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Title: Quality Management Factors and Related Performance Measures in the Cooperative Extension System.

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The purpose of this study was to identify the critical factors for effective quality management in the Cooperative Extension System (CES) and develop an instrument that measured quality management performance in selected CES organizations as a means of identifying organizational training needs.

Three procedures were applied in this study. First, critical factors of quality management were identified through a literature review and verified by an expert panel. Second, performance measures defining each critical factor were generated from the literature, approved by an iterative panel and assigned to scales. Finally, an instrument was developed and administered to a test population for purposes of establishing reliability and validity of the scales.

Seven critical factors were identified that contributed to effective organization-wide quality management in the CES: (a) Administrative Support for Quality, (b) Strategic Quality Planning, (c) Continuous Quality Improvement, (d) Strategic Human Resources Management, (e) Quality Information and Analysis, (f) Clientele Satisfaction, and (g) Quality in Education and Training.

Performance measures characterizing quality management were operationally defined from the literature, and approved by the iterative panel. An instrument, comprised of 69 performance measures, was designed and administered to a test population of Extension professionals, achieving a 91% response rate.

Five of the critical factors including: (a) Administrative Support for Quality, (b) Strategic Quality Planning, (c) Strategic Human Resources Management, (d) Clientele Satisfaction, and (e) Quality in Education and Training, and seven of their corresponding scales, showed evidence of reliability and validity.

The critical factors of Quality Information and Analysis and Clientele Satisfaction each had a scale that were reliable, but construct validity was not evident.

The critical factors of Strategic Human Resources Management, and Quality in Education and Training each had a scale that did not show evidence of empirical utility. All three scales within the critical factor of Continuous Quality Improvement did not show evidence of empirical utility.

This study offers a promising model for subsequent theory building and for more systematic research in assessing organization-wide training needs preceding the introduction of quality management technology in the Cooperative Extension System.

Quality Management Factors
and Related Performance Measures
in the
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CHAPTER I

INTRODUCTION AND BACKGROUND

From its beginning, the Cooperative Extension System (CES), a national educational network which spans 75 years, has sought to remain relevant, dynamic and flexible in response to contemporary issues and needs. Its mission states: "The Cooperative Extension System helps people improve their lives through an educational process that uses scientific knowledge focused on needs and issues" (CES Report, 1990; Rasmussen, 1989). Overall goals of the Cooperative Extension System have remained consistent with this mission throughout the history of the organization, yet organizational strategies have changed in direct response to emerging social, economic and technological issues.

In the last decade, the Cooperative Extension System has faced a new set of challenges brought about by changes in the global economy, the environment, demographics, family structures, values and resources (CES Strategic Directions, 1990). Federal deficits, state and local budget reductions and the struggle to fit within the university system's mission and priorities have also contributed to the unprecedented demands placed on the CES (CES Planning Information, 1990; Thompkins, 1989).

National and state Extension leaders have called for new directions in program development and organizational strategies that are visible, interdisciplinary, high impact, and cut across traditional program areas and departmental/college boundaries (CES Strategic Directions, 1991). The debate is no longer *whether* Extension should move boldly in new directions, but *how* to do so in a way that is true to the educational mission (Patton, 1989).

Total quality management, described as a theory-based managerial technology, has been proposed as a promising model for organizations to address the problems challenging the American public sector (Milakovich, 1991). In public sector and educational organizations such as the CES, the term quality management can be defined as a sustained organization-wide effort which focuses on continuous improvement in order to meet the current and future agreed upon needs and expectations of clientele.

Total quality management has been designated as the official management-improvement system for all federal executive agencies, with the United States Office of Management and Budget providing leadership for the quality improvement effort (Milakovich, 1991). In spite of the top-of - the-agenda attention, one has to wonder whether total quality management is just another fad or a genuine imperative which the public sector should embrace.

Nevertheless, today's shifting needs and priorities of clientele and unprecedented societal issues have brought the CES to a crossroads in its evolution (Warner & Christenson, 1984), and new organizational strategies must also be considered in response to these demands. Proposals have been forwarded concerning the mission of the CES in the future, but explicit organizational improvement strategies have been overlooked. The introduction of quality management technology in the CES may seek to ensure the survival of the organization and the people it strives to educate.

Statement of the Purpose

The purpose of this study was to identify the critical factors for effective quality management in the Cooperative Extension System and develop an instrument that measures quality management performance in selected CES organizations as a means for identifying organizational training needs. The specific questions addressed were as follows:

1. Which quality management factors are desirable for the Cooperative Extension System?

2. What are the organizational performance measures that characterize the specified quality management factors?

3. What empirical utility does Extension professionals place on the organizational performance measures?

Background for the Study

Theory development in the area of quality management is in its initial stages. Flynn, Schroeder & Sakakibara (1990) proposed quality management dimensions for manufacturing and service industries and developed an instrument with reliable and valid scales based on a theoretical framework. The authors suggest that research in the development of quality management factors and associated assessment instruments is of immediate and relevant concern.

Training is essential to the introduction of new technology (Rosow & Zager, 1990) and is cited as an essential element leading to effective quality management (Saraph, Benson & Schroeder, 1989). This study seeks to underscore the importance of training needs analysis in a field that is experiencing high interest and undergoing rapid transition.

There is strong evidence that interest is growing in applying quality management principles to the public and education sectors (Coate, 1990; Glaser, 1990; Rosander, 1990), yet no reports are cited in the empirical literature about the adoption of quality management in educational organizations. There is interest in implementing quality management in the Cooperative Extension System and quality indicators have recently been identified for Extension programs by Mueller (1991) and Smith (1991). However, these indicators are limited only to the Extension program development aspects of the CES. The quality management factors and related scales derived from the present study can be used to broadly define and facilitate the attainment of quality goals of the Cooperative Extension System.

