IDENTIFYING THE USE OF STRATEGIC QUALITY PLANNING IN DEVELOPING PRODUCTS WITHIN INDUSTRIAL ORGANZIATION

By
Munir Farhan

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(_____)
Investigation Adviser

The Graduate College
University Of Wisconsin-Stout
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The Graduate College
University of Wisconsin-Stout
Menomonie, Wisconsin 54751

Abstract

Farhan Munir S.
(Writer) (Last Name) (First Name) (Initial)

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In recent years, industry has had to respond to rapid developments in new technology to survive in an increasingly competitive environment. Fast, effective adoption depends on successful strategic quality planning. While in the long-term, new technology can play an active part in the development of a continuous innovation process and in strategic decision-making.

This thesis is addressed primarily to senior managers and development practitioners in industry. Finally, the thesis has been written with a student in mind. Every attempt was made to keep the exposition simple and straightforward. The thesis is based on careful study of the Juran's 'Quality Planning Road Map'. In analyzing who are the customers, determine the needs of those customers, translate those needs into our language, establish units of measure to develop a product that can respond to those needs. Attention also was made through a self-assessment tool and provided a good example of companies practicing this model.

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Chapter I

Research Problem and Objectives

Introduction

Quality has become one of the most important competitive weapons, and many organizations have realized that Strategic Quality Planning is the key to develop products and continue towards the future. Strategic quality planning is designed to set a clear direction for organizations to proceed and promote.

The aim of business is long term profitability. Over a considerable length of time, earnings are achieved by pleasing customers with good products while keeping production cost at a minimum. The knowledge of using strategic quality planning provides long term dividends through lower cost and improvement of productivity.

As competition increases and changes occur in the business world, we need to know a better understanding of strategic quality planning. Quality concerns affect all organization in every competitive environment. So, top mangers need to know strategic quality planning to achieve high performance in products and to face the challenges of the new global

competition, because consumers demand a high quality product at low price.

Problem Statement

The problem of this study is to identify how strategic quality planning is used as a management tool within industrial organizations.

Research Objectives

This research project will attain the following objectives:

1. **Determine the need for top mangers to understand strategic quality planning.**
2. **Identify how to analyze, develop and evaluate customer requirements.**
3. **Identify the strategic quality planning that will help to develop products.**
4. **Determine how top managers evaluate new products.**
5. **Determine the need of continuous improvement in order to promote effectiveness in years to come.**

Need Statement

In industrial organizations, major emphasis is being placed on developing and continuous improvements to meet the challenges of the future. Products may go out of date because customer requirements and expectations are becoming more and more, day-by-day. Also, the competition in business today is becoming more intense, and the pace of change is ever accelerating. Consequently, many long held assumptions and beliefs about the practice of strategic quality planning within industrial organizations are currently important and top managers in these organizations needs to respond wisely to cope with today's changing environment and customer expectations. For these various reasons cited, one can conclude that knowing strategic quality planning by top management is important to give them the flexibility to respond fast to market changes. As the organization grows and becomes more complex, a formalized strategic quality planning and review process will become a necessity for developing products and continuing improvement.

Definitions

Strategic Quality planning: **the process of envisioning the organization's future goals and developing the necessary procedures and operations to achieve those goals. It "focuses on the opportunities and threats that lie in the future and the subsequent decision making that defines organizational aims, polices, and plans"(Juran,1988).**

Management: **A set of functions directed at the efficient and effective utilization of resources in the pursuit of organizational goals. The efficiency means using resources wisely and in a cost-effective manner. The effectiveness means making the right decisions and successfully implementing them (Higgins,1991).**

Customer: **A person or organization to whom the work-group provides goods or services, either internal or external to the business.**

ISO 9000: **Series of quality standards where effectively applied and demonstrated itself as a foundation for quality management program. These standards apply to generic product categories such as hardware, software, processed material, and service, but are not related to any product's technical specifications (Peach, 1997).**

Limitations

There were several obstacles which limited this study:

1. **The researcher's time was limited.**
2. **The limitation of the resource and the body of knowledge on the topic of strategic quality planning.**
3. **The limited access to information of strategic quality planning from the companies.**

Assumptions

1. **The strategic quality planning model is correct.**
2. **The strategic quality planning model is generalizable for all company environment.**

Chapter II
Review of literature

In this chapter, literature review of strategic quality planning will be discussed which will include a planning, strategic planning, and strategic quality planning. In order to understand the concept of strategic quality planning, it is necessary to look at its origin.

I. Planning

The need for planning is illustrated by the relationship between planning and the other management functions: organizing, leading, and controlling. Planning is the first phase of management process. According to Higgins (1991)

> Planning is the process of determining objectives and how those objectives are to be accomplished in an uncertain future. In its broadest scope, planning involves the whole organization. Planning is broadly concerned, for example, with setting an organization's mission, goals, and strategic objectives and in determining strategies and other types of plans to reach them. Planning in its narrowest scope involves the

development of individual job objectives and the associated tasks to accomplish them. (p. 8)

Talking in depth about planning leads to discussion about the elements of planning, levels of planning and the classification of planning. Multiple authors: Management Principle and Functions (Ivancevich, Gibson, & Donnelly, 1989) described the elements of planning. The planning function requires managers to make decisions about four fundamental elements of plans. These are objectives, actions, resources, and implementation. Objectives are statements of future conditions that the planner deems satisfactory. All sets of objectives have three characteristics: priority of objectives where it considers that at any given time, accomplishing one objective is more important than accomplishing any of the others. Time frame of objectives where it considers developing different plans for different periods of time and state specific time periods for plans. And measurement of objectives where it is used to translate objectives into specific targets and actions (p. 90).

Courses of action to achieve objectives must be specified. Planned courses of action are called strategies and tactics. Strategies typically have

long run, organization-wide implications, while tactics usually have short-run departmental-wide implications. In either case, a planned action is directed toward changing a present condition. However, an important activity in specifying courses of action is that of forecasting future demand for the organization's output and future availability of resources. Resource requirements of a plan must be forecast and specified by budget. Management can select the type of budget that best suits the planning needs of the organization (Ivancevich, Gibson, & Donnelly, 1989).

