM in field engineering and construction activities are invalid.</li> </ul>		
x			<ul style="list-style-type: none"> <li>"The diversity of companies studied showed that quality management is useful for small companies (500 or fewer employees) as well as large and for service as well as manufacturers. The companies GAO reviewed began to focus on quality in the mid-1980s; their quality efforts are still evolving. Nevertheless, these companies improved their performance on average in about 2 1/2 years. Management allowed enough time for results rather than emphasizing short-term gains." (General Accounting Office, 1991).</li> </ul>			
x		<ul style="list-style-type: none"> <li>Production volumes increase, and it becomes possible to prepare rational production plans.</li> </ul>				
x		<ul style="list-style-type: none"> <li>Contracts with suppliers, subcontractors, and consumers can be rationalized.</li> </ul>				
x		<ul style="list-style-type: none"> <li>The company and its factories cease to issue false data.</li> </ul>				

428

FIGURE 29: NOT MATCHING OBJECTIVES

## Appendixes

Appendix A. "Esquizofrenia." .....	430
Appendix B. "Questionnaires." .....	432
Appendix C. "Tables." .....	439

## **APPENDIX A: "Esquezofrenia."**

**(Short English Abstract (Neuman, 1988)).**

In the Mexican environment, I found that there are two crucial problems that should be addressed first and solved afterwards, before even starting to think about the steps required to improve the implementation process of the Total Quality Management Strategic Operative System in any organization.

- Education: We Mexicans, despite our strong efforts to improve our knowledge level, still have a rickety average educational level accumulated in our great country.

This meager education level has generated a terrible and very contagious sickness that has already reached an epidemic status that I discovered some time ago and called:

- Esquezofrenia: "For us Mexicans it is easier to give an excuse than solve or be responsible of solving any problem or situation. Also, we are always unattached to our activities or responsibilities. We are here only surviving as sacrificed and victimized observers. The thesis I support, in order to improve the implementation process of "TQM-SOS" and with it continuously improve our current Quality-Productivity results is:

"If I can help people to improve their educational level, make people forget excuses, and get responsibly involved in their daily work, they themselves can become and will be better persons, have more job satisfaction, and will grow mentally and economically, their families will be able to lead a better life and everyone will improve their level of general satisfaction with their lives. At the same time, the organization will

increase its market share, be more profitable and be able to better satisfy all the requirements drawn upon her by the environment , its customers, and users. Also, the country will be able to achieve the developed status it deserves to have in the long run."

Up to this day many Mexican enterprises have left in the hands of the government the responsibility of educating and training workers, without directly helping or participating in a more interested way in the training process, and, this position has led to general stagnation in the productive processes and national underdevelopment. If organizations want to achieve an international competitive status regarding "Quality and Productivity," and in general, attain the expected economical growth, it is required that education and training, besides being focused in eliminating all excuses, will be taken as sole responsibility of the organization, without excuse or more loss of valuable time.

All the above mentioned requires drastic changes in organizational and personal attitudes and culture, but as I see it, there is no other choice or time to waste anymore. We have been for ages accustomed to wait for "Father-Government" to provide us with everything we cared for. This Utopia is not possible or acceptable any more. The word has changed outside. If we want to progress we require to change also from within (Toffler, 1971).

"We need to 'learn how to learn' in a better way. We need to be more productive and use our creativity in better thought, planned, organized, decided, and executed ways to improve, first, personally our quality of work, and only after that, our families will get for sure the benefits of these new attitudes, then, our corporations, and finally, our country will receive the results of such process of personal or group change of behavior too."

## **APPENDIX B: "QUESTIONNAIRES."**

### **CUESTIONARIO ENTREVISTA. (QUESTIONNAIRE INTERVIEW).**

#### **EVALUACION POSTERIOR PERIODICA (PERIODIC-POSTERIOR EVALUATION)**

El cuestionario que a continuación presentamos nos servirá para guiar las entrevistas que efectuaremos con aquellos ejecutivos que hayan participado en el "Taller: Conozca las necesidades de sus Consumidores-Usuarios". El objetivo del mismo es el de evaluar el grado de asimilación de la metodología presentada y empleada en el taller y además, registrar el impacto que la utilización de dicha herramienta ha tenido posteriormente en la organización.

El cuestionario se llenará con algunos breves comentarios personales de los participantes en el taller. Éstos se mantendrán confidenciales.

(The questionnaire here presented will help guiding the interviews we with executives that already participated in the "Consumers-Users Needs Evaluation Workshop." The main objective of filling the questionnaire is to evaluate the degree of personal assimilation achieved of the methodology presented and used in the workshop, and register the impact that the utilization of such tools had in the organization.

The questionnaire will be filled with brief personal comments of the participants to the workshop. These comments will be maintained confidential).

**I. Evaluación de la Metodología.**  
**(Methodology Evaluation):**

**A) Entendimiento y claridad.**  
**(Understanding and Clearness).**

1. ¿Considera que el material se presentó en forma clara (Explique brevemente)?

Do you consider that the supporting material was presented in a clear form (Briefly explain)?

---

---

2. ¿Qué entendió usted sobre el contenido del material de apoyo del taller?

What did you understand about the contents of the material to support the workshop?

---

---

3. Comente o sugiera algo sobre la metodología que se emplea en el taller.

Comment or suggest something about the methodology employed in the workshop.

---

---

**B) Aplicabilidad.**  
**Applicability.**

4. Comente usted sobre la aplicación práctica que creyó usted que tenía el material visto en la dinámica en su trabajo cotidiano (Cómo creyó que lo podría haber usado).

Comment about the practical application that you thought that the material seen in the workshop had in your daily work (How did you think at that time that you could have used it).

---

---

5. Comente que aplicaciones dió usted en la realidad al material visto en el taller (Cómo lo usó o para qué le sirvió en su trabajo real).

Comment what applications you did in reality to the material seen in the workshop (How did you use or how you utilized it in your real life work).

---

**C) Relación con el producto/servicio ofrecido por la empresa.  
Relationship with the produc/service offered by the organization.**

6. ¿El producto o servicio que usted analizó en el taller tiene realción o similitud con el producto o servicio que actualmente ofrecen en la empresa. (Explique brevemente por qué la tiene)?

The product or service that you analyzed in the workshop has relationship or similarities with the product or service that your organization is currently offering (Briefly explain why it has it)?

---

7. ¿En que consiste la similitud observada y cómo le ayudó ésta para mejorar su trabajo cotidiano?

In what consists such similarity and how such similarity helped you to improve your dayly work?

---

**D) Comentarios y sugerencias adicionales con respecto a la metodología empleada en el taller.  
Additional commentaries and suggestions regarding the methodology used in the workshop.**

8. Comentarios.  
Commentaries.

---

9. Sugerencias.  
Suggestions:

---

**II. Impacto de la utilización de la metodología en la organización.**

**Impact in the organization after using the methodology.**

**A) Cambio de actitud (interna y hacia el consumidor-usuario externo).**

**Attitude change (inner and towards the external consumer-user).**

10a) ¿Se logró un cambio de actitud de los participantes con respecto a la forma en que deberán de ser considerados y tratados los consumidores-usuarios en el futuro?

Did an attitude change was achieved among the participants in relation to the form in which must be considered and dealt with the consumers-users in the future?

---

---

10b) ¿En que consistieron estos cambios?  
What were those changes?

---

---

10c) ¿Qué estrategias se siguieron posteriormente (Explique brevemente)?

What strategies were followed afterwards (Briefly explain)?

---

---

11a). ¿Se logró una mejor comunicación y entendimiento con los usuarios-consumidores de la empresa?

Was a better communication and understanding with organization's consumers and users achieved?

---

---

11b). ¿Cómo se logró esto (Explique brevemente)?  
How was this achieved (Briefly explain)?

---

---

**B) Cambios observados en el trabajo de grupo.  
Observed changes In the way the group works.**

12. ¿Cuáles fueron los cambios de comportamiento y desempeño del grupo que usted notó durante el desarrollo del taller y después de éste. (Comente someramente sobre detalles de comunicación, liderazgo, delegación de responsabilidades, definición de tareas o proyectos, cumplimiento de compromisos, etc.)?

Which were the behavior and performance changes in the group that you noticed during and after your participation in the workshop (Briefly comment about details related to communication, leadership, responsibilities delegation, tasks and projects definition, delivery of objectives, etc.)?

---

---

13. Después del taller, ¿Cómo se ha venido desempeñando el trabajo de grupo y la colaboración entre los participantes?. (Explique brevemente sobre detalles como: comunicación, liderazgo, delegación de responsabilidades, definición de tareas o proyectos, cumplimiento de compromisos).

After the workshop, how has been performing or been the team-work performance and the collaboration in between participants to the workshop (Briefly comment about details related to communication, leadership, responsibilities delegation, tasks and projects definition, delivery of objectives, etc.)?

---

---

**C) Modificación de especificaciones del Producto-Servicio.  
Product-Service specification changes.**

14a) ¿Se modificaron las especificaciones de los productos-servicios que ofrece la empresa a raíz de los resultados y las conclusiones logradas durante el taller (Comente brevemente)?

Did Products-Services specifications change due to the results and conclusion reached during the workshop (Briefly comment)?

---

---

14b) ¿En que consistieron estos cambios y como se emplearon posteriormente? (Explique a continuación).

What were those changes and how did they were applied later (Explain next)?

---

**D) Modificaciones efectuadas al Producto-Servicio.  
Product-Service Modificatios done.**

15. ¿En que consistieron estos cambios y como se implementaron posteriormente?

What were those changes and how were implemented?

---

16. ¿Hubo algun esfuerzo conjunto para desarrollar algunos proyectos de mejora de la calidad-productividad de tipo prioritario y cómo se coordinó éste?

Was there a group effort to develop quality-productivity improvement priority projects and how was this effort coordinated?

---

**E) Cambios en el Proceso de Manufactura (Servicio).  
Changes in the manufacturing process (Service).**

17. ¿Se modificaron los procesos para la obtención de los productos-servicios que ofrece la empresa a raíz de los resultados y las conclusiones logradas durante el taller? (Comente en que consistieron estos cambios).

Were the processes required to obtain the products-services offered by the organization modified due to the results and conclusions achieved during the workshop?

---

F) Revisión de los resultados periodicos de logrados en la operación. (Mejorías o Retrocesos observados).

Periodic review of achieved operational results (Improvements or decreases observed)?

18. Comente que resultados globales ha percibido usted en la gente, departamentos, áreas y empresa después de que se participó en el taller. (Explique por favor).

Comment about the global results that you have perceived in the people, departments, areas and in the whole organization after the workshop (Please explain).

---

---

G) Comentarios generales. (Sobre el taller, el instructor y el cuestionario) (Gracias).

General comments and recommendation of the Workshop(About the workshop, the facilitator and the questionnaire) (Thanks!).

---

---

**F) Participant Data:**

Participant number:\_\_\_\_\_. Participant code:\_\_\_\_\_.

Nombre (Name): \_\_\_\_\_.

Date Participation:\_\_\_\_\_. Date Interview: \_\_\_\_\_.

Edad (Age) (\_\_\_\_). Telefono: \_\_\_\_\_.

Empresa(Organization): \_\_\_\_\_.

Departamento:\_\_\_\_\_.

Puesto (Position): \_\_\_\_\_.

Antigüedad en la empresa:  
(Seniority in the organization) \_\_\_\_\_(años/years).

Antigüedad en el puesto:  
(Seniority in the position) \_\_\_\_\_(años/years).