Quality Defined

Quality management in the private sector has greatly increased in importance as an organization-wide technology to develop, maintain and continually improve quality at all levels of the organization in order to

maximize customer satisfaction (Ebrahimpour, 1985). Quality is a judgment by clientele or users as to whether or not a product or service surpasses their needs and expectations. The enhancement of quality is characterized by (a) clientele satisfaction, (b) continuous process improvement and (c) total participation by the organization (Gitlow, 1990).

Customer or clientele satisfaction is the ultimate goal of the organization committed to quality (Gitlow, 1990). An organization committed to quality principles views the client as the most important element of its success and has an ongoing process to determine how its products or services are performing and what new specifications would improve customer satisfaction. Therefore, quality begins with a focus on the user and communication of the clientele needs.

Based on the needs of the customer, continuous process improvement seeks to (a) improve the design that meets the consumer's expectations, (b) conform to specifications required to serve the needs of the customer, and (c) determine how the product or service performs in the marketplace (Gitlow, 1990). Process improvement modifies current products and processes to continuously reduce the difference between customer needs and process performance.

Total participation refers to organization-wide commitment to achieving clientele satisfaction. The process of total participation begins with identifying the needs of the clientele and working to produce quality products and services in an effort to meet and, if possible, exceed the customer's expectations.

As managers of an organization focus on these key components of quality, improvements should occur in performance and productivity, and ultimately, result in a better financial position for the organization (Adam, Hershauer, & Ruch, 1981). Through the never-ending improvement of the process, the accomplishment of organizational goals benefits not just the organization, but ultimately the customers, vendors, investors, and the community.

Training Needs Assessment and Quality Management

Although the empirical studies of quality management confirm the importance of training as one of the organizational requirements for

effective quality management (Goldstein, 1986; Garvin, 1983; Saraph, Benson, & Schroeder, 1989), the linkage between quality management and training needs assessment has not been explored in training and development or quality management literature.

Quality management training typically focuses on small group problem solving, communication, statistical process control and other relevant areas, in addition to classroom and on-the-job training related to specific tasks (Flynn, Schroeder & Sakakibara, 1990; Goldstein, 1989). Yet initiating these training and development activities without conducting a preliminary analysis of employee needs is violated time and time again (McLagan, 1989; Ostroff and Ford, 1989).

The value of front end analysis, or the systematic study of a problem, new organizational strategy, or innovation is well recognized by training theorists and practitioners (Goldstein, 1989; Harless, 1979; Rossett, 1987; Kaufman, 1982). This fundamental step of analyzing organizational-wide, group and employee training needs preceding the introduction of a new technology avoids the resistance and spotty results which often accompany a less targeted approach (McLagan, 1989).

Quality Management Applied to the Cooperative Extension System

Quality management is characterized as an organization-wide phenomena which requires sustained collaborative effort across functional and hierarchical boundaries to satisfy the customer (Vansina, 1989). Identifying the successful elements of quality management, and substantiating those elements with a thorough organizational-level front end analysis, offers a promising model for launching a quality management improvement strategy for the Cooperative Extension System. Indeed, the fundamental principles highlighted in the quality literature parallel the principles of the Cooperative Extension System: (a) focus on the customer or clientele; (b) continuous improvement; (c) action based on knowledge and research; and (d) commitment to education and training.

Quality is judged by the customer or clientele (Rosander, 1989). This is operationalized in the Extension program planning process through the identification of Extension initiatives in which national initiatives, and state and county priorities blend together to address critical issues of wide public

concern. Thus, clientele-driven quality becomes a strategic concept as exemplified in the shift in CES programming in the late 1980's to address critical societal issues in an attempt to better serve clientele. The concept of client-driven quality leads to greater clientele satisfaction (Application Guidelines, 1991) and ultimately may affect accountability and preference by stakeholders outside the organization which determine Extension resources (Mueller, 1991).

The utilization of systems methods and ideas will be necessary in the future in order for Extension professionals to address complicated unstructured situations (Patterson, 1991). Achieving the highest levels of quality also requires a systematic and well-executed approach to continuously improve all operations and units in the organization (Application Guidelines, 1991). Continuous improvements in CES may include (a) adding value by improving a service or specific attributes of a program, (b) reducing errors and variations in performance, (c) improving the time it takes to perform a task or to provide a program or service; and (d) improving effective utilization of resources. Parallel to the program development process in the CES, the process of continuous improvement contains regular cycles of planning, execution and evaluation.

Because of the relative importance of information (Dillman, 1986), it is beneficial to consider response time and quality together. Successfully meeting the current and future needs of clientele demands a shorter lead time for the introduction of Extension programs. Reducing the lead time when introducing programs or services can occur only when quality systems and processes are designed to meet both quality and response goals (Application Guidelines, 1991).

Extension educators have prided themselves on helping people make their own decisions and transferring the information generated by research and knowledge to people who "need" or desire it (Jimmerson, 1989). Facts and data based upon reliable information sources provide the clientele with the opportunity for analysis to support evaluation and decision making in their own lives.

The use of facts and data for quality improvement may entail collecting and using data that might not be evident without analysis (Application Guidelines, 1991). The reliance of research and knowledge in a quality system supports a variety of purposes in Extension such as

assessment, planning, evaluating performance and meeting professional demands to conduct research and publish results.

Finally, both the principles of quality and the principles of the Cooperative Extension System rely on a commitment to education and training. A comparison can be drawn between the employee participation model valued in quality management and the human resource development model found in CES organizations. Organizations with quality objectives require a fully committed, well-trained workforce. Implicit in the human resources aspect of quality is full participation, quality leadership and personal and organizational growth. This is accomplished via training and development and suitable involvement in quality activities. Needs assessment for the types and amounts of quality education and training is considered, along with methods of delivery and reinforcement of knowledge and skills.