The fourth element of planning is implementation. Other people usually carry out plans, so managers must motivate those people to accept these tasks. Managers have three approaches to do implementation: authority, persuasion, and policy. These approaches can be used individually or in combination. In authority approach, managers give others the right to make decisions and expect compliance of these decisions. Authority is the sufficient way to implement plans when plans are relatively simple and are not involve with significant change. Otherwise it can be combined with other approaches, persuasion where managers convince others to base acceptance of the plan. Finally, policies usually are written statements

which reflect the basic objectives. Once individuals who must carry out the plans are convinced to take them, policies become important management tools for implementing these plans (Ivancevich, Gibson, & Donnelly, 1989).

Levels of planning are involved with all levels of management: top managers, middle managers, and first–line managers. According to Higgins (1991)

planning occurs at the three major levels of the organization: top, middle, and lower. At the top level of the organization, the manager is concerned with strategic planning. The planning that has a major impact on the organization as a whole, and that usually involves a major commitment of resources. Middle- and lower-level managers are principally concerned with implementing these strategic plans. They are concerned with obtaining the most effective and efficient use of an organization's resources to achieve strategic plans through intermediate and operational planning .(p. 8)

Planning is more complex, more uncertain, more unstructured, and more long-term at top levels of management than it is at middle or lower

levels. At lower levels there are few factors involved, there is more certainty, many of the decisions are structured and planning typically is for short term.

Plans may be classified as strategic plans, intermediate plans or operational plans. All types are used to pursue organizational goals and objectives, but in different ways. Higgins (1991) stated

> Strategic planning is the problem-solving process of establishing strategic objectives and formulating strategic plans to accomplish those objectives. Strategic planning may occur in any major area of an organization, but the central focus is most often the marketplace. It is principally concerned with long-term actions to achieve objectives, but it could also be concerned with major short-term actions. Any strategic plan is based on answering three questions: Where are we now? Where do we want to be? And how do we get there? (p. 176-177)

Also, Higgins (1991) stated " intermediate plans are plans that help translate strategy into operations. These plans normally commit far fewer resources than do strategies" And " operating plans are plans that deal with day-to-day operations, typically for a time frame of less than one year.

They commit far fewer resources than strategies or intermediate plans”(p. 146).

II. Strategic Planning

Strategic planning is a management tool. As with any management tool, it is used for one purpose only: to help an organization do a better job - to focus its energy, to ensure that members of the organization are working toward the same goals, to assess and adjust the organization's direction in response to a changing environment. In short, strategic planning is a disciplined effort to produce fundamental decisions and actions that shape and guide what an organization is, what it does, and why it does it, with a focus on the future (Bryson, 1995).

When the organization existed in a static environment in which no change was necessary or desired, there would be no need for strategic planning. But, the environment is changing: demographically, economically, and culturally. Thus, strategic planning is both a reaction to, and a tool for adapting to, those changes and creating an organization's future within the context of change. Strategic planning is the process of responding to the results of an organization's assessment of its external and internal environments. Its purpose is to help the organizations capitalize on its strengths while minimizing its weaknesses, and to take advantage of opportunities and defend against threats. McCune describes strategic

planning as a process for organizational renewal and transformation. McCune identifies another difference between long-range planning and strategic planning. In long-range planning, goals and projections are based on the assumption of organizational stability, while in strategic planning, the role of the organization is examined within the context of its environment. Strategic planning provides the means for an organization to adapt its services and activities to meet changing needs in its environment. It provides a framework not only for the improvement of products but also for the restructuring of these products, management, and collaborations, and for evaluation of the organization's progress in these efforts (McCune, 1986).

Pfeiffer and others also began with envisioning an organization's future. Strategic planning to them is the process of developing the procedures and operations necessary to achieve that future. They differentiate between long-term planning, which is reactive and strategic planning, which allows an organization to create its future (William, Goodstein, & Nolan, 1985).

The most basic question to ask before starting a strategic planning process is whether to develop a strategic plan. Unless this question is

answered honestly in terms of the organization's current status and the attitudes of its members and leadership, the planning process may be doomed before it begins. The question of whether or not to develop a strategic plan may be based on answers to the following questions:

- What purpose will the strategic plan serve?
- How will it help the organization?
- Will it be better than the system we now use?
- Are those in leadership positions committed to strategic planning?
- How much will it cost in terms of time and personnel effort?
- Who should be on the planning team?
- Does anyone have experience with strategic planning?
- Do we think we can do it?
- Are we willing to make decisions about our future?
- Will we actually use the plan?
- What overriding crises would inhibit our ability to plan?

If the answers to these questions support the development of a strategic plan, then the process can be initiated. Strategic planning can be

accomplished in as little as four to six two-hour planning sessions (Goodstein, 1993).

Strategic planning has three levels: corporate, business, and functional. Corporate strategy is concerned with what business organization should be in. Business strategy is concerned with how to compete in a particular business. Functional strategy is concerned with the effective and efficient use of resources in support of corporate and business strategies. Strategists must consider both internal and external environments when establishing objectives and formulating strategy. Functional strategies support corporate- and business-level strategies. Functional strategies include those related to the economic functions of organization such as marketing, finance, and operations. They also include those related to managing such as planning, quality, and creative problem solving (Higgins, 1991).

The strategy formulation consists of strategists steps outlined below describe the basic work that needs to be done and the typical products of the process:

- Reviewing vision, mission, and goals.
- Performing an environmental analysis.

- Determining strengths, weaknesses, opportunities, and threats (SWOT).
- Developing planning premises.
- Establishing strategic objectives.
- Proposing strategic alternatives
- Evaluating strategies, and making a decision.

(What are the steps of a strategic planning process? http://www.supportcenter.org/sf/genie.html)

III. Strategic Quality Planning

Strategic quality planning as a part of functional strategies defined by Aubrey (1995). Strategic quality planning (SQP) is an enhancement of strategic planning. Typical strategic planning begins with a vision and an assessment of current performance. Long-term plans, short-term operating plans, deployment, implementation, and review follow this. The SQP vision should be customer oriented, manageable, and shared by the whole organization. The vision is transformed into four or five key strategies and then into quality goals. The goals should be specific and tied to the key strategies. A planning tree diagram helps transform the vision into the specific means needed for implementation. The plan is deployed via

communication of goals and sub-goals throughout the organization. Responses go back up the organization, this feedback process being iterated until satisfaction is widespread. Reviews of results and process reviews of ongoing projects increase the likelihood of success. Lessons learned suggest the importance of executive leadership, adequate data, and placing limits on paper work and the number of objectives (Aubrey, 1995).