## APPENDIX C: "TABLES."

Table 1. "Important traits and characteristics of the Mexican worker." .	440
Table 2. "Important Terms Definitions." .....	441
Table 3. "Important traits and characteristics required by supervisors in order to implement policies or systems." .....	448
Table 4. "Principal points and requirements offered by Deming." .....	450
Table 5. "Principal points and requirements offered by Juran." .....	453
Table 6. "Principal points and requirements offered by Ishikawa." .....	457
Table 7. "Principal points and requirements offered by Crosby." .....	464
Table 8. "Recommended Work Group Processes." .....	470
Table 9. "Principal Guidelines and characteristics required by 'The Quality Master Plan to achieve Quality Improvement.' " .....	477
Table 10. "Principal Guidelines for developing a Process Improvement Plan." .....	480
Table 11. "A Model for Implementing TQM in Purchasing." .....	482
Table 12. "TQM Implementation Guidelines." .....	485
Table 13. "TQM Implementation Process: Three Steps to Continuous Improvement." .....	487
Table 14. "TQM: A Step-by-step Guide to Implementation." .....	490
Table 15. Guidelines for Implementing Total Quality Management in the Engineering and Construction Industry." .....	492
Table 16. "Partnering for Total Quality: Executive's Implementation Guideline. ....	495
Table 17: "Well Functioning Teams." .....	497

**TABLE 1.**

**IMPORTANT TRAITS AND CHARACTERISTICS OF THE MEXICAN WORKER**

Reference	Principal Traits Found in the Mexican Workforce
(Rodriguez and Ramirez, 1992).	<p>Mexican workers possess and show the next positive characteristics:</p> <ol style="list-style-type: none"> <li>1) Superior emotional security due to social forces, family cohesiveness, religious beliefs and friends availability.</li> <li>2) Tranquillity, happiness, satisfaction for life, love, affection and confidence, supported by their family, customs and Mexican traditions.</li> <li>3) Readiness to be of service, cooperative and to offer material or spiritual support, providing he or she is properly recognized and rewarded and is considered useful, important and having special value for the organization in which he participates.</li> <li>4) Favors harmony and cordiality in his relations.</li> <li>5) Good sense of humor, social, friendly, ingenious and creative.</li> <li>6) Proud of being Mexican.</li> </ol> <p>Mexican workers possess and show the next positive fundamental values:</p> <ol style="list-style-type: none"> <li>1) Liberty.</li> <li>2) Religion.</li> <li>3) Equality.</li> <li>4) Family.</li> <li>5) Human development.</li> <li>6) Technical development.</li> </ol>
(Alducin, 1989).	<p>The most important factors that Mexicans believe are required to attain achievement needs are:</p> <ol style="list-style-type: none"> <li>1) Education.</li> <li>2) Intelligence.</li> <li>3) Hard Work.</li> </ol>
(Kras, 1989).	<p>Mexican people and managers possess next traits:</p> <ol style="list-style-type: none"> <li>1) Tradition of family business.</li> <li>2) Paternalistic and autocratic.</li> <li>3) Relaxed, slow-moving and peaceable.</li> <li>4) Stress and tension for Mexico City inhabitants.</li> <li>5) Loyal.</li> <li>6) Deep and concealed sense of national and cultural identity based on firm attachment to cultural values.</li> </ol>

**TABLE 2a:  
OPERATIONAL DEFINITIONS SUGGESTED IN THIS WORK BY THE AUTHOR.**

<b>Terms:</b>	<b>Definitions:</b>
Values	"Set of beliefs and thoughts that influence the creation of accepted and expected norms and modes of behavior allowed to exist within organizations or society, which regulate and define how people or groups are allowed to behave and act to enable them to satisfy their current or future needs on an individual or within a given group or organization, in a particular moment of time."
Culture	"Set of values and accumulated information, knowledge, technical and manual skills and abilities, and gathered technology, that allows an individual, group or an organization to define and use all the available resources and means at a particular moment in time to perform all the required activities or operations to satisfy their and those of their consumers and users, current and future needs."
Vision	<p>"Projection, forecast or preview of the expected future needs, that directly depend on the forecasted and expected changes in values and culture, that individuals, groups or organizations will have in the same future time span considered. that can be satisfy able, with the available or easily achievable also (in the same span of time) culture and related technology level, that an individual, group or organization will have in such future moment of time."</p> <p>First Note: If development of culture and technology levels required to satisfy future needs, takes longer to be achieved than the actual materialization or realization of consumer's or user's needs, which would be already requiring or expecting to satisfy, those futu rely expressed needs in such particular time span, organizations will not be able to satisfy them for real, and, we will be only in the domains of science fiction, because of lack of the required knowledge or technology level to satisfy such expressed needs. The same happens in the case when available technology would have been used to develop products or services that are not yet needed or expressed as required in the minds or actions of the potential consumers or users, mainly because the values or culture that will be needed to support such products' or services' applications or particular usage would have not yet been achieved or attained. This last is required so those products or services would be really needed and seen as already appropriate for their marketing, sales, usage or consumption culturally and socially.</p> <p>Second Note: It is interesting to comment that we must forecast and project simultaneously the culture and its related values advancement or changes, with the futu rely expected needs that such changes will create or originate in the future potential consumers or users of the products or services that would be required in such forecasted time span by them, as expected to satisfy their future needs. We must project also the level of technology that would be required to generate the products or services that would be needed in such same time span as well.</p>
Mission	<p>"The principal reason for being or existing of the organization is: Satisfy the current and future verbally expressed as expected needs of its actual or potential customers with adequate products or services done right at the first time without any excuses, and at a productive, efficient and competitive level of cost for the organization manufacturing or generating them, and, that also offers value and satisfaction (at the adequate price level) to the direct or indirect consumers and or users of such products or services for an adequate paid price, while at the same time recognizing all the efforts and satisfying all the personal needs and delivering appropriate benefits to all the collaborators, employees, participants and stakeholders of the organization that continuously strive to improve their work, products and services in productive and honest ways."</p> <p>Third Note: The real authorization to operate and to be or stay continuously in business that an organization receives from the environment, is conveyed and obtained through the monetary deposits made by its satisfied customers, in the arks of the corporation, each time they purchase and repurchase the organization's products and services and afterwards fully satisfy their needs using them as expected.</p>
Customers	"The person or organization that can behave as a consumer, user or both, of the product or service that is required to satisfy expressed needs."
Consumers	"The one that pays for the product, good or service being considered, and enjoys or suffers the particular physical characteristics the product, good or service has, when consuming it with the purpose of satisfying his or her expressed needs."
Users	"The ones that use the product or service being considered and enjoys or suffers the particular physical characteristics the product, good or service has when using it in order to satisfy his or her expressed needs."

**TABLE 2a:  
OPERATIONAL DEFINITIONS SUGGESTED IN THIS WORK BY THE AUTHOR.**

Needs	"Verbalized or expressed wanted and expected requirements in a product or service that will be sought by a consumer or user to satisfy lack of satisfaction in regard to some want, that must be present in a product or service, that must be received now and also in the future, and that will fully satisfy his or her requirements when receiving, consuming and using such products or services now or in the future for an adequate paid price."
Satisfaction	"Is achieved by a consumer or user of a product when his or her previously verbally expressed needs and expectations are met or even surpassed by the product or service received at the level of price paid to obtain them, without requiring any hassle or guarantee claims, considering that such products or services can be immediately used after it is acquired or received and that those goods (services) will last for all the expected duration of the service life of the product or service involved."
Total Quality	"Offer your Consumer-User, Products-Services at the adequate price level that will completely satisfy their current and future verbally expressed needs and expectations, which are done right at the first time without any excuses or delays."
Total Quality Control	"The statistical process of measuring and evaluating if the organization is actually offering its Consumer-User, Products-Services at the adequate price level that will completely satisfy their current and future verbally expressed needs and expectations, where everything must controlled to be done right at the first time without any excuses in all organizational areas involved in the operative, administrative, design, manufacturing, and delivery processes."
Total Quality Management.	"The leadership and managerial process required in an organization to continuously improve all its processes employing the statistical process of measuring and evaluating if the organization is actually offering its Consumer-User, Products-Services at the adequate price level which will completely satisfy their current and future verbally expressed needs and expectations, where everything must controlled to be done right at the first time without any excuses in all organizational areas involved in the operative, administrative, design, manufacturing, and delivery processes."
Total Quality Management Strategic Operations System (TQM-SOS)	"The managerial task of personally be thinking, planning, deciding, and acting to continuously lead, define, promote, participate, supervise and recognize all the participants for their utilization of the statistical process tools available for measuring and evaluating if the organization is actually offering its current and future consumers and users the products or services they verbally expressed as needing at the adequate price level that will completely satisfy their current and future needs and expectations, where everything must be done right at the first time without any excuses in all organizational areas involved and even be voluntarily willing to improve everything on a continuous basis to maintain the organization profitable and productive at the same time that respects the norms and values expected by its current and future context and environment, while appropriately rewarding and recognizing its employees for their efforts done in the process of delivering such products and services. Includes as a starting major task the usage of the "C-U NEW" methodology to define such consumers and users needs."

**TABLE 2b:  
DEFINITIONS FROM OTHER REFERENCES.**

<b>Terms:</b>	<b>Definitions:</b>
Culture	<p>"Development of the intellect through education and training. Intellectual and artistic taste and refinement. The arts, beliefs, customs institutions and all other products of human work and thought created by people or groups at a particular time." (The American Heritage Dictionary, 1988).</p> <p>"The act of developing by education and training. A particular form or stage of civilization." (Merriam-Webster, 1989).</p>
Consumers	"One that consumes. A buyer." (The American Heritage Dictionary, 1988).
Customers	<p>"One who buys goods or services especially on a regular basis." (The American Heritage Dictionary, 1988).</p> <p>"The person or organization that can behave as a consumer, user or both, of the product or service that is required to satisfy expressed needs." (Operational definition suggested in this work by the author).</p>
Effectiveness	<p>"Having an intended or desired effect." (The American Heritage Dictionary, 1988).</p> <p>"How closely an organization's output meets its goal and/or meets customer's requirement." (General Research Corporation, 1988).</p> <p>"Doing the right things on time, and in the right manner, in terms of goals, objectives, activities, goods, products, services, etc. Focuses upon what should be doing and have done. Issue on the output side." (Sink, Tuttle and DeVries, 1984).</p>
Efficiency	<p>"Ratio of the quantity of resources expected or planned to be consumed in meeting customer requirements to the resources actually consumed." (General Research Corporation, 1988).</p> <p>"The ratio of resources expected to be consumed on the right things to resources actually consumed. Issue on the input side." (Sink, Tuttle and DeVries, 1984).</p> <p>"Acting or producing effectively with a minimum of waste or effort. The ratio of effective or useful output to the total input in a system." (The American Heritage Dictionary, 1988).</p>
Financial Performance	<p>"The difference between revenue received and cost incurred, usually measured in relation to a financial plan or budget." (General Research Corporation, 1988).</p> <p>"A measure or set of measures that asses attributes of financial resource utilization." (Sink, Tuttle and DeVries, 1984).</p>
Goals	<p>"Broad statements of desired end-states which, when considered cumulatively, will lead to mission accomplishment. They should be Key Results Areas (KRAs) and thus, should collectively embrace all key mission components. Goals set specific directions of performance, excellence, quality, service and/or cost effectiveness. Typically remain valid over multiple planning periods, although they should be revisited annually and can be expected to be less stable than the mission and its attendant Key Results Areas." (General Research Corporation, 1988).</p> <p>"A desired result or purpose; objective." (The American Heritage Dictionary, 1988).</p>
Innovation	<p>"The extent to which the organization makes creative changes as required to meet customer expectation and/or adapt to changes in the environment." (General Research Corporation, 1988).</p> <p>"The creative process of adaptation of product, service, process, structure, etc., in response to internal as well as external pressures, demands, changes, needs, etc. Effective implementation of a creative new idea." (Sink, Tuttle and DeVries, 1984).</p> <p>"The introduction of something new. A new idea, method or device." (Merriam-Webster, 1989).</p>
Invention or Creation	"To create or produce for the first time. A device, contrivance, or process originated after study and experiment." (Merriam-Webster, 1989).