Patterson (1991) described two themes in which Extension educators of the future will function: autonomous learning and effective communication. Autonomous learning implies that Extension professionals will not be sought out for subject matter expertise but valued for their ability to retrieve and synthesize large amounts of information in order to diagnose complex situations. Effective communication will be needed to understand and use all the personal and mass communication techniques to facilitate the learning of others. Training and education activities specified to meet quality objectives are clearly associated with the interdependent qualities suggested for personal and organizational growth in Extension. This may include basic quality awareness, problem-solving, meeting customer requirements, communication skills and use of systems methodology.

This emphasis on quality education and training extends beyond the employees in an organization. In quality organizations, it extends to customers, suppliers, investors and the community. In Extension organizations this can be compared to clientele, volunteers, external stakeholders such as legislators, university presidents, provosts and deans, and taxpayers.

The comparison of contemporary Cooperative Extension System principles and quality principles reveals the potential for quality management becoming central to the organizational improvement strategy of the Cooperative Extension System.

Assumptions

The following assumptions were made in the design of this study:

1. Theories and models of quality management in the private sector may be appropriately applied to public educational organizations.

2. Quality management, as it is defined in this study, may be an effective managerial technology for accomplishing organizational goals of the Cooperative Extension Service.

3. An organizational front end analysis may contribute to the successful adoption and implementation of quality management in the Cooperative Extension System.

4. There is interest in the Cooperative Extension System in implementing quality management as a new technology at the organizational level.

5. Some of the values and practices leading to effective quality management already exist in the CES.

6. Organizational strategies, new technology and requirements for training employees change continually, making training needs analysis a continuous process in most organizations.

Delimitations

The delimitations relevant to this study are listed below:

1. This study concerned the identification of quality management factors and the development of an instrument to measure quality management performance in selected CES organizations. It did not reflect literature in quality of work life, participative management and other trends and issues in organizational development.

2. This study included the development of an instrument to assess organizational-level needs analysis with respect to quality management. Sub-unit (work group) and individual needs analysis cannot be determined from this instrument.

3. The use of the instrument to determine the level to which quality management practices are actually occurring in CES organizations was beyond the scope of this study.

Definition of Terms

The major terms used in this study are defined below.

Cooperative Extension System: a national education network, that, as part of the Land-Grant institutions, is dedicated to education and service that delivers objective, research-based information to individuals, in an effort to maximize productivity, develop leadership skills and improve the decision-making ability of the people, and community environments in which they live.

Critical factors: broad categories that define effective quality management.

Educational organization: an educational and/or community organization that is not operating for a profit and whose mission includes improving the quality of life for individuals, families and communities through education and service.

Front end analysis: the systematic study of a problem or innovation, in order to make effective decisions or recommendations about training and non-training solutions, who within the organization should receive training, and content of training (Rossett, 1987).

Iterative panel: a modified Delphi method which integrates the responses of surveyed experts through a series of iterations for the purposes of providing content validity in a research study. The iterative

method combines controlled feedback by responding to information generated by the researcher with expert opinion to reach consensus on a specified topic

Levels of analysis: a theory which conceptualizes the training system as existing on three levels: those of the individual, the department level, and the organization (McGehee & Thayer, 1961).

Managerial technology: a technical method of achieving a practical purpose in order to perform at a higher level of quality than before. In this study, quality management is viewed as a system-wide technology for organizations which will require training.

Performance measures: operational definitions of behavior related to quality management philosophy and techniques.

Quality management: an integrated approach to quality, which focuses on the continuous improvement of quality at all levels in the organization, in order to maximize customer satisfaction (Fiegenbaum, 1961).

Training: the formal procedures which a company uses to facilitate employees' learning so that their resultant behavior contributes to the attainment of the company's goals and objectives (McGehee and Thayer, 1961).

Summary

Development of the theory base in total quality management as a new managerial technology is in its initial stages. The studies in quality management are notably in the manufacturing field of operations management and are not readily generalized to other fields of study. In order for total quality management to develop and advance as a managerial technology, careful attention needs to be given to building and verifying theory.

There is interest in applying quality management principles to the public sector (Milakovich, 1990) yet no studies are cited in the literature related to the application of quality management in a public sector organization. Furthermore, essential elements leading to effective quality management and statistical indicators for assessing quality management practices in educational organizations have not been reported. The identification and empirical testing of the critical factors and related performance measures in the Cooperative Extension System will contribute to the emerging field of quality management research in an educational organization.

There were no reports in the literature related to the steps that precede the introduction of quality management in terms of training needs assessment. The development of a theoretical framework that draws upon the linkage between quality management and training needs assessment underscores the importance of training needs analysis in a field that is experiencing high interest and undergoing rapid transition.

Quality management is characterized as an organization-wide phenomena that lends itself to the principles of the Cooperative Extension System. While quality indicators have recently been identified for Extension programs (Mueller, 1991; Smith, 1991), the quality management factors and related scales derived from the present study more broadly define quality goals at all levels of the Cooperative Extension System. The identification of the successful elements of quality management, and substantiating those elements with a thorough organizational-level front end analysis, offers a promising model for launching a quality management improvement strategy for the Cooperative Extension System.

This study has followed a logical progression from the development of a theoretical base of quality, its relevance to the public sector and the Cooperative Extension System, to the linkage of organizational level of analysis of training needs. Together, the disciplines provided a theoretical and empirical framework for the development of a measurement instrument. The assessment instrument was designed and empirically tested for the purpose of assessing organization-wide training needs leading to the introduction of quality management in a Cooperative Extension System organization.