Any organization should integrate its strategic quality planning and strategic business planning. Otherwise, when there is a conflict between the two plans, the quality plan probably will lose out. A good match between quality activities and the business situation requires:

- motivation, so that everyone has a reason for doing a quality job.
- knowing what the customer needs.
- tools, including training, information, and time to implement improvements.

An example of a gap between quality and business planning would be extensive training in quality function deployment when few new products are performance. A good quality planning should allow for arrange business strategies which would influence quality. An example of a positive correlation would be teamwork training in a business whose structure is flattening. To determine if a organization has a good match between business strategy and quality planning,

evaluate quality performance. One method is benchmarking to other organizations and even to customer expectations. Other methods could include capital and human resources (Allred, 1993).

Integrating quality planning into the business strategy of a organization gives direction to its improvement efforts. This happens when the quality planning and strategic planning become a single process. The process should be customer driven and based on results rather than activities. Strategic planning should provide the context in which the quality can grow. Separating quality planning and strategic planning could include: an emphasis on quality measurements; tension between financial and quality goals; and noninvolvement of employees and customers in strategic planning. On the other hand, an example of a good integration would be when quality planning focuses on customer value, with financial performance being an outcome instead of driver (Butz, 1995).

Winder (1994) modified the five dimensions of quality complemented Dr. Deming's Aim-Plan-Do-Study-Act cycle and provided an excellent model for incorporating reengineering in the strategic quality planning process; setting goals, performing an environmental analysis, determining strengths, weaknesses, opportunities, and threats (SWOT), establishing strategic objectives, and evaluating strategies, and making a decision. In order to reengineer the dynamics of its quality system, an organization must focus on the five dimensions of quality:

- The aim phase focuses on value sharing (delight the customer).
- The plan phase focuses on interconnectivity logic.

- The act phase focuses on relationships and systems thinking.
- The study phase focuses on measurement.
- The do phase focuses on experience.

Vision is the first consideration in quality reengineering. It is essential to focus on what drives the system rather than the processes that define its capacity. If an organization has limited vision, it also places limitations on its quality system. Core vision, which is the common good among all participants in an organization, is also essential to the organization's quality reengineering efforts. Core competency, core measurements, and core processes are also important considerations in strategic planning, which is the process of aligning these elements with the organization's underlying paradigms and the premises that formed those paradigms. General speaking, all of Dr Deming's dimensions have important considerations in strategic planning, which is the process of aligning these elements with the organization's products (Winder, 1994).

Integration of quality planning into strategic business planning is a prerequisite for total quality management. Therefore, ISO 9000 has become the major world standard for quality management. The North American

Automotive Industry, their tooling and equipment suppliers, the aerospace industry and the U.S Food and Drug Authority (Medical Device Quality System Regulations), the U.S. Department of Commerce, have all adopted, or adapted the ISO 9000, within their quality management strategies. During strategic planning an analysis of the ISO 9000 process demonstrates its links with communication and manufacturing technology activities to define value and vision. The setup phase of the ISO 9000 process is the key to establishing links to communication and industrial management. When pursued correctly, ISO 9000 takes on roles that can be applied beyond ISO 9000 as an interpersonal communication tool for encouraging employees to communicate; as a team-building tool, for creating work procedures and other documentation; as an information-sharing tool, for employee involvement in an atmosphere of open communication; as a means to monitor information flow, for a long-term, flexible documentation system (Manual 2000, http://www.qs9000.com/iso9000.html).

ISO 9000 standards are based on a set of 20 clauses containing quality system. These clauses are identified in section four of the standard:

4.1 Management Responsibility Element.

4.2 Quality System Element.

4.3 Contract Review Element.

4.4 Design Control Element.

4.5 Document and Data Control Element.

4.6 Purchasing Element.

4.7 Control of Customer-Supplied Product Element.

4.8 Product Identification and Tractability Element.

4.9 Process Control Element.

4.10 Inspection and Testing Element.

4.11 Control of Inspection, Measuring, and Test Equipment Element.

4.12 Inspection and Test Status Element.

4.13 Control of Nonconforming Product Element.

4.14 Corrective and Preventive Action Element.

4.15 Handling, Storage, Packaging, Preservation and Delivery Element.

4.16 Control of Quality Audits Element.

4.17 Internal Quality Audits Element.

4.18 Training Element.

4.19 Servicing Element.

4.20 Statistical Techniques Element (Peach, 1997).

However, the ISO technical committee is gearing up for the release of the year 2000 ISO 9000 family of standards. The new standard will provide familiar core attributes of TQM, Baldridge, QS-9000 and an overall business orientation that will bring the Quality System clauses into a new process structure.

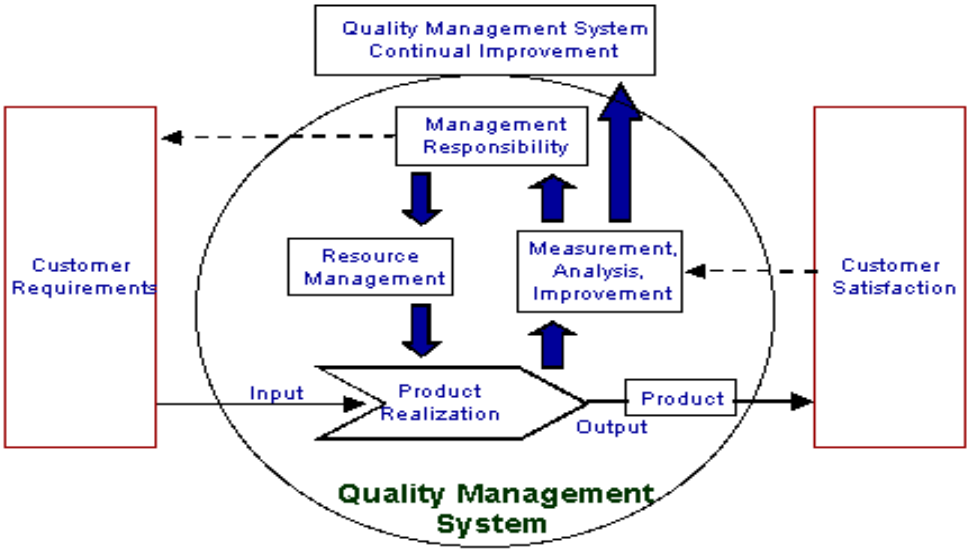

Figure:1 The Quality Management System

This new model will encompass issues relating to continuous improvement and customer confidence and satisfaction. It will have improved compatibility with the ISO 14000 Environmental Management System series of standards and will also reduce its manufacturing sector orientation. The proposed ISO 9000:2000 standard will, therefore, become a revolutionary edition to the ISO 9000 family of standards. The structure of the ISO 9000:2000 will conform to that of a process model and bring together the original 20

element requirement structure under four major headings (Manual 2000, www.qs9000.com/iso9000.html).