**TABLE 2b:  
DEFINITIONS FROM OTHER REFERENCES.**

Management	"Management involves the coordination of human and material resources toward objective accomplishment. Its basic elements can be identified as: (1) Toward objectives, (2) through people, (3) via techniques, and (4) in an organization. Is the process of planning, organizing and controlling activities. Is the primary force within organizations which coordinates the activities of the subsystems and relates them to the environment." (Kast and Rosenzweig, 1974).
Marketing Concept	"The key to achieving organizational goals consists in determining the needs and wants of target markets and delivering the desired satisfactions more effectively and efficiently than competitors." (Kotler, 1984).
Mission	"Describes the reason for existence of an organization (and of an activity). Broad and expected to remain in effect for an extended period of time. Often accompanied by an overarching philosophy or strategic purpose intended to convey a vision of the future and awareness of challenges from top-level perspective. Even if the organization has well-established written procedures, there should be a comprehensive and fresh look at the entire mission and operation of the organization." (General Research Corporation, 1988).
Needs	"A lack of something required or desirable. Necessity. Something required or wanted; requisite." (The American Heritage Dictionary, 1988).
Objectives	"Specific as to what, how much and when. Are verifiable commitments to results toward which resources will be allocated during a given period of time. They derive from goals and, when accomplished will move activities toward goal attainment. Provide a basis for setting performance indicator standards or targets." (General Research Corporation, 1988).  "The purpose of a specific action. Serving as the goal of a course of action. Something worked or striven for." (The American Heritage Dictionary, 1988).
Organization Performance Standards. (Indicators)	"Measure the degree of accomplishment of objective and, thus, quantify progress toward the attainment of goals within KRAs. Indicators themselves are formulas - precise specifications of the types and sources of numbers and calculations used to derive the relevant measurement." (General Research Corporation, 1988).  "Statement that quantifies and describes the desired level of quality, timeliness and efficiency of services to be provided by an organization." (Reagan, 1988).
Outputs	"Products or services delivered to the public." (Reagan, 1988).
Process	"A series of steps, actions, or operations used to bring about a desired result. A series of natural changes by which something passes from one condition to another." (The American Heritage Dictionary, 1988).
Productivity	"Ratio of outputs produced (or service transactions) to inputs required for production/completion. Productivity is an expected outcome of quality and a necessary companion to improving service." (General Research Corporation, 1988).  "Is the efficiency with which resources are used to produce a government service or product at specified levels of quality and timeliness." (Reagan, 1988).  "Ratio of quantities of output (goods and services from an organizational system over a period of time to quantities of input resources consumed by that organizational system for that period of time; or, the ratio of quantity at the desired quality level to resources actually consumed. It is an issue on both the input and output sides. Integrates effectiveness, efficiency and quality in one dimension." (Sink, Tuttle and DeVries, 1984).  "The rate of total true useful output produced per actual unit of total resources expended-simply put, the ratio of output to input." (Townsend and Gebhardt, 1990).
Productivity Improvement	A decrease in the unit costs of products or services delivered to the public, while maintaining specified standards of quality and timeliness." (Reagan, 1988).
Products	"Something produced naturally or by labor." (The American Heritage Dictionary, 1988).
Quality	"A combination of Quality in Fact and Quality in Perception. High Quality means defect free, in conformance to requirements and doing it right the first time- nothing less is expected." (Townsend and Gebhardt, 1990).  "Peculiar and essential character. Degree of excellence." (Merriam-Webster, 1989).  "The essential character of something. A characteristic or attribute; property." (The American Heritage Dictionary, 1988).

**TABLE 2b:  
DEFINITIONS FROM OTHER REFERENCES.**

Quality in Fact	<p>"The extent to which products and services produced conform to customer requirements. Customers can be internal as well as external to the organizational system." (General Research Corporation, 1988).</p> <p>"Productivity means counting the beans. Quality means making sure the bean plants grow well. But productivity is not quality. Quality incorporates productivity." (Townsend and Gebhardt, 1990).</p> <p>"Conformance to requirements.' (Crosby, 1979)." (Townsend and Gebhardt, 1990).</p> <p>"Fitness for use.' (Juran, 1990)." (Townsend and Gebhardt, 1990).</p> <p>"Conformance to specifications, fitness for use." (Sink, Tuttle and DeVries, 1984).</p>
Quality in Perception	<p>"The subjective quality as the customer sees it. Meets the customer's expectations. It means being believed to be as good as, or better than, the customer expects." (Townsend and Gebhardt, 1990).</p> <p>"Quality is what the customer perceives when he feels the product meets his needs and lives up to his expectations." (Thurston, 1985).</p> <p>"If you want it bad, you get it bad." (Collins, 1987).</p>
Quality Improvement	<p>"An increase in the conformance of a product or service to requirements or specification, and thus in the capability of a product or a service to meet customer expectations." (Reagan, 1988).</p>
Quality Master Plan	<p>"The quality master plan is the management system for the integration of quality principles and quality management tools into the organization. Just as quality must be built into a product or service, so must the quality process be built into the management structure and day-to-day activities. The quality improvement process is a continuous, never-ending series of actions based on new business principles that will result in a competitive business and/or organization. The quality improvement process means everyone working together to consistently provide the best value to his or her customer(s)." Russell (1990).</p>
Quality of Work Life. (QWL)	<p>"The extent to which the organizational culture provides employees with information, knowledge, authority and rewards to enable them to perform safely and effectively, be compensated equitably and maintain a sense of human dignity." (General Research Corporation, 1988).</p> <p>"Human beings affective response/reaction to working and living in organizational systems." (Sink, Tuttle and DeVries, 1984).</p> <p>"Live neither in the past or in the future, but let each day's work absorb all your interest, energy and enthusiasm. The best preparation for tomorrow is to do today's work superbly well. Sir William Osler." (Collins, 1987).</p> <p>"It's a funny thing about life... if you refuse to accept anything but the best, you often get it. Somerset Maugham." (Collins, 1987).</p> <p>"The six 'P'S': People, policy, procedures, practice, persistence and patience." (Collins, 1987).</p> <p>"QWL in its broadest sense encompass: a) Adequate and fair rewards. b) Safe, healthy and agreeable environment. c) Opportunity to use and develop human capacities. d) Feedback. e) Social integration. f) Decision-making opportunities. g) Promotion opportunities. h) Learning opportunities. i) Recognition and appreciation for work well done. j) Equity. k) Absence of stressful work. l) Prestige of the organization." (Holanda, 1993).</p>
Satisfaction	<p>"Payment through penance of punishment. Reparation of an insult. Settlement of a claim." (Merriam-Webster, 1989).</p>
Services	<p>"To act in a particular capacity. The act or means of serving. Duties performed as an occupation. Installation, maintenance, or repairs provided or guaranteed by a dealer or manufacturer." (The American Heritage Dictionary, 1988).</p>

**TABLE 2b:  
DEFINITIONS FROM OTHER REFERENCES.**

Scientific Management	<p>"The new duties of management are summarized from Taylor's Book of Principles of Scientific Management (1919), by Buffa and Sarin (1987), and are:</p> <ol style="list-style-type: none"> <li>1. The development of a science for each element of human work to replace the old rule-of-thumb methods.</li> <li>2. The scientific selection, training, and development of workers instead of the old practice of allowing workers to choose their own tasks and train themselves as best they could.</li> <li>3. The development of a spirit of hearty cooperation between workers and management to ensure that work would be carried out in accordance with scientific procedures.</li> <li>4. The division of work between workers and management in almost equal shares, each group taking over the work for which it was best fitted, instead of the former condition in which most of the work and responsibility fell on the workers."</li> </ol> <p>"The primary emphasis was on planning, standardizing, and improving human effort at the operative level in order to maximize output with minimum input. Management must plan, organize and control task performance." (Kast and Rosenzweig, 1974).</p>
Timeliness	<p>"Occurring at a suitable or opportune moment." (The American Heritage Dictionary, 1988).</p> <p>"The promptness with which quality products and services are delivered, relative to customer expectations." (General Research Corporation, 1988).</p>
Total Quality	<p>"Total Quality is Total Dedication to Continuous Customer Satisfaction." (Dan Ciampa, 1992).</p>
Total Quality Control	<p>"Effective system of the efforts of various group within an organization for the integration of the development, maintenance and improvement of quality, with the objective of making possible marketing, engineering, manufacturing and service, for total satisfaction of the customer at the most economical level." (Feigenbaum, 1987).</p>
Total Quality Management.	<p>U.S. Defense Department official definition: "Total Quality Management is both a philosophy and a set of guiding principles that represent the foundation of a continuous improving organization. TQM is the application of quantitative methods and human resources to improve the material and services supplied to an organization, all the processes within an organization and the degree to which the needs of the customer are met, now and in the future. Provides a comprehensive way to improve quality by examining the way work gets done in a systematic, integrated, consistent, organization-wide perspective." (Scott, 1990).</p> <p>"Japanese Quality Control is a revolution of the way management thinks. Practicing Quality Control is develop, design, manufacture and maintain a quality product that is the most economic, the most useful and always satisfactory for the customer." (Ishikawa, 1986).</p> <p>Mexican Secretary of Commerce and Industry definition: "Quality Management determines and implements the quality policy which includes strategic planning. Also the assignment of resources and other systematic actions in the quality field such as quality planning, development of operative activities and of evaluation related to quality." (SECOFI - DGN NOM-CC-1-1990).</p>
Users	<p>"One that uses." (The American Heritage Dictionary, 1988).</p>
Values	<p>"The standards or principles by which the worth of something is judged." (Rosnow and Rosenthal, 1984).</p> <p>"Are objectives, meaning, that they maintain their real form above our appreciations. Appear as ideal qualities of objects, which help them to be located outside of time or space. Have polarity, thus the possibility of being positive or negative exists and a hierarchic order, making them different among them." (Espasa Encyclopedic Dictionary, 1979).</p>
Value	<p>"The assessment by the customer of his satisfaction with the degree of excellence and the fair return he or she receives in products or services for his or her payments to and relationships with the corporation providing such products or services." (Townsend and Gebhardt, 1990).</p> <p>"A fair equivalent return for something, as goods or services. Monetary or material worth. Worth as measured in usefulness or importance. Merit. A principle, standard, or quality considered inherently worthwhile or desirable." (The American Heritage Dictionary, 1988).</p> <p>"Degree of utility or ability of things, to satisfy needs or offer well being or delight. Quality or trait of things, based on which money or equivalent is given in exchange to the current owner to possess them." (Espasa Encyclopedic Dictionary, 1979).</p>

**TABLE 2b:  
DEFINITIONS FROM OTHER REFERENCES.**

Vision	<p>"Identifies the purpose of the organization and the required things that must be done to remain competitive in the future. Needs to focus on continuous improvement of its products and services." (General Research Corporation, 1988).</p> <p>"Unusual foresight. A mental image produced by imagination." (The American Heritage Dictionary, 1988).</p> <p>"Unusual wisdom in foreseeing what is going to happen." (Merriam-Webster, 1989).</p> <p>"A mental image of a possible and desirable future state of the organization. May be as vague as a dream or as precise as a goal or mission statement." (Bennis and Nanus, 1985).</p>
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### **TABLE 3.**

#### **IMPORTANT TRAITS AND CHARACTERISTICS REQUIRED BY SUPERVISORS IN ORDER TO IMPLEMENT POLICIES OR SYSTEMS**

**REFERENCE: (Beyer and Trice, 1978)**

##### **PRINCIPAL TRAITS REQUIRED IN SUPERVISORS:**

###### **A. Individual Characteristics:**

1. Demographic characteristics yield mixed results.
2. Attitudes toward work also produced mixed results. The major positive effects of job involvement are in the supervisor's readiness to use the policy, as evidenced by policy-supportive attitudes, and not in the earlier diffusion stage or the later use stage. The most important attitude in predicting implementation of the policies by supervisors is clearly their attitude toward change. As in the case of job involvement, the impact of this variable is primarily in the receptivity stage.
3. In any case, the results indicate that support of certain types of organizational members cannot be taken for granted when contemplating change efforts.

###### **B. Role Characteristics:**

1. Number of years in the position, tenure, is positively related to both perceived need and past use of alcoholism policy and negatively related to training topics and administrative emphasis for this policy. Managerial experience may lead to greater appreciation of need for these policies.
2. The results for work overload and skill level of the participants are mixed.
3. For both policies, the emphasis on performance for promotion is positively related to expected use, while emphasis in seniority in promotion is negatively related to expected policy use in the future. All together, the consistency of these findings suggest that the reward structure has effects on the implementation of changes in these federal organizations.

**CONTINUATION TABLE 3:**

**C. Organizational Characteristics:**

1. Supervisors in larger installations are consistently more likely to implement the policies.

2. The presence of a union within the installation produces mixed effects.

3. The average span of control of supervisors, measured as the percentage of supervision, is generally positively related to implementation of both policies, although results are somewhat mixed.

4. Expected use of the policy is not higher when centralization is higher.

## **TABLE 4.**

### **PRINCIPAL POINTS AND REQUIREMENTS OFFERED BY DEMING.**

**REFERENCES: (Deming, 1982), (Walton, 1986), (Neuman, 1993).**

"Quality is not produced by inspection but through the improvement of the process."

#### **A. Central Philosophical Thoughts:**

"We trust God. All the rest must use data."

"The consumer is the piece most important in the production line. What is needed by the customer? How can we serve him/her? What he/she thinks that he/she needs? Can he/she pay it? Nobody has all the answers. Luckily, it is not necessary to have all the answer to manage correctly."

"It is necessary to transform Management in America. This does not mean only a reconstruction or a revision. A completely new structure is required, from the base to the top."

"The fundamental cause for the sickness of American industry and its related unemployment is management failure, that does not manage. One that can not sell can not buy."

"Management has new tasks to perform. The answer is not in each one doing the best he/she knows. First it is necessary that persons know what must be done."