CHAPTER II

REVIEW OF RELATED LITERATURE

Goals for attaining quality are based on the ancient principles of product inspection by consumers and the European craftsmanship concept (Juran, 1990). In the larger towns, craftsmen organized themselves into guilds which strictly enforced product quality. Craftsmen were both trainers and inspectors (Gitlow, 1990). The Industrial Revolution created the factory system, and quality was managed through the skills of the craftsmen who had begun to work for factories and supplemented by departmental inspection or supervisory audits (Juran, 1990). Down through the decades, upper management became detached from the process of managing for quality (Gitlow, 1990; Juran, 1990).

At the end of the 19th Century in the United States, Fredrick Taylor pioneered scientific management, removing work planning from the job responsibilities of workers and foremen and placing it in the hands of industrial engineers. Part of this process was an inspection to separate nonconforming and conforming products. Quality was viewed as the sole responsibility of the manufacturing department. Upper management eventually realized that quality suffered because of this system, and quality assurance was created as part of management's responsibility.

Shewhart, a mathematician who introduced statistical quality control in 1924, was the first to discuss the philosophical aspects of quality. He pointed out that quality has both an objective side and a subjective side. This view was uniquely attributed to Shewhart and has contributed to the multidimensional view of quality that exists today (Gitlow, 1990).

World War II quickened the pace of quality technology worldwide. After the war, the Japanese were concerned with rebuilding Japan and breaking into foreign markets. A major obstacle to selling their products in international markets was a reputation for shoddy products exported prior to World War II. In 1950, Edwards Deming, a statistician who had worked at the Bell System, convinced the Japanese that their products could become the best in the world by instituting his methods of quality improvement. The Japanese industrialists took Dr. Deming's

teaching to heart and the quality, productivity, and competitive position of Japan was tremendously strengthened (Gitlow, 1990). The Japanese created unprecedented quality management strategies including upper management in charge, training for all functions at all levels, continuous quality improvement and work-force participation (Juran, 1990). The most obvious effect of the Japanese quality revolution was its massive export of high-quality goods.

By the mid 1970's, the impact of Japanese exports on the United States was significant, including loss of sales and decreasing global market share. The United States economy has been damaged by the resulting unfavorable trade balance. A combination of increased consumer interest in product quality and foreign competition forced American management to become more concerned with quality (Gitlow, 1990; Juran, 1990).

Reduced productivity, increased costs, strikes, and high unemployment further influenced the turn to improvement of quality as the means to organizational survival (Gitlow, 1990). In the late 1970's and 1980's, the United States began striving for quality in all aspects of business and service organizations, including finance, sales, personnel, maintenance, management, manufacturing and service. In contrast to the more traditional view of quality control where the emphasis was on inspection and rejection of inferior products, the focus was on the entire system.

The demand for quality in the United States was fueled, in part, by the influx of high quality Japanese products. At the same time, the media and other observers began to recognize that the inefficiency in both private and public enterprises in the United States raised consumer prices and lowered the standard of living (Deming, 1986).

One explanation for the increased demand for higher quality in products and services has been the large numbers of young adults entering college. Education, especially college education, has gradually, but inevitably, changed the sophistication of the consumer (Hage, 1988). In addition to more highly educated consumers, other consumers have developed a more complex view of products and services, which is evident in how products are evaluated. Consumers want products to have multiple attributes, often conflicting with one another.

As a result of this sophistication, quality has become more important than quantity relative to the price. This does not mean price is no longer important, it only means that in a larger proportion of products, quality has become a major consideration (Hage, 1988).

All of these changes have occurred in the last decade, highlighting a shift in values toward quality, stronger connections between research and development of new products, and the demand for individualized products and services (Hage, 1988).

Organizational Improvement through Quality

Although rooted in work done in the United States by W. Edwards Deming, Joseph M. Juran, and others prior to 1950, total quality management (TQM) has been applied with notable success by the Japanese in the last forty years, especially in the manufacturing industry (Samson & Yao, 1990). The approach has received increased acceptance in the United State in the last decade.

Quality management has been defined in many ways, creating questions as to what quality improvement costs, how to measure it, and how to achieve it. Juran (1990) suggested "fitness for use" as a concise definition of quality, and distinguished between quality as "freedom from deficiencies," and quality as a measure of "product features." Garvin (cited in Samson & Yao, 1990) provided several definitions of quality management as given by various writers in the field. The definition of quality management that most closely resembles the focus of this study is provided by Fiegenbaum (1961). He stated, "The term quality management represents an integrated approach to quality, which focuses on the continuous improvement of quality at all levels in the organization, in order to maximize customer satisfaction." Although "total quality management" is the preferred term used in this study, other quality terms are used interchangeably relative to cited authors.

Organizations investigating the value of quality management practices often overlook the benefit of organizational improvement in favor of strengthening their competitive advantage. Total quality management has been described as the most integrative concept in management and organizational development to date.

Vansina (1989) stated that the essence of total quality control (TQC) is its systematic method of organizational improvement through sustained collaborative effort across functional and hierarchical boundaries to satisfy the customer. Total quality control allows organizations to improve customer satisfaction, enhance the quality of products and services, ensure cost-effectiveness through the reduction of waste, increase flexibility, reduce work-in-progress, improve delivery times, better utilize human resources, and increase the possibility to automate when necessary.

Theoretical Background of Quality

It has only been in the last decade that there has been any urgency in the development of research and theory in total quality management (TQM). The demands for quality on one hand, and the growing interest in quality management practices on the other, have led to research and theory development in the fields of industrial and organizational psychology, operations management, training and development, and allied disciplines.

The literature review for the present study focuses on quality management from an organization-wide, managerial point of view. The writings of Deming (1981,1982, 1986); Juran, (1974); Ishikawa, (1976); Crosby, (1979); Garvin, (1983; 1986); and Adam, Hershauer and Ruch (1981) are representative of the expanding literature base on quality management practice (Saraph, Benson & Schroeder, 1989).