ISO 9000:2000 will continue to permit organizations to tailor their quality management system to reflect their individual needs. The process structure in the revised standard will bring together the original requirements under four major headings. These four main clauses that numbered 5 to 8 in ISO 9001:2000 are:

5. Management responsibility.

6. Resource management.

7. Process management.

8. Measurement, analysis and improvement.

The first section: Management responsibility addressed strategic issues viewed in establishing quality policy, quality objectives, and customer needs and requirement. This section contains four of sub-clauses and nine of sub-sub clauses as shown below:

5. MANAGEMENT RESPONSIBILITY

- 5.1 General
- 5.2 Customer Needs And Requirements
- 5.3 Quality Policy
- 5.4 Quality Objectives And Planning
  - 5.4.1 Quality Objectives
  - 5.4.2 Quality Planning
- 5.5 Quality Management System

5.5.1 General

5.5.2 Responsibility and Structure

5.5.3 Quality Manual

5.5.4 System Procedures

5.5.5 Management Representative

5.5.6 Control of Documents

5.5.7 Control of Quality Records

5.6 Management Review

The second sections: Resource management addressed strategic aspect in identifying competence and establishing other resources such as work environment, information, and infrastructure. This section contains three of sub-clauses and five of sub-sub clauses as shown below:

6. RESOURCE MANAGEMENT

6.1 General

6.2 Human Resources

6.2.1 Assignment Of Personnel

6.2.2 Training, Qualification and Competence

6.3 Other Resources

6.3.1 Information

6.3.2 Infrastructure

6.3.3 Work Environment

The third section: Process is more tactical in its vision which addressed issues related to customer process that include their needs and requirements. This section contains seven of sub-clauses and 21 of sub-sub clauses as shown below:

7. PROCESS MANAGEMENT

- 7.1 General
- 7.2 Customer Related Processes
  - 7.2.1 Identification of Customer Requirements
  - 7.2.2 Review of Customer Requirements
  - 7.2.3 Review of Ability to Meet Defined Requirements
  - 7.2.4 Customer Communication
  - 7.2.5 Customer Property
- 7.3 Design and Development
  - 7.3.1 General
  - 7.3.2 Design and Development Inputs
  - 7.3.3 Design and Development Outputs
  - 7.3.4 Design and Development Review
  - 7.3.5 Design and Development Verification
  - 7.3.6 Design and Development Validation
  - 7.3.7 Design and Development Changes
- 7.4 Purchasing

7.4.1 General

7.4.2 Purchasing Information

7.4.3 Verification of Purchased Product and/or Services

7.5 Production and Service Operations

7.5.1 General

7.5.2 Identification and Tractability

7.5.3 Handling, Packaging, Storage, Preservation and Delivery

7.5.4 Validation of Processes

7.6 Purchasing

7.6.1 General

7.6.2 Nonconformity Review and Disposition

7.7 Post Delivery Services

The fourth section: Measurement, analysis, and improvement is support to both strategical and tactical aspects of quality. It reflects how the researcher can use the process management and the human resources of organizations. Also, it provided information that will tell if the researcher met the establishing quality objectives during strategic planning or not. This section contains four of sub-clauses and seven of sub-sub clauses as shown in below:

8. MEASUREMENT, ANALYSIS AND IMPROVEMENT

8.1 General

8.2 Measurement

8.2.1 General

8.2.1.1 Measurement of Customer Satisfaction

8.2.1.2 Internal Audit

8.2.2 Measurement of Processes

8.2.3 Measurement of Product and/or Service

8.2.4 Control of Measuring, Inspection, and Test Equipment

8.3 Analysis of Data

8.4 Improvement

8.4.1 Corrective Action

8.4.2 Preventive Action

8.4.3 Improvement Processes

Virtually all the elements from the previous standard will be clearly discernable within the new structure of its revised edition; the application of the quality system will generate data and information, and each element will become directly (records) or indirectly, a recipient for data and information. The new challenge of the revised ISO 9000:2000 will be to integrate the previous elements

and the resulting data, into value-added knowledge. Accordingly, decision-makers will be able to tackle issues relating to continuous improvements and customer satisfaction, effectively and efficiently, based on the value-added knowledge acquired through data integration (Manual 2000, www.qs9000.com/iso9000.html).

Chapter III
Methodology

Introduction

In this chapter, definitions and descriptions of the methodology approach will be verified as well as procedures of data collection that will be used to review and analyze the existing body of knowledge in strategic quality planning.

Research Design

The purpose of research design varies according to the research paradigm, methods and assumptions. Generally speaking, there are two major methods in research design: quantitative and qualitative approach.

Quantitative approach requires the use of standardized measures to fit into a limited number of predetermined response categories to which numbers are assigned. The advantage of quantitative approach is that it is possible to measure the reactions of many people to a limited set of question, thus facilitating comparison and statistical aggregation of the data. This gives a broad generalizable set of findings that can be presented briefly and clearly (Patton, 1990). The efforts to achieve this method use either random assignment or other sampling techniques to minimize intervening variables that could impact the results of the research (Cook, & Reichardt, 1979).

Qualitative research is multi-method in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative

researchers study things in their natural settings, attempting to make sense of or interpreter phenomena in terms of the meaning people bring to them. Qualitative research involves the studied use and collection of a variety of empirical materials-case study, personal experience, introspective, life story, interview, observational, historical, international, and visual texts that describe routine and problematic moments and meaning in individuals' lives (Creswel, 1997).

Qualitative methods are a traditional evaluation in which the researchers translate the results of findings to describe research categories. The methodology of qualitative provides depth and detail rather than breadth through direct quotation and detailed descriptions of people's activities, behaviors, actions, and the full range of interpersonal interactions and organizational processes that are part of human experience (Patton, 1990).

Qualitative research is an inquire process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts their study in a natural setting (Creswel, 1997).