"In Japan, the principal objective of consumer research consists in understanding needs and wants of the consumers, and with them design the product or service that offers a better life in the future."

**CONTINUATION TABLE 4:**

**B. Deming's 14 points for Management Quality Improvement:**

1. Create continuous improvement of the products and services.
2. Adopt a new philosophy. We can't live longer with the commonly accepted levels of delays, errors, materials and manufacturing full of defects.
3. Eliminate the dependency on massive inspection. Instead, request statistical evidence of quality improvement.
4. Finish with the established custom of doing business based only on price.
5. Continuously improve the production or services systems. Finding problems, working on the system, is the responsibility of management.
6. Implement modern training methods in the workplace.
7. Implement leadership. Implement modern methods of production worker supervision. Responsibility of supervisors must be changed from quantities to quality.
8. Eliminate fear, such that all workers can perform satisfactorily and efficiently for the organization.
9. Tear down all walls and obstacles that exist between existing departments.
10. Eliminate numerical goals, posters and slogans for the work force that ask for higher levels of productivity without providing adequate methods to achieve them.
11. Eliminate work standards for the work force prescribing numerical goals without providing adequate methods to achieve them.
12. Eliminate obstacles that stand between the worker and his/her rights to be proud of a work well done.
13. Implement a vigorous retraining and education plan.
14. Create a special structure in the top management level to promote the previous points everyday thus achieving the transformation.

#### **CONTINUATION TABLE 4:**

##### **C. 7 Tools for Quality Improvement:**

1. Cause and effect diagram (Ishikawa's Fish-bone diagram).
2. Flow charts.
3. Pareto diagram.
4. Tendency charts.
5. Histograms.
6. Control charts.
7. Scatter diagram.

##### **D. 7 Deadly Illnesses**

1. Lack of constancy of purpose.
2. Short term profits emphasis.
3. Performance appraisal and personnel classification based on annual merit analysis.
4. Excessive top management mobility.
5. Manage the company only considering visible numbers (counting the money).
6. Excessive medical costs.
7. Excessive guarantee costs.

## **TABLE 5.**

### **PRINCIPAL POINTS AND REQUIREMENTS OFFERED BY JURAN:**

**REFERENCES: (Juran, 1988), (Neuman, 1993).**

#### **A. Juran's Central Philosophical Thoughts:**

"Many businesses have to suffer large losses and scrap that are mainly due to deficiencies in the process of Planning for Quality. The principal observed losses have been: 1) Sales decreases. 2) High quality costs. 3) endangerment of society."

"It is important to create consciousness about the quality crisis, and the role Planning for Quality plays in that crisis and the need to review the current focus of Planning for Quality."

"There are internal as well as external customers in any organization. Customers are all the persons that can get affected by our processes and products."

"It is important to discover current needs in customers and afterwards translate from their language to our language those needs. With these last establish measurement units that define those needs. (For more details refer to Juran's (1988), Road Map about Planning for Quality)."

#### **B. General Guide Lines for Quality Planning:**

1. Create general consciousness about the quality crisis, and the role Planning for Quality plays in the future of the organization.
2. Establish a new purpose for Planning for Quality.
3. Offer training about the new way of doing Planning for Quality.
4. Help organization personnel to review current planning of processes with deficiencies of quality that are unacceptable.

## **CONTINUATION TABLE 5:**

### **C. Guide Lines for Quality Improvement:**

1. Identify who are the customers?
2. Define what are the needs of the customers?
  - a. Own point of view manifested needs.
  - b. Perceived needs:
    - b.1 Related to the product
    - b.2 Related to cultural aspects.
  - c. Needs related to the unintended use of the product.
3. Processes to detect customers needs:
  - a. Be the customer.
  - b. Be in touch with customers. Communicate with them.
    - b.1. Communication started by the customer.
    - b.2. Communication started by supplier.
    - b.3. Communication by human behavior.
    - b.4. Surveys and sampling.
  - c. Simulate usage as customers.
4. Organize needs according to a logic system of needs:
  - a. Primary needs.
  - b. Secondary needs.
  - c. Tertiary needs.
5. Translate needs:
  - a. Glossary of terms.
  - b. Samples.
  - c. Special organization for translation purposes.
  - d. Normalization.
  - e. "Products" or "Objectives" for management (internal customers):
    - e.1. Policies.
    - e.2. Objectives.
    - e.3. Plans.
    - e.4. Organization Structure.
    - e.5. Orders.
    - e.6. Councils.
    - e.7. Incentives.
    - e.8. Audits.
  - f. Measures.
6. Define customer needs in measurable units.
7. Establish measurement methods:
  - a. Apply measurement sensors.
  - b. Sensors variation.
  - c. Sensors functions.
  - d. Precision, accuracy and maintenance of sensors.

**CONTINUATION TABLE 5:**

8. Development of the product.
  - a. Product characteristics.
    - a.1. Satisfy customer needs
    - a.2. Satisfy our needs.
  - b. Competitiveness.
  - c. Costs optimization.
  - d. Process characteristics.
  - e. Analysis of possible failures in the product or process.
  - f. Value analysis.
9. Optimization of the product design.
10. Development of the process.
  - a. Define what is the process.
  - b. Define responsibility of planning the process.
  - c. Process capability.
  - d. Process variation.
  - e. Process design:
    - e.1. How will the process be used?
    - e.2. Environmental condition were the process will be used.
    - e.3. Analysis of the process design.
    - e.4. Process anatomy.
    - e.5. Tasks for process design:
      - Establish relationship between process variables and product results.
      - Supply measurement capacity.
      - Establish adjustment capacity.
      - Transfer process to operations.
    - e.6. Plan process control.
      - Auto control.
      - Control objectives.
      - Responsibility of planning process controls.
      - Process control analysis chart.
        - \* Operation control.
        - \* Product control.
        - \* Installations control.

**CONTINUATION TABLE 5:**

**D. Juran's 10 Points to achieve Quality Improvement:**

1. Construct the consciousness about the need and opportunity for improvement.
2. Establish goals for improvement.
3. Organize the achievement of objectives:
  - a. Establish a quality council.
  - b. Identify quality problems.
  - c. Select projects.
  - d. Set teams.
  - e. Designate participants.
4. Offer proper training.
5. Realize projects to solve problems.
6. Inform about achieved progress.
7. Offer recognition to participants.
8. Communicate results achieved.
9. Maintain a record.
10. Maintain the effort of achieving annual improvements as part of the organization's strategy.

## TABLE 6.

### PRINCIPAL POINTS AND REQUIREMENTS OFFERED BY ISHIKAWA:

REFERENCES: (Ishikawa, 1986), (Ishikawa, 1989), (Neuman, 1993).

"If we employ the following ideas, each of us will give the best of himself or herself and quality will be controlled without inspection from the work place.  
This is respectful management of the human being."

"QC starts and ends with education."

#### A. Central Philosophical Thoughts:

1. "Modern Quality Control constitutes a revolution in management thinking, and implementing it company wide can dramatically improve a company's corporate culture. This revolution implies a positive evolution of the individuals, the organizations where these individuals work, the country in which these organizations are and the world in general. Thus, global peace will be achieved."
2. "Education must be started and given from the President of the Corporation all the way down to the workers and everybody must practice it by following clear policies about it and lines of authority and responsibility equally clear."
3. "Quality Control requires continuous education to be implemented and maintained, it is not a miraculous drug. The education given, will reflect magnificent financial results in the long term, providing quality results are obtained from the beginning."
4. "As industry advances and society modernizes, quality control becomes more and more important."
5. "If every nation plays its part in promoting quality control, the world will find peace, and its people will be able to live together harmoniously and happily."
6. "We should all strive to create a lively, cheerful atmosphere within our companies and to build happy lives for our countries and the world."
7. "All around the world the consumer needs satisfaction and all the individuals are able to work in their level to offer it."

## **CONTINUATION TABLE 6:**

### **B. General Guide Lines for Quality Improvement:**

1. "Put ourselves in the role of the consumer and try to satisfy ourselves."
2. "Know the requirements of the consumer."
3. "Know what the consumer will purchase."
4. "Relate cost with quality (What I do give Vs. What I do receive)."
5. "Anticipate potential defects and complaints."

### **C. Operative Guide Lines for Quality Improvement:**

1. "Quality Control achievement must be assured with facts."
2. "Quality Control is always achieved with objective and continuously done measurements."
3. "Measurement is statistical and also from opinions (this last is measured by the degree of purchase and repurchase of our products)."
4. "We sell products or services and not prices."
5. "Quality Control must be equally applied to Machining, 'Maquilas,' Purchasing, Marketing or any other areas involved in the generation of the products or services offered by the organization."

### **D. Principal Objectives Sought with Quality Control:**

1. Strengthen a country's economic base by making it possible to export high-quality, reasonably-priced products in large volumes.
2. Secure a solid economic foundation for the future.
3. Enable companies to share their profits fairly among consumers, employees and company investment and raise their nation's standard of living.

### **E. The Four Principal Aspects of Quality:**

"Talk of making good-quality products is often misunderstood as making products of the best possible quality. However, when we talk about quality in quality control, we are talking about designing, manufacturing, and selling products of a quality that will actually satisfy the consumer in use. In other words, 'good quality' means the best quality that a company can produce with its present production technology and process capability, and that will satisfy the consumer's needs, in terms of factors such as cost and intended use."

## **CONTINUATION TABLE 6:**

"We wish to produce good quality for the consumer; we must therefore decide in advance what quality of product to plan, design, produce, control and sell."

1. "Q" - Quality: Quality Characteristics in their narrow sense.
2. "C" - Cost.
3. "D" - Delivery: Delivery Characteristics related to quantities and lead times.
4. "S" - Service: Problems that can arise after products have been shipped.

### **F. Evaluation Checklist for the Deming Prize Application:**

1. Policies and Objectives:
  - a. Policies related to management, quality and quality control.
  - b. Methods used to determine policies and objectives.
  - c. Correction and consistency of the content of objectives.
  - d. Utilization of statistical methods.
  - e. Diffusion and comprehension of objectives.
  - f. Verification of objectives and its execution.
  - g. Relation between long and short term plans.
2. The Organization and its Operation:
  - a. Clear division of responsibilities.
  - b. Appropriate power delegation.
  - c. Cooperation of divisions.
  - d. Committees activities.
  - e. Utilization by top management.
  - f. Utilization of Quality Circles in the organization.
  - g. Quality Control audits. (Quality Assurance).
3. Education and its diffusion:
  - a. Executive plan and its practical implementation.
  - b. Awareness and understanding of quality and quality control.
  - c. Education about quality concepts and statistical methods.
  - d. Ability to understand effects of education process.
  - e. Supplier and vendors education programs.
  - f. Quality Circles activities.
  - g. Suggestions System.
4. Information gathering, Usage and its Diffusion:
  - a. Outside information gathering.
  - b. Diffusion of information between divisions.
  - c. Information diffusion velocity (Computers support).
  - d. Statistical Analysis of the information and its utilization.

## **CONTINUATION TABLE 6:**

### **5. Analysis:**

- a. Problems and important subjects selection.
- b. Analytical Method convenience.
- c. Statistical Methods utilization.
- d. Relation with its own engineering techniques.
- e. Quality and Process Analysis.
- f. Usage of analysis results.
- g. Positive improvement suggestions.

### **6. Standardization:**

- a. Norms and Standards System.
- b. Methods to establish, review and discard norms.
- c. Content of the standards employed.
- d. Utilization of statistical methods.
- e. Technology enhancement.
- f. Norms utilization.

### **7. Control:**

- a. Control System for quality and other areas compared to costs and quantity.
- b. Quality points and control lines.
- c. Utilization of the control charts and general acceptance of statistical criteria.
- d. Contribution of Quality Circles activities.
- e. Current state of control activities.
- f. Current state of control system.

### **8. Quality Guarantee:**

- a. Procedures to develop new products.
- b. Quality development (analysis of quality function), confidence and review of designs.
- c. Security measures and prevention of the legal liabilities.
- d. Control and improvement of the process.
- e. Process capability
- f. Measurement and inspection.
- g. Installations and equipment, subcontractors, suppliers, purchases, services, etc., control.
- h. Quality guarantee systems and its review.
- i. Utilization of statistical methods.
- j. Evaluation and review of quality.
- k. Practical status of the quality guarantee.

## **CONTINUATION TABLE 6:**

### **9. Effects:**

- a. Effects measurements.
- b. Visible effects such as: quality, service conditions, delivery dates, costs, profits, security, environment, etc.
- c. Invisible effects.
- d. Compatibility between predicted and real effects.