Deming's (1981) early work approaches quality management from a statistical perspective. Deming's efforts are symbolized by the Deming Prize, the highest award for Japanese quality improvement. More recently, he has broadened and amplified his approach through his fourteen principles of quality management (Saraph et al. 1989; Deming, 1986). Deming states that companies should establish constancy of purpose by means of innovation, research and education, continuous improvement of products and services and maintenance of equipment (Walton, 1986).

Juran (1974) one of the early leaders in the quality field, has helped build the conceptual basis for quality management. He proposed three basic processes: quality control, quality improvement, and

managerial and technical breakthroughs. In contrast to Deming's statistical approach, Juran emphasized quality planning, establishment of formal quality policy, quality through product design, quality audits, and the systems approach to managing quality through the organization (Saraph et al. 1989). Juran's (1990) research shows how breakthroughs can be achieved through continuous process-improvement and that at least 85% or more of quality problems are under management's control rather than individual performance discrepancies.

Ishikawa (1976) emphasized total quality control and has advocated the use of cause-and-effect diagrams or "fishbone" diagrams to diagnose quality problems. Much of his contribution to the field has been the collection of data regarding quality and its use by production workers and first-line supervisors, as well as stressing employee participation (Saraph et al. 1989).

Crosby (1979) is highly visible in the field of quality management because of the practitioner nature of his work. He is best known for his zero defects program and a consistent focus on the people-oriented issues inherent to quality management.

Together, the theories of these quality leaders form the basis for what has become known in the United States as Total Quality Management.

Malcolm Baldridge National Quality Award

The most visible and widely recognized compilation of current trends and practices in quality management from an organization-wide, managerial point of view is the Malcolm Baldridge National Quality Award. This award has been considered the "highest level of recognition for quality that an American company can receive" (DeCarlo & Sterett, 1988).

The fundamental purpose of the Baldridge award program is to strengthen quality in the United States. The four overriding goals of the award are to: a) elevate quality standards throughout the United States; b) create a quality excellence standard for the United States used in all organizations; c) create harmony, communication, and consistency; and d) foster involvement of people and organizations (Reimann, 1991; Dooley, K. J., Bush, D., Anderson, J.C., & Rungtusanatham, M., 1990). There are

seven distinct categories of evaluation for the award related to leadership, information and analysis, strategic quality planning, human resources utilization, quality assurance of products and services, quality results, and customer satisfaction (Application Guidelines, 1991).

Any for-profit business or subsidiary located in the United States is eligible to apply for the Baldridge Award. Despite the fact that the public sector is not eligible for this award, interest in the application guidelines has spread to government, health care and education. It was reported that in 1990 190,000 applications were requested, presumably to be utilized as a self-assessment and training document (Reimann, 1991).

Several points related to the Malcolm Baldridge National Quality Award strengthen the focus of this study. Although the experiential significance of the award is acknowledged, no theoretical base of the award has been established (D. Gobeli, personal communication, December, 1990). The application guidelines provide an operational definition of total quality management from a "for-profit" perspective. Finally, the guidelines are not definitive in measurement and provide little guidance concerning performance measures, since the overall focus is on implementation and results rather than analysis.

Empirical Literature Related to Quality

The literature reported thus far has been based on theories resulting from years of experience in the quality field; however, none of these prescriptions have been derived from organization theory. The only application of organization theory that could be found in the quality literature was in the conceptual model of quality management proposed by Adam, Hershauer, and Ruch (1981). Since quality management is an organization-wide function, the organizational perspective contributes significantly to the practice of quality management and, in turn, improving quality performance (Benson, Saraph & Schroeder, 1990). Furthermore, quality management as an organizational phenomenon lends itself particularly well to empirical study and is in its infancy, from a research point of view (Flynn et al. 1990). Empirical work done on quality management has been characterized as being narrowly focused on

quality management methodology such as statistical process control (SPC) or quality functional deployment (QFD) rather than organization-wide assessment of quality management performance. Other empirical studies show a lack of rigor, particularly with regard to reliability and validity issues.

The existing empirical studies have been more anecdotal than research and theory oriented. Flynn et al. (1990) found that many of the quality management studies described questionnaires, interviews and observation and were best characterized as case studies and in-depth examination of relatively few observations. Limited data have been collected in the studies reported, and what data were collected were mostly descriptive. Very few of the investigators made any attempt to generalize their quality management studies, and as such, are not as valuable from a research perspective.

The same concern can be expressed regarding survey research done in the area of quality management. Flynn et al. (1990) found that very few of the studies of quality management attempted to establish the reliability and validity of their instruments, which severely limits the generalizability of the results. Although restricted from an organization-wide perspective, some of the studies of quality circles cited in their study have used reliable and valid instruments (Flynn et al. 1990).

Flynn et al. (1990) expressed the need for reliable and valid instruments to assess the broad set of dimensions which comprise organization-wide quality management. Until recently, even for commonly recognized critical factors such as management leadership for quality and employee involvement in quality, no operational measures were available.

Garvin (1983, 1984) is noted as the first to conduct a systematic empirical study of organization-wide quality practices and their impact on quality performance. Because of the careful collection and interpretation of data, this study is highly generalized and has been the basis for subsequent theory building. In his study of the window air conditioner industry in the U.S. and Japan, Garvin concluded that, in companies with effective quality management, there was strong management support, a strong goal-setting process, and a high level of cross-functional

participation in quality. He also found that the leading performers had superior quality information systems in which managers received more timely, accurate, and extensive quality data.

Saraph et al. (1989) were the first to investigate and publish a detailed measurement analysis for assessing the critical factors of quality management. The authors organized and synthesized the various sets of critical factors identified in the literature and proposed measures of overall quality management of the organization. No previously published research has developed a comprehensive set of requirements or critical factors that has spanned the literature (Flynn et al. 1990). The critical factors of quality management identified were: management leadership, role of the quality department, training, product/service design, supplier quality management, process management, quality data and reporting, and employee relations (Saraph et al. 1989).