For the purpose of this study, the qualitative methodology was selected. The followings reasons are:

- The topic of strategic quality planning is complex that qualitative research will continue to play an important role in its investigation.
- Strategic quality planning in one of those topics where there is no foreseeable endpoint where researchers will be able to state that there is a complete shared understanding.
- Strategic quality planning is also a topic that poses serious problems for quantitative methods. There is not sufficient information available to use the quantitative measures and experimental design.
- There is a lack of proven quantitative instruments for important strategic quality planning outcomes. The state of measurement science such as not valid, reliable, and believable standardized instruments is available for readily capable of being developed to measure quantitatively the system outcomes for which data are needed. For example, customer satisfaction has a great concerned in quality planning, but it is hard to transfer this satisfaction into numbers.
- There is a need to ground in observations of system activities, impacts and the relationship between treatment and outcomes related to strategic quality planning.

This research was conducted through comprehensive review of management, planning and quality literature and an existing of the quality disciplines body of knowledge. To identify quality objectives and planning clauses in management responsibility (clauses 5.4 in ISO9000:2000), the researcher has identified and selected a classic planning model which is adaptable to strategic quality planning.

For the purpose of this study, the researcher will study, analyze, and evaluate in depth the strategic planning which are represented in this model. Then the researcher will identify self-assessment tools that emphasize strategic quality planning and practice. Finally, the researcher will give an overview and recommendation.

Chapter IV
Findings of the Study

Introduction

In Chapter Two the researcher introduced the strategic quality planning. Chapter Four will provide a model that will cooperate with specific planning in strategic quality planning. In Juran's message there are many aspects on quality. Intrinsic is the belief that quality does not happen by accident, it must be planned. His book, Juran on Planning for Quality is perhaps the definitive guide to Juran's final thoughts and his structured approach to company-wide quality planning. Juran's earlier Quality Control Handbook was much more technical in nature.

Juran sees quality planning as part of the quality trilogy of quality planning, quality control and quality improvement. The key elements in implementing company-wide strategic quality planning are in turn seen as identifying customers and their needs; establishing optimal quality goals; creating measurements of quality; planning processes capable of meeting quality goals under operating conditions; and producing continuing results

in improved market share, premium prices, and a reduction of error rates in the office and factory.

Quality Planning (strategic planning) Road Map.

Juran developed the idea of quality trilogy: quality planning, quality improvement and quality control. These three aspects of company-wide strategic quality planning are further broken down in Juran's 'Quality Planning Road Map', into the following key elements:

Quality Planning (strategic planning)

- Identify who are the customers.
- Determine the needs of those customers.
- Translate those needs into our language.
- Establish units of measure to develop a product that can respond to those needs (key measurables).
- Develop measurement to optimize the product features so as to meet our needs and customer needs.

Quality Improvement (tactical planning)

- Develop a process which is able to produce the product.
- Optimize the product design.

Quality Control (tactical planning)

- Develop process.
- Prove that the process can produce the product under operating conditions.
- Transfer the process to operations.

Juran concentrates not just on the end customer, but identifies other external and internal customers. This effected his concept of quality since one must also consider the 'fitness of use' of the interim product for the following internal customers.

Juran's work emphasizes the need for specialist knowledge and tools for successful conduct of the Quality Function. He emphasizes the need for continuous awareness of the customer in all functions. According to Juran, the mission of his work is:

- Creating an awareness of the quality crisis of the 1980s.
- Establishing a new approach to quality planning and training.
- Assisting companies to replan existing processes avoiding quality deficiencies.

- Establishing mastery within companies over the quality planning process thus avoiding the creation of new chronic problems.

Juran refers to the widespread move to raise quality awareness in the emerging quality crisis of the early 1980s as failing to change behavior despite company quality awareness campaigns, or drives, based on slogans and exhortations. Which quality awareness was raised, the improved awareness seldom resulted in changed behavior in the sense of 'doing it right first time'. He sees the failure as due to the campaigns lack of planning and substance. His formula for results is:

1. Establish specific goals to be reached.
2. Establish plans for reaching the goals.
3. Assign clear responsibility for meeting the goals.
4. Base the rewards on results achieved.

Dr Juran warns that there are no shortcuts to quality and is skeptical of companies that rush into applying quality planning, since he doubts their effectiveness in the West. Juran believes that the majority of quality problems are the fault of poor management, rather than poor workmanship on the shop floor. In general, he believes that management controllable

defects account for over 80% of the total quality problems. Thus he claims that Philip Crosby's Zero Defects approach does not help, since it is mistakenly based on the idea that the bulk of quality problems arise because workers are careless and not properly motivated. Juran believes that, as with Japanese industry, long-term training to improve quality should start at the top, but he knows that this irritates senior management. Their instinctive belief is that upper managers already know what needs to be done, and that training is for others - the workforce, the supervision, the engineers. It is time to re-examine this belief (Juran,1988). As it introduced in the beginning of this chapter the strategic planning in Juran's 'Quality Planning Road Map', consists of:

1)- Identify who are the customers.

In the highly competitive business environment, managers who long assumed that their company's success came from their product portfolio are now realizing that the true source of value lies with their customer portfolio, usually a firm's most valuable and underutilized asset (McDougall, 1995).

The best way to identify customers is to follow the product to see whom it impacts. Anyone who is impacted is a customer. Customers can be external or internal: external customers who are impacted by the product but are not members of the company. External customers may include clients who buy the product, government regulatory bodies, or public who may be impacted because of unsafe products or damage to environment. In the other hands, internal customers who are inside the company and received what is being produced (Juran, 1992).

2)-Determine the needs of those customers.

Customers must be the focus of strategic planning. However, many companies focus on internal matters and operational planning, while assuming the company knows best what customers need. Other impediments to listening to customers include fads like profit impact of market strategy and strategic business units. Profit impact of market strategy overemphasizes the importance of market share, while the strategic business units philosophy is too internally oriented and impedes the movement of customer satisfaction between organizational units. Even the strategy of focusing decisions on the driving force of a business is flawed

because the customer rarely is seen as this force. Prerequisites to successful strategic planning include: validated customer satisfaction data; a corporate culture that is customer centered; and planners who recently have spent significant time with customers (Massnick,1996).

For everyone responsible for satisfying customers, meeting customers face-to-face should be a necessary activity. Among the benefits involved are the opportunity to learn about the needs of customers that are not presently being satisfied and the opportunity to share information about products of a business that the customer could benefit from. In addition, face-to-face meetings are a good means of improving the quality of communication and minimizing the chance of misunderstanding. Meetings with customers should be scheduled in advance and may be short, provided the businessman is prepared and learns one thing or plants one idea. It is important for the businessman to bring one concrete idea for discussion and to be prepared to listen and be flexible enough to allow the customer to address issues that are considered to be of importance (Chaneski, 1996).