### **10. Future Plans:**

- a. Actual conditions understanding and its precision.
- b. Policies adopted to correct mistakes.
- c. Future promotion plans.
- d. Relationship with the organization's long term plans.

## **G. Obstacles to Improvement:**

"Progress and development only occur when various types of improvement, starting with quality improvement, are implemented. In times of rapid technological innovation and economic change, such as today, maintaining the status quo and failing to carry out innovative improvement actually means slipping back. The history of the rise and fall of companies proves that an organization will drop out of the race if it continues to adopt the outmoded approach of either acting recklessly ('crossing a stone bridge without checking it') or over cautiously ('checking a stone bridge, then not crossing it'). In this day and age, a more apt approach would be, "How quickly can we act with caution?" or "How quickly can we check the stone bridge then cross it?"

"Why, then, are active improvements and advances not implemented? The main enemy of improvement is people, and some of the barriers they erect are:

1. Negative attitudes on the part of those in authority, starting with company presidents and going down through operations department directors, factory managers, and sales directors to section managers. This is actually the crux of the problem, but we can go in further detail.
2. Believing that everything is hunky-dory and no problems exist.
3. Believing that things are going better in one's own preserve than anywhere else.
4. Believing that "the way it's been done" is easiest and best; trusting only one's own experience and nobody else's.
5. Being satisfied with the status quo.
6. Thinking of oneself and one's own area of responsibility; being unable to listen to the views of others.
7. The absence of stimuli from outside the department or company.

### **CONTINUATION TABLE 6:**

8. Resignation, jealous, envy.
9. Bad judgment on the part of superiors and directors; fear of losing face.
10. Sectionalism.
11. Cutting others out in pursuit of one's own ambitions.
12. Inadequate technical and statistical knowledge, intellect, resourcefulness, originality, judgment, and practical ability.
13. Doing nothing through fear of failure, since mistakes often occur when things are changed.
14. The practice of superiors always criticizing their subordinates' mistakes and never praising them for their successes.
15. The attitudes of those engaged in office work, and in workplaces and labor unions that lack understanding, since these can be the most old fashioned of all.

"These are just some of the many obstacles standing in the way of the desire to carry out improvement, and most of them are erected by people. To break through these barriers requires self-confidence, courage, a spirit of cooperation, an ardent pioneering spirit, and the motivation to make breakthroughs, together with the right tactics, strategy, and techniques, and unceasing effort."

"The greatest obstacles to new products, new methods and other improvements are within your company! Without overcoming this 'fifth column,' progress is impossible."

#### **H. The Basic Conditions for Improvement.**

1. Managers must take the lead and demonstrate their desire for improvement. They must communicate basic policy (company policy, etc.) and specific goals and imbue the entire company with an atmosphere charged with zealous pioneering spirit and an eagerness to achieve improvements and breakthroughs.
2. The right people must be placed in the right jobs, and authority should be extensively delegated.
3. Those in positions of authority must take the lead in the drive for improvement, constantly searching for better things and better methods, and superiors must take responsibility for their charge's mistakes. The 'protruding nail will be pounded down' type of atmosphere must also be eliminated.
4. Systems for actively recording and carefully investigating complaints and problems from both within and outside the company should be set up. and an atmosphere that encourages this must be created.

#### **CONTINUATION TABLE 6:**

5. People should be receptive to stimuli from outside sources as free competition, a recession, liberalization of trade or capital, the appointment of outside directors, audits and advice by consultants, consumer complaints, or showing things to staff or people from other departments and getting their views.
6. A suggestion system should be started, creativity and ingenuity encouraged, standards revised, and brainstorming sessions held.
7. Personnel should periodically be reshuffled and organizations improved.
8. Systems of reward and punishment, especially awards systems, should be clarified.
9. People should be given the chance to experience the spirit of cooperation and teamwork.
10. Education must be carried out, especially thorough education in Quality Control thinking and methods.

"In short, all the employees of our company, or if that is impossible, at least everyone in our workplace, should be filled with tireless fighting spirit and creative dissatisfaction with the status quo. They must be driven by a pioneering spirit that keeps them moving forward, putting constant pressure on their superiors to break out of the mold. New-product development, process control, and improvement all depend on people. Unless people change the way they think and feel, there will be no continual improvement and progress. However, although attitudes are important, motivation campaigns alone are not enough; you cannot expect to win a battle without putting up a fight. So, as discussed below, proper technology and statistical methods must be used for process analysis so that improvements can be implemented scientifically based on accurate grasp of the facts."

"Saying that QC won't work in our industry because we're different from the rest is just an excuse for lack of motivation."

**TABLE 7.**

**PRINCIPAL POINTS AND REQUIREMENTS OFFERED BY CROSBY:**

**REFERENCES: (Crosby, 1979), (Crosby, 1984), (Neuman, 1993).**

**"Good things only happen when planned; bad things happen on their own."**

**A. Integrity System Support Legs: "Quality Management is a systematic way of guaranteeing that organized activities happen the way they are planned and it must start at the top."**

1. Management Participation and Attitude.
2. Professional Quality Management.
3. Original Programs.
4. Recognition.

**B. Corporate Quality Program Integrity Systems:**

1. Quality Control.
2. Reliability.
3. Quality Engineering.
4. Supplier Quality.
5. Inspection.
6. Product Qualification.
7. Training.
8. Testing.
9. Consumer Affairs.
10. Quality Improvement
11. Metrology.

## **CONTINUATION TABLE 7:**

### **C. The Quality Absolutes:**

1. The First Absolute: The Definition of Quality is conformance to requirements, not elegance.
2. The Second Absolute: The System of Quality is Prevention. There is no such thing as economics of quality; it is always cheaper to do the job right the first time.
3. The Third Absolute: The Performance Standard is Zero Defects.
4. The Fourth Absolute: The Measurement of Quality is the Price of Non conformance.

### **D. The Fourteen Steps for Quality Improvement Implementation:**

1. Management Commitment with Quality.
2. Quality Improvement Teams must be employed.
3. Quality Measurement. Define where the current or potential quality problems are.
4. Cost of Quality Evaluation.
5. Quality Awareness.
6. Corrective Action.
7. Zero Defects Planning.
8. Supervisors and Employees Education and Training.
9. Zero Defects Day Celebration is established so employees understand a change has happened.
10. Improvement Goals Setting.
11. Error-Cause removal. Promote employees communications of obstacles found to achieve improvement goals.
12. Thank and Recognize participants.
13. Quality Councils.
14. Do It Over Again.

### **E. The Quality phases an organization can move on:**

1. Uncertainty: We don't know why we have problems with quality.
2. Awakening: Is it absolutely necessary to always have problems with quality?
3. Enlightenment: Through management commitment and quality improvement we are identifying and resolving our problems.
4. Wisdom: Defect prevention is a routine part of our operation.
5. Certainty: We know why we do not have problems with quality!

## **CONTINUATION TABLE 7:**

### **F. Management Style Checklist:**

1. Listening.
2. Cooperating.
3. Helping.
4. Transmitting.
5. Creating.
6. Implementing.
7. Learning.
8. Leading.
9. Following.
10. Pretending.

### **G. Management Character:**

1. Integrity.
2. Compassion.
3. Determination.
4. Education.

### **H. Quality Improvement Self Evaluation:**

1. "Do I really understand the cause of the defects that occur?"
2. "What are the most frequent defects occurring in my area?"
3. "What defects occurring are the most expensive to repair?"
4. "Do I feel that any of them are the fault of my people or myself?" "If so, which ones?" "If not, who do I feel is responsible?"
5. "Have I talked with the other departments involved about the defects that concern to me?" "What was their reaction?"
6. "If I could eliminate three problems, what would they be?"
7. "Do I feel that I am personally responsible for causing these three problems?"

### **I. Problem Analysis Review:**

1. "How do I know the problem exists?"
2. "What is the apparent cause of the problem?"
3. "What do the other people involved say the apparent cause is? (Does it agree with yours?)."
4. "Have I asked anyone not directly involved to look at it?" "What did this person say?"

**CONTINUATION TABLE 7:**

**J. The Profile of a Quality-Troubled company (Questionnaire):**

1. Our services and/or products normally contain waivers, deviations, and other indications of their not conforming to requirements?
  - a. That's us all the way ( ).
  - b. Some is true ( ).
  - c. We're not like that ( ).
2. We have a "fix-it"-oriented field service and/or dealer organization?
  - a. That's us all the way ( ).
  - b. Some is true ( ).
  - c. We're not like that ( ).
3. Our employees do not know what management wants from them concerning quality?
  - a. That's us all the way ( ).
  - b. Some is true ( ).
  - c. We're not like that ( ).
4. Management does not know what the price of non conformance really is?
  - a. That's us all the way ( ).
  - b. Some is true ( ).
  - c. We're not like that ( ).
5. Management believes that quality is a problem caused by something other than management action?
  - a. That's us all the way ( ).
  - b. Some is true ( ).
  - c. We're not like that ( ).

**K. Expected Results of Suggested Actions:**

**1. Integrity:**

a. "The chief executive officer is dedicated to having the customer receive what was promised, believes that the company will prosper only when employees feel the same way, and is determined that neither customer nor employees will be hassled."

b. "Chief operating officer believes that management performance is a complete function requiring that quality be "first among equals"-schedule and cost."

c. "The senior executives, who report to those in A and B above, take requirements so seriously that they can't stand deviations."

d. "The managers who work for the senior executives know that the future rests with their ability to get things done through people- right the first time."

## **CONTINUATION TABLE 7:**

e. "The professional employees know that the accuracy and completeness of their work determines the effectiveness of the entire work force."

f. "The employees as a whole recognize that their individual commitment to the integrity of requirements is what makes the company sound."

### **2. Systems:**

a. "The quality management function is dedicated to measuring conformance to requirements and reporting any differences accurately."

b. "The Quality Education System (QES) ensures that all employees of the company have a common language of quality and understand their personal role in causing quality to be routine."

c. "The financial method of measuring non conformance and conformance costs is used to evaluate processes."

d. "The use of the company's services or products by customers is measured and reported in a manner that causes corrective action to occur."

e. "The company wide emphasis on defect prevention serves as a base for continual review and planning that utilizes current and past experience to keep the past from repeating itself."

### **3. Communications:**

a. "Information about the progress of quality improvement and achievement actions is continually supplied to all employees."

b. "Recognition programs applicable to all levels of responsibility are a part of normal operations."

c. "Each person in the company can, with very little effort, identify error, waste, opportunity, or any other concern to top management quickly and receive an immediate answer."

d. "Each management status meeting begins with a factual and financial review of quality."

### **4. Operations:**

a. "Suppliers are educated and supported in order to ensure that they will deliver services and products that are dependable and on time."

b. "Procedures, products, and systems are equally qualified and proven prior to implementation and then continually examined and officially modified when an opportunity for improvement is seen."

c. "Training is a routine activity for all tasks and is particularly integrated into new processes or procedures."

## CONTINUATION TABLE 7:

### 5. Policy:

- a. "The policies on quality are clear and unambiguous."
- b. "The quality function reports on the same level as those functions that are being measured and has complete freedom of activity."
- c. "Advertising and all external communications must be completely in compliance with the requirements that the products and services must meet."

"Quality has much in common with sex. Everyone is for it. (Under certain conditions, of course.) Everyone feels they understand it. (Even though they wouldn't want to explain it.) Everyone thinks execution is only a matter of following natural inclinations. (After all, we do get along somehow.) And, of course, most people feel that all problems in these areas are caused by other people. (If only they would take time to do things right.) In a world where half marriages end in divorce or separation, such assumptions are open to question."

"Operating managers interest in Quality is proportional to the amount of profit-deterioration situations they are experiencing at that exact moment."

## **TABLE 8.**

### **RECOMMENDED WORK GROUP PROCESSES:**

#### **A. BRAINSTORMING:**

**REFERENCES: (J. P. Russell, 1990), (P. R. Scholtes,1991).**

##### **1. Purpose:**

a. Generate without any restrictions all kind of creative ideas within a work group environment trying to solve a problem.

##### **2. Rules:**

- a. Everyone is motivated and gets to participate.
- b. Everyone can comment during their turn or later.
- c. As many ideas as possible are given.
- d. No arguing, criticism, or evaluation during the ideas presenting session.
- e. All the given ideas are ranked and sorted (category, importance, priority, benefits, cost, impact, time, etc.) using a big chart paper to work on or a large board.