Using perceptual data collected from twenty business units in service and manufacturing firms, Saraph et al. (1989) proposed operational measures of the critical factors of quality which have been shown to be reliable and valid. While the instrument can be used with confidence by other researchers in the field of operations management, it is only applicable to manufacturing at the division level, not the plant level (Flynn et al. 1990). Furthermore, customer involvement was not included as a critical dimension, and its importance has been explicitly acknowledged in other literature on the topic of quality.

Flynn et al. (1990) proposed a comprehensive empirically-based model for quality management based on eight quality management core dimensions. The core dimensions centered on top management support for quality, quality information, process management, product design, workforce management, supplier involvement, customer involvement, and rewards for quality.

Based on Flynn's model, a set of fifteen scales were proposed. Analysis of the quality literature and a set of plant visits indicated that the scales had content validity and, from a statistical analysis, the scales were shown to be reliable and valid. Flynn et al. (1990) provided a clear model for conducting reliability and validity analysis of a proposed measurement instrument in the area of quality management from an organization-wide point of view. However, the elements are likely to resemble the functional

roles of a manufacturing organization rather than an educational organization and have a general rather than specific orientation toward customer involvement and customer service.

Quality Management in the Public Sector

On the sidelines of the crisis in global competition and the growing quality revolution as experienced by the private sector is the re-examination of bureaucracies and other major institutions in society (Hage, 1988). There has been a general belief that social policy has not kept up with the emerging realities of individuals and groups in the United States.

This critical look at bureaucracies is further evidence that people are rethinking the requirements for new social institutions, and demanding that the quality of services in public sector organizations exhibit the same high quality becoming evident in the private sector. In bureaucracies, as German social scientist Max Weber (1946) pointed out, means tend to become ends. The essential focus of an organization shifts inward, rewarding those activities that maintain the bureaucracy's inner health, regardless of whether or not it is doing what it is supposed to do.

The inability of bureaucracies to respond to social realities and demands of the people they are expected to serve directly contributes to the crisis in productivity and quality improvement. Hodgekinson (1988) proposed that one way for bureaucracies to view their role in achieving global economic and competitive status in the United States is to perceive the client or customer as the most important part of the organization. The literature on the topic of quality also ascribes to this perspective, and, consequently the customer determines whether or not the organization and its services are acceptable. This is a radical departure from where education and public sector organizations currently operate (Rosander, 1989).

The question arises, can quality management goals and practices be expanded to education and community organizations to respond to the serious challenges facing individuals, families and communities, and ultimately, to make the United States more economically competitive?

<u>Improving Quality in the Public Sector</u>

Milakovich (1991) described total quality management as a theory-based option that provides a promising model for launching a strategy for total quality management for the American public sector at all levels. Yet a critical observer has to wonder whether total quality management is just another fad or a genuine imperative which public sector organizations are expected to embrace.

The concern surrounding the issue of applying what appears to be a managerial technology for the private sector to the public sector, indeed, an educational institution, is valid and is not an issue that is easily sorted out. Bozeman (1987) provided a comprehensive overview of the empirical literature related to the similarities and distinctions between public and private organizations. He maintained that while there was significant differences in organization behavior and management, virtually any organization--government, business, not-for-profit--had significant public aspects. "Sector blurring" was reported as becoming as much the rule as the exception and new organizational forms had emerged that were not easily classified by conventional labels of government-business.

There has long been an interest in transferring technologies, including managerial technologies, between sectors (Bozeman, 1987). The interest in private-sector management, in particular with regard to quality, has intensified in the past decade. Transfer and implementation of managerial technologies typically proceed "willy nilly" or, at best, according to the hunches of persons involved. There was substantial evidence that some managerial transfers were dismal failures and others were ringing successes, but the knowledge of the determinants of success and failure was limited (Bozeman, 1988).

Ledford, Lawlor, and Mohrman (1988) reported that quality management practices have been used with some degree of success in virtually every type of organization, including government agencies, white-collar-organizations, and service organizations. While quality management was used more widely in blue-collar manufacturing than white-collar organizations, the authors concluded that there was no basis

in the literature for claiming that quality management was more effective in some organizational environments than others (Ledford, Lawlor, & Mohrman, 1988).

Milakovich (1991) reported that total quality management (TQM) strategies were being employed extensively to improve a wide range of service organizations, federal executive agencies, hospitals, and public utilities, as well as state and local governments and colleges and universities. TQM was recently designated the official management-improvement system for all federal executive agencies. Since 1988, the United States Office of Management and Budget (OMB) has provided leadership for a joint public and private-sector quality improvement effort. The Federal Quality Institute was also established in 1988 to assist federal executives in their quality-improvement efforts (Milakovich, 1991).

Improving quality without increasing costs may be more difficult to achieve in the public sector than in the private sector for a number of reasons. First, there is an on-going attempt to balance the multiple, vague, and conflicting goals of diverse interest groups for which public sector organizations are responsible (Milakovich, 1991). The literature related to autonomy, or the degree to which an organization has power with respect to its environment (Price & Mueller, 1986), helps to explain this difficulty in achieving quality in public sector organizations. As expected, the greater the accountability of the organization to political units outside the organization, the lower the autonomy is in relation to decision-making authority inside the organization (Price & Mueller, 1986).

Second, annual budgets force decision-makers to focus on short-term rewards rather than long-term organizational values such as increased productivity, higher quality of service, reduced waste, and more efficient use of scarce public resources (Sensenbrenner, 1991).