Individual customers, rather than products and markets, now drive global trade. Product providers need to determine the needs and wants of

individual customers, whether they are clearly expressed or only vaguely implied. To succeed in satisfying their customers, organizations need to listen to them. Company representatives need to probe beyond customers' articulated concerns in order to gain a sense of their unspoken concerns, observing body language and facial expressions. A good listener will pay attention to customers' moods, predispositions, cultures, and backgrounds. Listening goes beyond gathering information. It is a means of building rapport and a more collaborative relationship with the customer. Company representatives who have become skilled listeners are in a position to determine the sort of products and services that will yield the best value to the customer, so that the company can refine its offerings or invent new ones (Flores, 1993).

Looking back to the new model of ISO 9000:2000 in Chapter Two, we can find that the ultimate goal of sustained customer requirement and satisfaction will be embedded throughout the entire ISO 9000:2000 document. Customer-related processes and its subsequent sub-clauses will require organizations to identify and review their customer needs, requirements, and expectations as well as their own ability to meet their

defined needs. More significantly, the message that will remain consistent throughout the new model of standard will be continuous improvement must provide positive effects for customer requirement and satisfaction. As long as organizations strive to become ISO 9000:2000 compliant will therefore require survey tools to measure requirement and satisfaction provided to their customers. Accordingly, these progressive organizations will need to implement systems to analyze data captured from voice of customers, and voice of processes.

3)- Translate those needs into our language.

To achieve profitable and sustainable competitive advantage through business reengineering, organizations must be truly customer focused. They must have an in-depth understanding of the customer's value delivery process and value structure. Furthermore, to satisfy the customer, the organization's performance must be assessed relative to competition. The manner in which this information is structured should facilitate communication within the organization and with the customer. This effort should be quantified from the customer's perspective in terms of value, price, and cost for both the organization and competitors. Further to these

analytical efforts, the organization must develop a culture emphasizing customer orientation and promote the idea of viewing the world through the eyes of the customer (Jury, & Sturdivant, 1995).

The language of the customer is not very specific and some information is too fuzzy for the design process. Therefore, the translation of the subjective demand qualities voiced by customers into the engineering terms for the key measures used by the organization plays an important role to develop products that exceed customer expectations. Words such as quickly, quietly, and efficiently must be changed to the engineer's language (organization language) such as time to complete or a frequency range. This translation of subjective engineering terms can be challenging, but the effort is rewarding in the eyes of the customer.

Identical words have different meaning because of this conflict even within the same company. This conflict become more significant when the relationships involve multiple companies, and industries. To solve this conflict, there are a number of tools that can assist in translation and communication of customer needs. More practical tools such as glossary,

samples, standardization, and measurement are adopted from Juran on quality by design (1992).

- The glossary is a result of terms and their definitions that agree for each customer and the organization and could be supported with different kinds of forms such as videotapes, sketches, and photograph.
- Samples are used as specification for the sensory product features through these samples human senses get involved beyond those associated with word images.
- Standardization is communication tools that is used at various levels. The product's designations includes code numbers, acronyms, words, and phrases. Standardized a system of naming makes it easy to communicate with internal customers and at the same time adoption of this system by external customers leads to disappearance of the complicated problems.
- Measurement is considered to be the most effective tools to translate customer needs to avoid the vagueness and the conflict of misunderstanding. The most use of measurement could be seen

during product development for physical goods. These measurements include internal and external instruments for quantitative and qualitative data.

4)- Establish units of measure.

In today industry, there is a high demand on the precision for communicating quality-related information. This higher precision is best expressed in numbers. To express the numbers, companies are required to create a system of measurement that consists of :

- A unit of measure- “a defined amount of some quality features which permits evaluation of that feature in numbers” (Juran,1992).
- A sensor- “ a method or instrument that can carry out the evaluation, and state the findings in numbers, that is, in terms of the unit of measure” (Juran,1992).

In quality technology, quality can be expressed to product deficiencies or its features. So, there are two kinds of units of measures. One is the product deficiencies and the other one is for product features. In product deficiencies, there is a simple formula where quality is equal to the frequency of deficiencies divide by the opportunity for that deficiency. On

the other hand, for product features that do not have a known formula but each product feature requires its own unique unit of measures and best resource to establish this unit is to ask the customers what their measure for evaluating product quality will be.

There is a pyramid of unit of measure that serves the needs of various levels of the organization. There are four layers in this pyramid. At the upper level of the pyramid are the financial measures, indexes, and ratios, and so on, which become part of the evaluation system used and serves the needs of the top managers in the organization

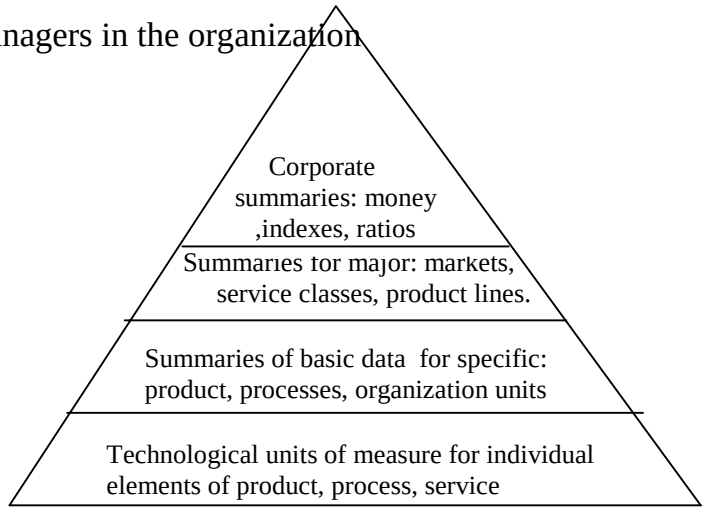

Figure: 2 A Pyramid Of Unit Of Measure

Unit of measures will vary depending on the company, the industry, and the competitive position of the company. However, their criteria for the units of measures that could be the decisive test for determining the potential effectiveness of the selected measurement. Each units of measures must be:

- Relative to the overall strategy.
- Simple to define and communicate.
- Easy to measure and document.
- Collected at optimal intervals.
- Provide fast feedback (AIAG Board of directors, 1997).