##### **3. Methodology:**

- a. Review the subject, defining the scope of the brainstorming activity that will follow. Ask all kind of questions.
- b. Allow one or two minutes to think about the question and its possible answer.
- c. Invite each of the participants to present their ideas.
- d. Write all the ideas in the paper in front of everybody. Verify their accuracy.

## **CONTINUATION TABLE 8:**

### **B. NOMINAL GROUP TECHNIQUE (NGT):**

**REFERENCE: (P. R. Scholtes,1991).**

#### **1. Purpose:**

a. It is a more structured process to generate a list of ideas from a group trying to solve a problem than the brainstorming approach.

b. It is called "Nominal" because during the session the group does not interact as much as a usual or typical real work group.

c. It is recommended when participants do not know each other. It is also appropriate when the topic creates some controversy or when disagreement between the participants can be expected.

#### **2. Rules and Methodology:**

a. First Part: "A formalized brainstorming session" to obtain a list of ideas will follow:

a.1. Define the activity in terms of a question as in a brainstorming session would be done.

a.2. Describe the purpose of the session and its rules and procedures.

a.3. Present, write on the board and clarify the question. With this everybody can refer to the question at any moment during the session.

a.4. Generate ideas. The most important step of the technique. "All the participants must write their answers in silence and individually." Experience has shown that this is the best way to obtain good ideas. No distractions of any kind are allowed during this stage. Participants that finish first must wait until the rest finish too.

a.5. Prepare a list with all the ideas when everybody is finished. Each of the participants around the table must read one of his/her ideas. Write each of the ideas on the board. Taking turns complete the reading of all the ideas of all the participants or until time allows. In this part of the session is very important not to allow any discussions, not even questions to clarify what has been written is allowed also.

a.6. Clarify and discuss all the ideas. All charts must be seen by all the participants. Ask if anybody has any question about any of the subjects on the list in front. The supplier of the idea must answer the question asked, but anybody can participate in the discussion to help define and focus the idea's presentation. Only the facilitator of the session can modify the edition of the idea, but only, when the person that gave the idea agrees to do so.

### **CONTINUATION TABLE 8:**

a.7. When no more ideas or questions would be available, the facilitator will condense the list of ideas. Combination of ideas is possible but only if the persons that offered them agree to do so.

b. Second Part: "Selecting from the list" to reduce the options and select the preferences of the group will follow:

b.1. If the list has more than fifty (50) subjects, it is mandatory to reduce it to that number or less if possible. Multiple rounds of voting can be employed to accomplish such purpose. Participants can delete the less important ones that way. Nobody can take away any idea from the list unless the person that offered it agrees to do that.

b.2. Give 4, 6 or 8 cards to each of the participants. (4 if the number of ideas is up to 20, 6 from 21 to 34 ideas and 8 if the number of ideas goes from 35-50).

b.3. The participants to the exercise select on an individual basis the ideas they consider as more important from the list on the board without any pressure from other participants. (They pick one idea and write it in a card. An idea per card only).

b.4. The participants will give a grade point to each of the ideas selected and written on the cards. The highest point value will be given to the most important idea he has selected. If the number of cards given to each person is eight (8) for example, then the highest value to be given to the most important idea will be 8. The second idea in importance for the participant would get then a 7 in the respective card. The least valued idea in the list will be given a one point grade. No ties are allowed in this grading point system.

b.5. After each participant has assigned their personal grade to each of the selected ideas, the cards are collected by the facilitator and the votes are counted and the grades are added. The counting and adding can be done on the list that is on the board. After the votes are counted and grades added the ideas with the highest number of votes and with the higher total sum of added grades will be known. Consideration as the most important idea must be given to the idea that obtained the highest total grade value as the topmost important selected by the group.

b.6. The group then reviews the results achieved and discusses them. If there is time a Pareto Chart is used to show the results of the exercise.

### **CONTINUATION TABLE 8:**

b.7. If agreement or consensus is achieved by the participants about the most important idea, then the group needs to decide what to do about such result. If there is no agreement yet, then the group can concentrate its efforts to decide about defining the most important idea and next activities among the three most important ideas in the Pareto Chart analysis just accomplished.

### **C. QUALITY CIRCLES:**

**REFERENCES: (P. C. Thompson, 1982), (R. Barra, 1983).**

#### **1. Purpose:**

- a. Increase the morale in the organization through recognition of the intellectual potential of the employees and personal growth.
- b. Enhance the loyalty of the work force to the organization.
- c. Create an environment of team-work and participation among workers where creativity is allowed and promoted by top management.
- d. Reduce the motives for complaints, lost time, accidents, fights, frictions, absenteeism and lateness.
- e. Solve problems related to their work area. "The people that do a job everyday know more about it than anybody else".
- f. Study techniques to improve quality and productivity of their work.
- g. Save money.

#### **2. Rules:**

- a. The group is voluntarily integrated by a small number of people working in the same shop or area. Usually from 4 to 15 members can participate in the circle. The norm is 8 people. Voluntarily means that whoever wants to join or not a circle can do so. They also can delay their entrance, drop it or rejoin the circle whenever they want.
- b. All the members work under the command of the same supervisor that also participates in the circle.
- c. Generally but not always the supervisor is the leader of the circle. As leader of the circle some of his or her responsibilities are to moderate the discussions and try to reach consensus without giving orders or making decisions, which are finally made by all the members of the circle.

### **CONTINUATION TABLE 8:**

d. The circles meet usually once a week during paid work hours and receive remuneration for such activities. The meeting place is a especially prepared room for such purposes away from their work area.

e. The members of the circle receive special training about the rules of their involvement in a quality circle, the mechanics of the development of meetings and the way of doing presentations to management about all their activities. Training also covers techniques to solve problems in a group setting such as brainstorming, cause-effect analysis, flow-charts and Pareto analysis among others.

f. The members of the group are the ones that select the problem or project they want to work with and not management.

g. The circle gathers all the required information and receive all necessary support to analyze the problem and obtain a solution.

h. Technical experts and management offer their help with information and expertise when circle members do ask them to do so.

i. The circle is advised and oriented by a special advisor that assists to all the circle meetings but that is not considered as a member of the circle.

j. In the presentations to management are present managers and technical experts that usually have the authority to decide about a proposal offered.

k. The existence of the circles depends on the purpose of its members to voluntarily meet. Members can declare themselves in recess or continue their activities. They can meet once, for a month or two, for years, to solve one problem, two or hundreds.

### **3. Methodology:**

a. Identify problems, in depth study of the different techniques to improve quality-productivity and the design of solutions.

b. Explain, in a presentation to management, the proposed solution, so managers and technical experts related to the subject matter can decide if its implementation can be done practically.

c. The organization must be in charge of the general execution of the solution.

d. Evaluation of the success achieved by the implementation of the solution presented by the circle. This evaluation is done by the circle and the organization too.

e. An internal office in charge of coordinating the circle efforts must be organizationally defined and supported. A facilitator to coordinate the efforts needs to be selected and empowered.

f. Recognition must be offered to circle members that achieve the sought results.

**CONTINUATION TABLE 8:**

**D. FOCUS GROUP:**

**REFERENCE: (R. C. Whiteley, 1991).**

**1. Purpose:**

- a. Collect information from customers about their expectations, perceptions of what they receive, and suggestions for improvement.
- b. Find out from customers which outputs of your work unit have the greatest need for improvement.
- c. Understand how your customer thinks.
- d. Obtain constructive criticism, ideas and feedback.

**2. Rules**

- a. A group of twelve or fewer external or internal customers led by a moderator in a group-interview format gathers to work.
- b. Discussion may be recorded.

**3. Methodology:**

- a. Prepare questions or discussion guide and distribute it ahead of time to people participating.
- b. Determine how many and which customers to invite, based on the total customer group, to ensure accurate, fair representation.
- c. Design and plan for analyzing the results.
- d. Assemble the group, conduct the discussion, organize input, and report results.

**E. DELPHI TECHNIQUE:**

**REFERENCES: (B. Brocka and S. Brocka, 1992), (J. Neuman personal applications):**

**1. Purpose:**

"The Delphi technique is an iterative approach to arrive at a consensus of a group of experts. Getting experts to agree is a difficult task, especially when they are in the same room. It is not a technique to combine expert opinion."

**CONTINUATION TABLE 8:**

**2. Important considerations:**

- a. Particularly useful in eliminating personality clashes in technical areas.
- b. Useful whenever powerful personalities are likely to dominate the discussions.

**3. Rules and Methodology:**

- a. Prepare a dossier including all pertinent data about the subject to be discussed about.
- b. Deliver information to identified experts for their study and review.
- c. Define the task to be accomplished by experts.
- d. Establish selection criteria.
- e. Summon experts for exercise.
- f. Perform rounds of evaluation and qualification of factors on special process control tables.
- g. Obtain consensus about decisions to be made.

**TABLE 9.**

**PRINCIPAL GUIDELINES AND CHARACTERISTICS REQUIRED BY  
"THE QUALITY MASTER PLAN" TO ACHIEVE QUALITY  
IMPROVEMENT.**

**REFERENCE: (J. P. Russell, 1990).**

**A. Advantages:**

1. Requires low investment to be started. Has low business risk, yet high return. Leads to growth and prosperity.
2. Requires no previous experience or special expertise.
3. Can be applied to any kind of organization.
4. Secures and improves competitive position and provides new market opportunities.
5. Has proven record of success.
6. Eliminates waste and rework.
7. Builds customer confidence.

**B. Keys to Quality Improvement:**

1. Continuous customer focus and satisfaction.
2. Total management commitment and support.
3. The building of trust and team spirit.
4. Implementation of systems for prevention, measurement, and elimination of problems.

**C. Goals, Strategies and Activities: (Note: To achieve the goals, the usage of all the previously mentioned 1-4 "Keys" is required).**

1. Integrate and promote quality management:
  - a. Commit to a quality policy.
    - a.1 Evaluate policies of other companies.
    - a.2 Define requirements for a quality policy.
    - a.3 Draft and circulate quality policy.
    - a.4 Publish the quality policy to demonstrate to all employees that upper management is committed to the process.

## **CONTINUATION TABLE 9:**

- b. Market total quality and team concepts within the organization and in the marketplace.
  - b.1 Identify promotional opportunities.
  - b.2 Select promotional media.
  - c. Demonstrate management commitment.
    - c.1 Complete all quality education.
    - c.2 Take a leadership role in the quality teams.
    - c.3 Advocate quality and support champions.
  - d. Involve all levels.
    - d.1 Define criteria for involvement in the organization quality plan.
    - d.2 Conduct periodic assessment of employee involvement.
- 2. Build an organization responsive to customer needs and wants.
  - a. Integrate quality into the business organization.
    - a.1 Appoint a quality coordinator or director.
    - a.2 Establish a quality management team.
    - a.3 Form a quality business team.
    - a.4 Organize quality action teams.
  - b. Educate the organization in quality concepts and methods.
    - b.1 Plan and develop education strategies.
    - b.2 Quality management seminar
    - b.3 Quality awareness education.
    - b.4 Quality action skills education.
    - b.5 Quality process implementation education.
- 3. Consistently provide value to the customer.
  - a. Build a foundation for improvement.
    - a.1 Initialize the process.
    - a.2 Develop an action item list.
    - a.3 Publish a quality action plan.
    - a.4 Identify customers/suppliers and their requirements.
    - a.5 Develop a supply/demand outreach program.
    - a.6 Customer Complaint/Problem/Response (CPR) program.
  - b. Apply quality techniques and tools for prevention.
    - b.1 Problem solving technique (PMSA):
      - \* Problem definition (stating the problem).
      - \* Measurement focus (gathering information and defining root causes).
      - \* Solution (preventing recurrence).
      - \* Action (Implementing solutions to satisfy the customer).

**CONTINUATION TABLE 9:**

- c. Implement statistical quality control methods.
  - c.1 Select a Statistical Quality Control (SQC) method.
  - c.2 Select and implement a pilot SQC process.
  - c.3 Expand SQC to remaining operations.
  - c.4 Bring process in control and make it capable.
  - c.5 Qualify suppliers:
    - \* Steps for qualification:
      - I. Asses requirements and wants.
      - II. Have supplier complete customer information survey and specification verification.
      - III. Review the supplier's past performance.
      - IV. Test the supplier's systems, materials, products, or services. Customer on site visit.
      - V. Establish internal customer systems for monitoring and certification. Product certification.
      - VI. Review (audit) the supplier's quality management system(s).
    - \* Key performance outputs:
      - I. Quality materials, supplies, and services that are uniform, consistent, in control, and capable.
      - II. On-time delivery/performance.
      - III. Accurate invoice/billing.
      - IV. Timely market information.
      - V. Opportunities (ideas) for cost savings.
- 4. Achieve continuous improvement.
  - a. Establish a quality education system.
  - b. Form audit systems.
  - c. Integrate total prevention.
    - c.1 Be proactive and use special problem prevention technique (DEVSA):
      - \* Define.
      - \* Evaluate.
      - \* Validate.
      - \* Systematize.
      - \* Act.
  - d. Integrate total quality management.
    - d.1 Organization structure.
    - d.2 Job description/performance.
    - d.3 Feedback.
    - d.4 Procedures and standards.
    - d.5 Quality management plan.