Finally, public sector organizations operate within a different competitive environment than their private-sector counterparts. Unlike competition in business and industry, the "competition" for public sector organizations is symptomatic of larger problems within society (Jenkins, 1990). Jenkins argued "competition" for education and community organizations was exemplified by economic instability, lack of basic work

skills, illiteracy, school failure, drug and alcohol abuse, negative or dysfunctional relationships, inadequate parenting skills and caregiving options.

The advantage that private business and industry have that is lacking in education and community organizations is a relatively clear vision of the consequences in relation to market share loss. For education and community organizations, there are no definitive measures to determine if the "competition" has succeeded (Jenkins, 1990).

Quality in Educational Settings

While quality management practitioners cite the importance of having knowledge and skills related to quality in the workplace, quality as a curriculum has long been devalued as a subject unworthy of academic attention (Edgeman, 1988). Degree programs in quality and reliability have only recently been established at several leading American academic institutions. Edgeman (1988) highlighted the academic institutions that provided quality and reliability programs and described a curriculum that captures the essence of a masters level degree program in quality, reliability and productivity.

Meade (1991) described the mutual benefits of an ongoing dialogue between educators and business people and offered insight into what the globally competitive marketplace demanded of students and educators. Glasser (1990) suggested that Deming's ideas can be incorporated into public schools so that almost all students have the experience of producing high-quality work. Glasser (1990) relied on the industrial analogy that compares workers and managers to students and teachers. He suggested, that if there were more and better-publicized models of a better way of doing things, people would demand the same quality from their school systems that they demand from consumer goods (Glasser, 1990).

Other attempts have been made to apply quality management to the processes found in the education sector (Coates, 1990) primarily the administrative services aspect of educational institutions. Nevertheless, few attempts are underway in applying quality management principles to

the education sector (Coates, 1990) and there are no reports cited in the empirical literature related to the adoption of quality management technologies in educational organizations from an organizational needs assessment perspective.

The Cooperative Extension System

The underlying philosophy of the Cooperative Extension System (CES) has always been to "help people help themselves" by taking the university to the people. The system has evolved into an institution that focuses on priority needs and allocates its resources towards those needs by providing quality information, education and programs to address the concerns (Rasmussen, 1989).

The Smith-Lever Act, from which the Cooperative Extension System was enacted, required matching funds from state and local sources. Today, the federal partner funds approximately 30% of the system, state and local funds provide the remaining 70%, with the state usually, but not always, the dominant funding source. Each state Extension service is headquartered at a land-grant university and usually is closely associated with the agricultural experiment station (Rasmussen, 1989).

The organizational structure and staffing pattern contributes to the Cooperative Extension System's educational strength. One percent of CES staff is at the federal level, approximately one-third at the land-grant university, and two-thirds located in counties or areas in each state. In addition, there are local volunteers who receive training and direction from professional staff to assist in extending programs (Rasmussen, 1989).

The accomplishments of the Cooperative Extension System in the past 75 years have been possible because certain fundamental principles were established at the outset. These included identifying and meeting the needs of the people, designing programs based upon research, communicating research needs to the land-grant institutions, developing more effective educational methods, and maintaining the cooperative agreement between the local, state and federal governments (Rasmussen, 1989).

General purpose descriptions and critiques of the Cooperative Extension System are provided by Rasmussen (1989), Dillman (1986) and Warner and Christenson (1989). The literature reviewed for this study focused on issues that are either specific to research on quality or contemporary organization-wide managerial practices.

The Extension Services of Minnesota and Maryland, independent of each other, have developed explicit criteria for excellence and quality in Extension programs (Mueller, 1991; Smith, 1991). Both provide conceptual frameworks for application in Extension program development and evaluation processes. Mueller (1991) reported that critical attributes were identified which were associated with high impact programs, and, from these, quality indicators or principles for guiding decision making and action were developed. Mueller (1991) suggested that decisions made in the name of quality improvement have the potential to shape the expectations university partners, legislators and external collaborators have of Extension.

Smith (1991) described the benefits associated with identifying quality criteria and examined why evaluative criteria to judge excellence has been lacking for Extension programs. The criteria cited for judging excellence in research and extension efforts included relevance, quality process and utility. Relevance refers to whether the focus of the program is based on need or expected return. Extension has relied on relevant criteria for its accountability in the past. The quality process refers to whether credible procedures are followed. Quality process as a criterion of excellence in research has been measured primarily by methods of peer review. The criteria of quality process (Smith, 1991) parallels continuous process improvement language found in quality management literature. The quality process criteria described by Smith could be strengthened by the broader application of continuous improvement, not just for the sake of offering a credible process subject to peer review, but for the ultimate purpose of meeting clientele needs.

The criteria identified as utility means that the outcome is expected to be of some use. Smith implies that relevance, quality process and utility will be essential for justification of continuing or increasing public or private funding of Extension programs in the future.

The criteria proposed by Smith (1991) and Mueller (1991) significantly contributes to the quality dimensions that have been identified by others outside the education discipline. The quality indicators identified for Extension programs strongly parallel the specific service quality dimensions identified in Zeithaml, Parasuraman and Berry (1990).

The criteria and performance measurement in the name of quality improvement in Extension programs provided by Mueller (1991) and Smith (1991) lay the preliminary groundwork for the introduction and adoption of quality improvement technology in the organizational context. However, the conceptual frameworks described by Smith (1991) and Mueller (1991) are appropriate for Extension program development *per se* and not to the organizational structure of the Cooperative Extension System.

Extension has been and continues to be an important educational agency, yet the organization stands at a crossroads in its evolution (Warner & Christenson, 1984). Simultaneously, the concern about the future of social institutions (Hage, 1988; Hodgekinson, 1988) underscores the imperative for re-examination of the Cooperative Extension System mission, whom it should serve, its management, and its methods of determining issues and programs.