5)- Develop measurement (key measurables).

Senior management needs to identify key measurables that reflect the overall direction and strategy of the organization. The measures provide a mechanism to evaluate the overall health of the company. In the state of business the financial measures are the cornerstone indicator. However,

there are other leading indicators that drive the financials. Selecting key measurables requires looking at the company as a complete system. The measures selected must drive the desired financial performance. Once these drives are identified, organizational activities can be aligned to ensure the company's profitability (AIAG Board of Directors, 1997).

Key measurables alignment is an important element of strategic quality planning that ties the company with its customers to ensure that strategy is aligned from the top of the company through all departments and customers. This alignment is achieved through the units measurables that tie to the day-to-day tactics. Senior management identifies the corporate measurables. Then each area, department, or business unit creates units of measures to support those measurables that are identified by senior management. Finally, individuals on the shop floor creates the measures that support those of the other areas of the company and help them to become focused with the ability to establish appropriate priorities to achieve the required objectives (AIAG Board of Directors, 1997).

The deployment of the key measurables provides a framework for establishing self-assessment that evolved with developing products. Any

changes in the external environment, customer requirement, and business direction requires the organization to realign its key measurables. So, the process of this deployment and refining key measurables needs to be continuously evaluated. The results are used to provide feedback for advanced steps could be recommended to be used (AIAG Board of Directors, 1997).

Self-assessment tool.

An organization can evaluate its strategic quality planning through the use of self- assessment tools. One of the best tools available for establishing where a company should focus its change efforts is the Malcolm Baldrige National Quality Award (MBNQA) Criteria for Performance Excellence (1999). This self-assessment examines the company's planning process and how all key quality requirements are integrated into overall business planning. It examines the company's short- and longer-term plans and how quality and performance requirements are deployed to work units. It examines how the company sets and determines strategic directions and key action plans by translating them into an effective performance system. The key elements for the strategic planning in this self-assessments tool.

Strategy development process which include an overall strategic planning process to describe how the company sets strategic directions to better define and strengthen its competitive position.

This self-assessment tool will include answers to the questions in two areas: the strategy development and strategy deployment. The strategy development addresses how the company develops its view of the future, sets strategic directions, and translates these directions into a clear and actionable basis for communicating, deploying, and aligning critical requirements. On the other hand, strategy deployment will addresses the company's action plans and how they are deployed. The main intent is to effect the operational actions of company's directions, incorporating measures that permit clear communication, and tracking of progress and performance.

The strategy development area will address questions such as:

- Do you have strategic objective? What are they and what is the timetable to for accomplishing them?
- What is your strategic planning process? Include key steps of the strategy developments process.

- How the company develops strategy? Taking into account the factors listed below. Include how relevant data and information are gathered and analyzed. The factors are:
  - How well does your company target customer needs; market requirements, including price; customer and market expectations; and new opportunities?
  - How well does your company define competitive environment, performance indicators, necessary resources, deployment methods, capital expenditures, and training? How well does it review performance relative to goals and plans?
  - How well are your company's human resources, technology, research and development, and business process capabilities defined?
  - How well does your company define supplier and or partner capabilities and needs?

One the other hand, the strategy deployment will address question such as:

- Does the company have both short- (one- to three-year) and long-term (three-year or longer) strategic plans? What are the key changes, if any comes up?
- What are the company plans for improving daily work processes, employee skills, knowledge sharing, innovation, and customer-response time?
- What are key performance measures and/or indicators for tracking progress relative to the action plans?
- Are projected strategic planning process outcomes made and compared with those of competitors? How? What is the basis for these comparisons? (Baldrige National Quality program, Criteria for Performance Excellence, 1999).

Examples of Good practicing companies.

In the next section, the researcher will provide companies within ideally strategic quality planning in setting goals and defining operations. There are many companies such as Ford, Hewlett-Packard, and Kodak which emphasize this vision as well as practice it.

Ford Company is one of the world's leading consumer companies for automotive products and services. According to their annual report in 1998, Ford sold 6.9 million vehicles for serving consumers in more than 200 countries and territories. Ford is furthering its commitment to advancing quality, occupant safety, and environmental responsibility to satisfy its customers and ascertain their expectations.

Satisfying the needs of its customers is a basic strategy at Ford Company. A world-class company must base strategic decisions on customer satisfaction. As the business has become international, so have customer needs and demands. To satisfy a customer means not only producing a reliable and price-competitive product, it also means providing safety and efficient customer service. This world-class attitude is very noticeable at Ford. Some of these safety issues include but not limit:

- 1992 Driver-side air bag in a full-size van (1993 model Ford Econo-line).
- 1993 Driver-side air bag in a full-size truck (1994 model Ford F-Series and Bronco).

- 1995 Ford puts manual cut-off switches in its light trucks with dual air bags.
- 1996 Ford leads industry into announcing the move toward de-powering air bags in Canada, where there are no regulatory constraints.
- 1997 Ford announces that every vehicle in North America will have the new Second Generation air bag system at its 1998 model year introduction (Ford company, http://www.ford.com/default.asp?pageid=69).

The following is a recent example of fulfilling of customer expectation in safety. Recent technological innovations at Ford will bring the Advanced Restraint System and the Belt-Minder system as standard equipment to future Ford Motor Company vehicles. The Advanced Restraint System features nearly a dozen components that work together to more fully protect front-seat occupants during frontal crashes. The system uses sensors to take into account seating position, safety belt use and accident severity in the deployment of dual-stage air bags and pre-tensioning of safety-belts to lessen the possibility of chest injury. All Ford vehicles sold in the U.S. should have the system in about the next three years (Ford company,

http://www.ford.com/default.asp?pageid=66&storyid=403(10-26-99).

The best evidence of practicing its interest of customer safety and in keeping with its drive is to become a more consumer-focused company. In March 26, 1999 Ford Motor Company voluntarily notified approximately 945,000 owners of a safety recall involving speed control cables. The recall affects certain 1998 and 1999 Ford and Mercury cars and trucks equipped with the speed control option. This concern is the result of a quality issue with speed control cables manufactured between certain dates. Therefore, Ford is in the process of acquiring speed control cables to repair customers' vehicles (Ford company, http://www.ford.com/default.asp?pageid=68&storyid=269).