**TABLE 10.**

**PRINCIPAL GUIDELINES FOR DEVELOPING A PROCESS IMPROVEMENT PLAN.**

**REFERENCE: (P. R. Scholtes, 1991).**

**A. Advantages:**

1. Uses teamwork to develop an improvement plan and to identify the required information and resources needed in the project.
2. Helps define goals and specific needs of the plan with strategies especially designed for such purpose. Each strategy has various activities that will be followed to achieve the objectives and goals stated.
3. The methodology here included is supported by the established rules of the Scientific Method.

**B. Crucial activities in the improvement effort:**

1. Maintain communications.
2. Fix the obvious problems first now. Don't wait till the end.
3. Observe and question previous stages in the process.
4. Document the improvements achieved and the problems met.
5. Monitor and observe changes.

**C. Goals, Strategies and Activities: "Basic strategies of the Scientific Method."**

1. Collect useful data.
2. Identify fundamental causes of the problems.
3. Develop appropriate solutions to achieve expected objectives.
4. Plan and execute changes. Look forward and anticipate required resources and training for a successful project.
5. Define a project:
  - a. Prepare and define the mission of the project group problem to be solved. It is important that the problem will be of interest to the participants and to the organization.
  - b. Identify needs for improvements:
    - b.1 Brainstorming, Multiple Voting or Nominal Group Technique.
    - b.2 Identify Needs and expectation of customers.
    - b.3 Study the usage of time in the different areas.
    - b.4 Localize recurrent problems.

**CONTINUATION TABLE 10:**

**D. Five Stages Plan for Process Improvement:**

1. Understand the Process:
  - a. Describe the process:
    - a.1 How does the process work?
    - a.2 Achieve consensus about the problem to be studied.
    - a.3 Eliminate inconsistencies.
  - b. Identify needs and expectations of the customer.
  - c. Develop a standard process.
2. Eliminate errors:
  - a. Design a process robust to errors.
3. Suppress the unnecessary:
  - a. Develop an efficient process.
4. Reduce variation:
  - a. Reduce variation in the measurement systems. (Useful information is required).
  - b. Bring the measurement process into Statistical Process Control.
  - c. Reduce process variation.
  - d. Bring the process into Statistical Process Control.
  - e. Improve the design of the product or service.
5. Develop Continuous Improvement Plan:
  - a. Plan surveillance or observation of changes.
  - b. Execute surveillance.
  - c. Verify results.
  - d. Act to promote continuous improvement.

**TABLE 11.**

**A MODEL FOR IMPLEMENTING TQM IN PURCHASING AND QUALITY FUNCTION DEPLOYMENT (QFD).**

**REFERENCE: (J. F. Call, 1993), (Houser and Clausing, 1991).**

The American Supplier Institute defines QFD as:

"A system for translating consumer/customer requirements into appropriate company requirements at each stage, from research and product development, to engineering and manufacturing, to marketing/sale and distribution."

**A. Advantages:**

1. "The model is focused on meeting the needs of purchasing customers-both requisitioners and suppliers."
2. "Uses a quality tool, Quality Function Deployment (QFD), to determine those customer's requirements."
3. "It is only a guide and is to be applied with traditional management approaches, such as quality awareness and employee involvement."

**B. The Seven Basic steps:**

1. Establish the Management Environment:
  - a. Establishing Purchasing Leadership.
  - b. Establishing Vision for Purchasing.
  - c. Obtaining and Demonstrating Long-Term Commitment.
  - d. Using Disciplined Methodologies.
2. Understand Purchasing Customers and their needs:
  - a. Define Purchasing Customers:
    - a.1 The internal customer is: Requisitioner.
    - a.2 The external customer is: Supplier.
  - b. Phase I: Build Quality Table 1. Identify Critical Voice of the Customer (VOC):
    - b.1 Step No.1: The What, or Voice of the Customer, is identified.
    - b.2 Step No.2: The VOC is prioritized.
    - b.3 Step No.3: VOC performance is evaluated by the customer.
    - b.4 Step No.4: VOC Targets are established.
    - b.5 Step No.5: Each VOC's degree of implementation difficulty is determined.

## **CONTINUATION TABLE 11:**

- b.6 Step No.6: Critical VOCs are identified.
- c. Phase II: Identify Actions to meet VOC.
  - c.1 Expedite Suppliers.
  - c.2 Visit Suppliers.
  - c.3 Update computer system.
- d. Phase III: Build Quality Table 2. Identify Purchasing Strategies.
  - d.1 Step No.1: Determine the importance of each action to its own, or primary, VOC.
  - d.2 Step No.2: Examine the impact of each action on other VOCs.
  - d.3 Step No.3: Determine the most critical actions necessary in relation to the total impact of each action.
  - d.4 Step No.4: Identify Potential Purchasing Strategies.
  - d.5 Step No.5: Compare the impact of each Potential Strategy to each Critical Action.
  - d.6 Step No.6: Select appropriate Purchasing Strategies.
- 3. Determine Purchasing Strategies:
  - a. Develop Strategic Relationships/Partnerships.
  - b. Reduce the Supplier base/sole Source.
  - c. Implement Supplier Certification.
  - d. Practice Just-In-Time Purchasing.
  - e. Reduce Variability.
  - f. Improve Cash Management.
  - g. Benchmarking.
  - h. Involve Suppliers in Design (Concurrent Engineering).
  - i. Back to Basics of good buying: "These include understanding the requirements, understanding the abilities of the suppliers, and establishing good working relationships".
- 4. Determine Training Needs:
  - a. Select the Education/Training Approach.
  - b. Identify Education/Training Needs for Purchasing Organization.
  - c. Identify Education/Training for the Supplier Community.
- 5. Establish and Train Improvement Teams (These are not equal to Quality Circles):
  - a. Team Type/Structure.
  - b. Team Leaders.
  - c. Team Members.
  - d. Team Process.
  - e. Use of Facilitators.
  - f. Train Teams after they are formed.

**CONTINUATION TABLE 11:**

6. Develop Implementation Plans:
  - a. Identify opportunities and develop "mini" plans.
  - b. Develop and Establish Measurements.
7. Implement, Monitor and Make Adjustments.

## TABLE 12.

### TQM IMPLEMENTATION GUIDELINES.

REFERENCE: (Scott, 1990).

1. Focus on the customer or user of a product or service, ensuring that his needs and expectations are consistently satisfied. Customers may be inside an organization or outside, but every person-from the chief executive to the janitor has customers who receive and depend upon that individual's "product."
2. "Building in" quality during the early phases of a job, rather than "inspecting out" defects near the end. This precept concentrates on problem prevention instead of correction as a cost-saving, more efficient program. For management or team leaders, building-in quality means providing the resources and time to plan, design and produce products and services with high yields. They also must recognize the capabilities and limitations of the manufacturing or service process. Everybody in the organization strives to develop designs and plans that are "robust"-immune to variations in manufacturing or operational use.
3. Recognizing the importance of people in the total process. Improved quality and high productivity can be achieved by tapping the inherent potential of a work force, enabling employees to do their job right the first time. Creating a positive, pleasant and safe working environment, emphasizing teamwork over individual efforts and providing an abundance of training. Worker's ideas and expertise are actively sought and rewarded through extrinsic and intrinsic methods. Management motivates its people through positive incentives rather than fear. Creating an environment (or culture) that values every employee and ensures all members voluntarily cooperate to achieve the groups objectives. Management generates ideas and goals and actively encourages the flow of ideas up through the organization.
4. Pursuing a strategy of continuous improvement by focusing on and understanding all the elements of existing tasks. Over time a series of incremental but continuous advances and improvements in products, processes and services will enable an organization to leapfrog competitors who rely on periodic breakthroughs to keep them in the game.

## **CONTINUATION TABLE 12:**

5. Establishing structured problem-solving methodologies that can identify opportunities for improvement. These are applied to every work activity input, output and critical point within the process. Brainstorming, experimentation or cause-effect analysis techniques are used to find solutions or alternatives.

6. Using statistical tools to reduce variations in a process. "Robust" designs that reduce the number of parts, for example, eliminating opportunities for tolerance stacking and make the system less sensitive to manufacturing variations.

7. Reducing "chronic" waste in material, people's time, lost sales and expended capital with no measurable return. Obvious examples include scrap material, excess inventory, inspection equipment, over-and under-specification and wasted energy resources. However, less apparent chronic waste-often accepted as the normal cost of doing business-can include inefficient meetings, reworking failed components, poor customer service and deficient engineering. Capital is wasted through poor investments, the cost of warranties and liability claims, idle equipment and depreciation.

**TABLE 13.**

**TQM IMPLEMENTATION PROCESS: THREE STEPS TO CONTINUOUS IMPROVEMENT.**

**REFERENCES: (Tenner and DeToro, 1992), (David Garvin, 1987), (Berry, Parasuraman and Zeithaml, 1985).**

**A. Advantages:**

"Clearly, any of the internally focused approaches to marketing described by Kotler or the internally focused definitions reported on by Garvin cause the organization to be unaware of changes in the marketplace requirements and thereby render its products or service, over time, ineffective. Paying close attention to the needs of the external customers and meeting those needs is a route to achieving increasing success in the marketplace."

**B. Steps to Continuous Quality Improvement:**

**1. Objective: Continuous Improvement.**

"Quality is defined by the customer and meeting the customer's needs and expectations is the strategic goal of TQM."

**2. Quality Principles:**

a. Customer Focus: Quality is based on the concept that everyone has a customer and that the requirements, needs, and expectations of that customer must be met every time if the organization as a whole is going to meet the needs of the external customer. This concept requires a thorough collection and analysis of customer requirements, and when these requirements are understood and accepted, they must be met.

b. Process Improvement: Work is the result of a series of interrelated steps and activities that result in an output. Continuous attention to each of these steps in the work process is necessary to reduce variability of the output and improve the reliability of the process.

### **CONTINUATION TABLE 13:**

c. Total Involvement: This approach begins with the active leadership of senior management and includes efforts that utilize the talents of all employees in the organization to gain a competitive advantage in the marketplace. Employees at all levels are empowered to improve their outputs by coming together in new and flexible structures to solve problems, improve processes, and satisfy customers. Suppliers are also included and, over time, become partners by working with empowered employees to the benefit of the organization.

### **3. Supporting Elements:**

- a. Leadership: Senior management must lead this effort by example, by applying the tools and language, by requiring the use of data, and by recognizing those who successfully apply the concepts of TQM.
- b. Education and Training.
- c. Supportive Structure.
- d. Communications.
- e. Reward and Recognition.
- f. Measurement.

### **C. Understanding Customer Expectations:**

#### **1. Eight Dimensions of Quality (David Garvin, 1987):**

- a. Performance.
- b. Features.
- c. Reliability.
- d. Conformance,
- e. Durability.
- f. Serviceability.
- g. Aesthetics.
- h. Perceived Quality.

#### **2. Ten Determinants of Service Quality (Berry, Parasuraman and Zeithaml, 1985):**

- a. Reliability
- b. Responsiveness.
- c. Competence

**CONTINUATION TABLE 13:**

- d. Access.
- e. Courtesy.
- f. Communication.
- g. Credibility.
- h. Security.
- i. Understanding the customer.
- j. Tangibles.

**D. Process Management:**

1. Identify key processes impacting on success.
2. Assign ownership.
3. Plan approach to define and document process.
4. Measure performance against customer's expectations.
5. Control process to assure predictable performance.
6. Improve capability to meet customers' expectations.
7. Optimize efficiency and productivity.

**E. Process Improvement Model:**

1. Define problem:
  - a. Identify the output.
  - b. Identify the customers.
  - c. Define the customer's requirements.
  - d. Identify the process producing these outputs.
  - e. Identify the owner(s) of the process.
2. Identify and document process.
3. Measure performance.
4. Understand why?
5. Develop and test ideas.
6. Implement solutions and evaluate.