Hewlett-Packard Company is a leading global provider of computing and imaging solutions and services for business and home. People used more than 36,000 products from Hewlett-Packard Company for many different uses, personal use and in industry, business, engineering, science, medicine and education. In addition, the company makes networking products, medical electronic equipment, instruments and systems for chemical analysis, handheld calculators and semiconductor products.

One corporate objective at Hewlett Packard is to provide a framework for group and individual goal-setting in which all employees participate. At Hewlett-Packard the vision about customers is ” To provide products and services of the highest quality, thereby gaining and holding their respect and loyalty. We must listen attentively to our customers to understand and respond to their current needs and to anticipate their future needs” (Hewlett-Packard, http://www.hp.com/abouthp/corpobj.html).

Hewlett-Packard's Electronic Measurements Division (EMD) worked to understand ease-of-use from the customer’s perspective. The aim is to satisfy real customer needs, including expectations for quality. They first developed a method to measure the quality of the interaction between user and product by listening to customers discuss shortcomings of high-performance products. They also tapped into outside research on customer usability, such as the well-known University of Maryland Questionnaire on User Interface Satisfaction. From this research, EMD settled on a series of standard questions to build usability into a product, including "does the product have a logical physical layout?" and "does the product conform to common interaction conventions?" (Hewlett-Packard,

http://www.tmo.hp.com/tmo/feature/UKEnglish/UK_InfiniumAwards_GB.html).

At Hewlett-Packard, measurement systems revealed several factors that are common among systems that no longer met the needs of the organization. Three of the most common factors are:

- The measurement system did not monitor the aspects of organizational performance that create value from a customer perspective. This often leads to a situation in which organizational goals are achieved, but customer satisfaction and loyalty are unaffected.
- Metrics did not relate to business objectives. In such instances, the metrics failed to link performance to what the organization has needed to achieve its business goals.
- Metrics did not explain what is happening. Performance results did not adequately identify performance issues or enable analysis to explain the underlying causes.

In Hewlett-Packard, high-performing organizations use a balanced score card approach to address these issues. The best of these systems contains both customer-centered and traditional internal measures. They monitor

performance to critical objectives, and integrate with the organization's management processes. In addition, they measure cross-functional performance with historical and predictive metrics that provide value at all organizational levels (Center for Quality of Management Journal, Quality 1 on 1, http://cqmextra.cqm.org/cqmjournal.nsf/b263b3600a90d1b0852566340064b991/7855628816bce47b85256640004adf58?OpenDocument, 10/25/1999).

Kodak is the world's largest manufacturer and marketer of imaging products and has one of the world's most recognized and respected brand names. Kodak makes photographic films and papers for a wide range of consumer, entertainment, professional, business, and health-related uses. They develop, manufacture, and market traditional and digital cameras, photographic plates and chemicals, processing and audiovisual equipment, as well as document management products, applications software, printers, and other business equipment.

Kodak manufactures innovative products that aim to satisfy real customer needs, including expectations for environmental responsibility. At Kodak, the view of the environmental quality of manufacturing processes

is an important element of customer satisfaction. Kodak constantly works to reduce overall chemical emissions and to minimize waste from their operations.

The aim of Kodak's environmental management system is to continuously improve the environmental quality of manufacturing operations. All Kodak operations are designed to meet or exceed local environmental, health and safety laws, or Kodak's own standards, whichever are most stringent. Kodak manufacturing facilities worldwide are audited regularly and results are reported to executive management. Business managers are accountable for the environmental, health and safety management systems at their sites.

Kodak's vision is to make measurable improvements in the environmental aspects of their products, services, and operations...every day...every month...every year. They achieved high environmental progress. This is included, but not limited:

- worldwide emissions inventory and reduction program, reduction 36%. Progress since 1992.
- chlorofluorocarbon (CFC) emissions reductions is 97 % worldwide.

- **photo-processing chemicals- Volume of chemicals required to develop and print one 24-exposure roll of film- 96 % reductions.**
- methylene chloride air emissions in U.S. Operations goes down 73 %.
- worldwide single-use camera collection and recycling approximately 163 millions cameras recycled.
- film container to Recycle Steel Magazines, Plastic Spools, Cartridges, Canisters 44 million pounds of solid waste from the equivalent of 1.6 billion rolls of film kept out of landfills (Kodak company, http://www.kodak.com/US/en/corp/environment/1997/environmentProgress1998.shtml).

Kodak designs high quality products that perform reliably and increasingly address the environmental or safety concerns of their customers. New product design processes aim to balance technological innovation, enhanced performance, and environmental responsibility. At the same time Kodak develops creative packaging and distribution methods that safeguard product quality while reducing negative environmental impacts.

Chapter V
Summary and Conclusion

Overview

Strategic Quality Planning (SQP) is a future driven process of managing planned change. It is led by the organizations top managers but it involves the entire organization through use of improvement teams. Strategic planning is a way to assess the organizations current state, a look at the future desired state and a way to manage planned change in order to move the organization toward the desired state.

Top management needs to understand key customer and operational requirements as inputs to setting future goals. The organization needs to know what the customers' needs are and what the organization needs operationally to fulfill those needs. This helps align ongoing process improvements with the company's strategic direction. Top managers also need to optimize the use of all resources including human resources. This ensure bridging between short-term and long-term goals.

Finally, top mangers needs to ensure that quality initiatives are understood at all key levels of the organization. These levels are the organization level, the operational/process level, and the individual level. This means that from the board of directors to the line worker, everyone needs to understand why these changes are being made and which strategic goals these change will effect.

The strategic quality planning process increasingly is being used as a business management model on which leading organizations are basing their investment decisions. As organizations have sought to become more customer-focused, the ability to implement strategic plans has become the focal point in corporate efforts to maintain a competitive advantage in the marketplace.

Recommendations

1. There must be a clear vision, or purpose statement that supports the strategic planning process.
2. Top managers should be committed to continuously evaluate the system, the processes, the resources, and organizational structure to ensure that they are aligned to achieve quality results.
3. Planning for the future means that top mangers will always need to be ready for the unexpected. They will determine what processes and additional skills needed to be viable, using the full potential, as embracing additional responsibilities.
4. Top managers need to develop ways to enhance the relationships with current and potential customers and provide a means to measure and evaluate satisfaction.
5. The measurement should reflect the current situation and the external demands of the customer that will help to improve communication throughout the organization.
6. Strategic quality planning has to focus on teamwork and continuos improvement.
7. This study strategic quality planning needs further research.

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