## **TABLE 14.**

### **TQM: A STEP-BY-STEP GUIDE TO IMPLEMENTATION.**

**REFERENCE: (Weaver, 1991).**

#### **A. Main Barriers:**

"The main barriers to improving quality and increasing organizational effectiveness is the absence of a simple, step-by-step procedure which permits the systematic implementation of existing knowledge on this subject."

#### **B. Key concerns to be addressed:**

1. The procedure must provide managers with frequent and reliable information.
2. Information about the state of quality and effectiveness go beyond the measures available from accounting and engineering. Many important measures of quality and effectiveness, such as customer satisfaction and timeliness, cannot be directly assessed with dollars and man-hours.
3. Managers know it is senseless to suggest that there is one best way to initiate improvement in organizations. They understand that the specific techniques needed to improve organizations are not rigidly determined. It is always incorrect, therefore, to try to duplicate the approaches to improvement used by currently successful companies. To be successful, an implementation approach should be adaptive enough to reflect unique features of the organization using it.
4. A procedure for company wide improvement should also be capable of promoting the application of any specific quality improvement approach or, more likely, any combination of approaches.
5. Prioritize the significance of problems. Define critical ones.
6. Obtain short and long term results as well.
7. Minimize outside help with employment of internal facilitators.
8. Focus on teams, not individuals.
9. Everybody must be involved in the undertaking.

## **CONTINUATION TABLE 14:**

### **C. Suggested steps:**

1. Preparations to begin:
  - a. The key role of the CEO.
  - b. Selection of facilitators.
  - c. Selection of target organizations where the implementation will begin.
  - d. Define Blue Team
    - d.1 Target organization's manager.
    - d.2 Manager's superior.
    - d.3 Immediate subordinates.
    - d.4 Customers and suppliers representatives.
  - e. Define Gold Team
    - e.1 Work center supervisor
    - e.2 Key workers (Opinion leaders among the workers of target organization).
  - f. Select Participants for the Teams.
  - g. Define Facilities and Materials.
2. Review:
  - a. Mission Statements.
  - b. Define who are the customers.
  - c. Define who are the suppliers.
  - d. Input-output Analysis.
  - e. Customer Identification. (NGT Technique utilization).
    - e.1 Gather information about their needs. "Despite the complexities involved in identifying customers, the essential contribution of asking the question Who is the customer? is that it provides a vehicle by which facilitators can get Blue Teams meaningfully involved in a number of issues related to the importance of the customers. The desired result of this discussion and the next step in the process (actually identifying the customers of the target organization) is not to obtain a definite list of customers, but to change or deepen attitudes about the customer's importance."
3. Develop Key Result Areas (KRAs). (NGT Technique utilization).
4. Develop Indicators. (NGT Technique utilization).
5. Develop Feedback Charts. (NGT Technique utilization).
6. Roll up Feedback Charts.
7. Improving Leadership with TQM/MGEEM (Methodology for Generating Efficiency and Effectiveness Measures explained by the author referred here).
8. Processes and Improvement.

**TABLE 15.**

**GUIDELINES FOR IMPLEMENTING TOTAL QUALITY MANAGEMENT  
IN THE ENGINEERING AND CONSTRUCTION (E&C) INDUSTRY.**

**REFERENCE: (Oswald and Burati, 1992).**

**A. TQM: A Strategic Necessity.**

"Companies must institute TQM or become noncompetitive in the national and international construction and engineering markets in the next five to ten years." (The Construction Industry Institute, 1990).

**1. Strategic Implications of TQM:**

- a. Survival in an increasingly competitive world.
- b. Better service to its customers.
- c. Enhancement of the organization's "shareholder value."
- d. Improvement of the overall quality and safety of our facilities.
- e. Reduced project duration and costs.
- f. Better utilization of the talents of its people.

**2. Major findings of the research (17 Major companies involved in E&C Industry):**

- a. There is no universal, "cookbook" approach, although there is a general sequence of implementation phases which seem to produce the best results.
- b. The common features of successful TQM systems are:
  - b.1 Corporate attention is focused on meeting customers' requirements.
  - b.2 Senior management personally and persistently leads the building of Quality values into the company's operations. (This single finding eclipses all the rest. If this does not happen, Quality Improvement does not happen).
  - b.3 Employees are suitably trained, empowered, and involved in continuously improving Quality and reducing costs.

### **CONTINUATION TABLE 15:**

b.4 The progress or speed of TQM implementation is enhanced if systematic processes are established and integrated in the organization to foster continuous improvement. E&C companies have learned from other industry companies who "went before," but only by means of informal and fragmentary research. These guidelines should assist additional organizations to implement TQM even more efficiently.

b.5 Traditional reservations about the practicability of TQM in field engineering and construction activities are invalid.

b.6 TQM is truly a bottom-line issue. The organization's "shareholder value" is enhanced by the improvement of its processes. Allows improved customer satisfaction, reduced cycle times, cost savings and more satisfied work forces.

**3. Comprehensive TQM guideline for the Engineering and Construction Industry: The road map that follows is a composite sequence of highly successful practices, perhaps "best practices. (15 out of the 17 companies interviewed combined practices)."**

#### **4. Phases of the TQM Journey:**

a. Exploration and Commitment:

a.1 Perceived need for change.

a.2 Investigation of approaches.

a.3 Engagement of consultant.

a.4 Top Management basic training.

a.5 Confirmation of TQM commitment.

b. Planning and Preparation:

b.1 Strategic Quality Deployment Process.

b.2 Initial development of Quality infrastructure.

b.3 Expansion of training:

\* More people.

\* More subjects.

\* Management Role Modeling.

c. Implementation:

c.1 Management oversight structure.

c.2 Realignment of reward system.

c.3 Formation of teams.

c.4 Team skills training.

c.5 Pilot Improvement Projects.

c.6 Implementation of results.

**CONTINUATION TABLE 15:**

- c.7 Company-wide expansion.
- c.8 Vendor/Supplier process.
- d. Sustaining:
  - d.1 Absorption of TQM infrastructure into regular management system.
  - d.2 Long range planning.
  - d.3 Focus on processes and customers.
  - d.4 Ongoing training.
  - d.5 Ongoing improvement efforts.
  - d.6 Management for Continuous Improvement.

## TABLE 16.

### PARTNERING FOR TOTAL QUALITY (TQ): EXECUTIVE'S IMPLEMENTATION GUIDELINE.

REFERENCE: (SEMATECH, VOL. 9, 1992).

#### A. TQ: DEFINITION:

"A business management methodology that aligns the activities of all employees in an organization with a common focus of customer satisfaction through continuous improvement in the quality of the activities, goods and services."

#### B. Environment for TQ:

"TQ is a process with long-term benefits that frequently involves no less than a cultural change in the way business is conducted. This requires constancy and consistency of top management's attention. 'Cultural shift,' 'paradigm shift,' and even 'Total Quality' appear to be overused, misapplied, and misunderstood expressions. While these words describe a desired outcome, it is something that 'happens' because individual actions and behaviors, followed by more and more individuals until there is a shift in group consciousness. The shift then becomes the normal state or institutionalized."

#### C. TQ: An Implementation Process:

##### 1. Total Quality Snapshot:

- a. Management Commitment:
  - a.1 Become aware of TQ potential.
  - a.2 Establish Company Values/Vision/Mission.
  - a.3 Develop TQ Goals and Objectives.
  - a.4 Obtain Top Management Enrollment.
  - a.5 Select TQ Champion.
  - a.6 Select TQ Steering Committee.

**CONTINUATION TABLE 16:**

**2. Detailed Organizational Assessment:**

- a. Employee Perceptions:
  - a.1 Develop Preliminary Priority List.
  - a.2 Identify Possible Focus Areas.
  - a.3 Establish Validation Issues.
  - a.4 Initiate Process Mapping.
  - a.5 Conduct Employee Feedback.

**3. Joint Assessment:**

- a. Customer Validation:
  - a.1 Refine Priority List.
  - a.2 Validate Focus Areas.
  - a.3 Recommended Near-Term Actions.

**4. Action Plan:**

- a. Launch Improvements:
  - a.1 Develop Short list.
  - a.2 Charter Teams.
  - a.3 Allocate Resources.
  - a.4 Establish Milestones and Time Tables.

**5. Apply for PFTQ (Partnering For TQ) Award:**

**6. Continuous Improvement (Shewhart Cycle):**

- a. PLAN-DO-CHEK-ACT:
  - a.1 Refine Strategic Plan.
  - a.2 Expand Critical Business Issues.
  - a.3 Improve Business Processes.
  - a.4 Improve Human Resource Plan.
  - a.5 Develop Customer and Supplier Partnering Relationships.
  - a.6 Refine Performance Indicators Reassess/Validate Progress.

TABLE 17.

WELL FUNCTIONING TEAMS.

REFERENCE: Shonk, 1982.

Well-Functioning Teams	Poorly Functioning Teams
<p style="text-align: center;">Environmental Influences</p> <ol style="list-style-type: none"> <li>1. Team members are in close physical proximity and able to meet regularly.</li> <li>2. The appropriate skills are represented on the team.</li> <li>3. The appropriate levels of organizational authority are present within the team.</li> </ol> <p style="text-align: center;">Goals</p> <ol style="list-style-type: none"> <li>1. Team members are involved in the setting of objectives.</li> <li>2. Objectives are understood by all members.</li> <li>3. All individuals agree with objectives.</li> <li>4. Objectives are set and met within realistic time frames.</li> </ol> <p style="text-align: center;">Relationships</p> <ol style="list-style-type: none"> <li>1. There is team identity or esprit de corps and pride.</li> <li>2. There is tolerance for conflict, with an emphasis upon resolution.</li> <li>3. Conflict is openly discussed, often resulting in growth or learning.</li> <li>4. Members enjoy each other.</li> <li>5. Team members support each other.</li> </ol> <p style="text-align: center;">Roles</p> <ol style="list-style-type: none"> <li>1. Roles are clearly defined and do not overlap.</li> <li>2. Team members and their leader know their assignments.</li> <li>3. Roles are understood by all and are supported.</li> <li>4. There is strong, effective leadership with clearly defined responsibilities.</li> <li>5. Members and the leaders are accessible to help each other.</li> </ol> <p style="text-align: center;">Procedures</p> <ol style="list-style-type: none"> <li>1. Decisions are made by consensus.</li> <li>2. Meetings are efficient and task-improvement oriented.</li> <li>3. Emphasis is on solving problems, versus blaming the individual responsible for the problem.</li> <li>4. All members participate in discussions and meetings.</li> <li>5. Minutes of meetings are promptly distributed.</li> <li>6. Members listen well.</li> <li>7. There is frequent feedback to individuals regarding performance.</li> <li>8. All members are kept informed.</li> <li>9. Deadlines and milestones are clearly established and agreed to by team.</li> </ol>	<p style="text-align: center;">Environmental Influences</p> <ol style="list-style-type: none"> <li>1. Physical separation prevents members from meeting frequently.</li> <li>2. Team is not given adequate resources to do the job.</li> <li>3. There is no recognition of team effort.</li> <li>4. There is a lack of recognition by the organization or its leaders that a team exists.</li> </ol> <p style="text-align: center;">Goals</p> <ol style="list-style-type: none"> <li>1. Members do not participate in setting goals.</li> <li>2. Goals are unclear.</li> <li>3. Goals are not communicated.</li> <li>4. Everyone is doing his own thing without attention to team goals.</li> </ol> <p style="text-align: center;">Relationships</p> <ol style="list-style-type: none"> <li>1. Members are unwilling to be identified with the team.</li> <li>2. There is covert conflict between members.</li> <li>3. There are severe personality conflicts.</li> <li>4. Relationships are competitive.</li> <li>5. Members are defensive.</li> </ol> <p style="text-align: center;">Roles</p> <ol style="list-style-type: none"> <li>1. Responsibilities are poorly defined.</li> <li>2. No clear leader is identified.</li> <li>3. There is buck-passing of responsibility.</li> <li>4. Members engage in power plays for authority and control.</li> <li>5. Members refuse to recognize their interdependence and act as if they were independent.</li> </ol> <p style="text-align: center;">Procedures</p> <ol style="list-style-type: none"> <li>1. Decisions are always a crisis situation.</li> <li>2. Decision making is dominated by one person.</li> <li>3. Communications are one way -from top down- and channeled through the leader.</li> <li>4. Minor points are debated endlessly.</li> <li>5. Meetings are unproductive with the issues unresolved.</li> <li>6. Meetings cover trivia, versus significant issues.</li> <li>7. Actions are taken without planning.</li> <li>8. Members work individually and ignore each other.</li> <li>9. Members are late for meetings or do not attend.</li> </ol>

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