Rasmussen (1989) has described the proposals made by an Extension committee regarding the future of the Cooperative Extension System. The proposals concern the future mission of Extension, identification of the people whom it should serve, the roles of the federal, state, and local parts of the system, and programs that might or should be undertaken. Yet what appears to have been overlooked is an explicit organizational improvement strategy which may help to ensure the very survival of the organization.

Organizational Training Needs for New Technology

Training has always been an essential element in the adoption and implementation of new technology. New technology grows out of continual advances in the sciences, and meshing together elements of separate disciplines. New technology also grows out of advances in

intellectual disciplines creating new social technology (Rosow & Zager, 1988). Finally, there are new organizational and managerial technologies exemplified in the emergence of total quality management. Regardless of the discipline from which new technology arises, training is essential for adoption within an organization.

This study concerns the steps that precede the introduction of new technology. The decision to adopt the new technology of total quality management carries with it the demand for the acquisition of technological skills and knowledge. However, it does not determine which individuals should receive which skills and knowledge. If training for a new technology is to be conducted with consideration of organization-wide application, there must be a guiding principle for deciding who gets what types of training, when the training is conducted, and how the training is delivered and evaluated.

Rosow and Zager (1988) proposed that the single guiding principle for training is whether the organizational business strategy requires it. The strategy defines the goals and objectives of the organization, and the use of the technology is adopted to accomplish those goals.

This is a radical departure for those organizations in which training and development activities have not been considered central to the business of the organization. In these organizations, training has often been tolerated because it is viewed as either a staff benefit or a means to remedy an isolated skill discrepancy (Gill, 1989).

A training intervention may have the ultimate purpose of improving a work unit's or individual's performance in an organization, and costs are associated with the acquisition of the necessary skills. However, if the need for new technology and subsequent training grows out of the organization's mission and long-term business strategy, then training becomes as vital as the other components in the new technology--which, in fact, it is (Rosow & Zager, 1988).

Training efforts that reflect the business strategy of the organization and are conveyed through the managers and supervisors are more likely to be integrated into operations and planning (Rosow & Zager, 1988). The authors recommend that senior associates include a training plan as a critical component of the corporate strategic plan to ensure that all levels of

the organization have the knowledge and skills to carry out the strategic plan. Furthermore, managers will recognize that training and development activities which support the organizational business strategy are not only critical to all employees but also to the survival of the organization.

Since business strategies, new technology and requirements for training will change continually, training needs assessment becomes a continuous function.

Training Needs Assessment

The development of research and theory in training needs assessment has been a focus of concern ever since McGehee and Thayer (1961), Campbell (1971) and Goldstein (1974) stated that training systems require systematic research attention before energy can be profitably focused on particular training methods.

One of the most influential texts on training needs analysis was authored by McGehee and Thayer (1961) and their approach is still promoted by many training researchers and practitioners. They argue against intuitive approaches to the solutions of training problems and suggest a three-fold, interrelated approach to determining training requirements of an organization or a component of an organization. Their approach consists of:

1. Organization analysis--determining where within the organization training emphasis can and should be placed.

2. Operation analysis--determining what should be the training content in terms of what an employee must do to perform a task, job, or assignment in an effective way.

3. Man (person) analysis--determining what skills, knowledge, or attitudes an individual employee must develop to perform the tasks which constitute the job in the organization.

Although McGehee and Thayer's framework (1961) appears comprehensive at first, Moore and Dutton (1978) highlight the omission of environmental and structural analyses. They suggest that McGehee and Thayer's model lacks explicit attention to issues of training needs as related to work group performance and internal group processes. This is of particular importance in light of the trends in participatory management and self-managed work groups.

Organization analysis studies the entire organization, its objectives, its resources and the allocation of those resources as they relate to the organizational objectives. The organizational analysis provides the context for analyzing training requirements within which other analyses are performed.

Although the importance of incorporating both macro level (organizational) and micro levels (group and individual) has been implicitly acknowledged in the training research literature (McGehee & Thayer, 1961; Ostroff & Ford, 1989), it has not been given sufficient consideration in research or practice. Goldstein (1989) observed that the area of organizational analysis has an extremely limited theoretical and empirical base.

Levels of Training Needs Analysis

Ostroff and Ford (1989) synthesized the organizational psychology levels of analysis literature to propose a contemporary framework for viewing the organizational, sub-unit, and individual analysis of training needs. The levels-of-analysis perspective forces training researchers to explicitly acknowledge the importance of understanding the relationship among characteristics of organizations, groups and individuals. The integration of the levels concept and training needs assessment (McGehee & Thayer, 1961; Kaufman & English, 1979; Rossett, 1987) forms a theoretical framework for more systematic research on training needs analysis issues.

When developing measures for use in levels-of-analysis research, the unit of theory, or the level on which the theory is based, becomes an important consideration (Ostroff & Ford, 1989). The unit of theory should

dictate the level or levels selected for observation (Mossholder & Bedeian, 1983) and measure the variables at the appropriate level of analysis. Because quality management is a phenomenon that is integrated into all aspects of the organization, the unit of theory in this study addressed the organizational level of analysis.

Concepts at the organizational levels should be defined more broadly than those at lower levels. As an example, "quality education and training" at the organizational level is more global in intent and would require more specific and measurable objectives at the operations and individual-levels of analysis (R. Stiehl, personal communication, April, 1991).

Establishing congruency between conceptualizing and operationalizing the levels may be difficult (Ostroff & Ford, 1989). The preferable approach is to develop constructs and corresponding operational definitions at the same level of analysis (Glick, 1985; Roberts, Hulin, & Rousseau, 1978; Rousseau, 1984). When this approach cannot be used, aggregation of responses may be appropriate; however, aggregation and interpretation of responses at the higher level of analysis may lead to speculation and inappropriate conclusions about training needs at the sub-unit or individual levels.

Once data have been gathered, inferences can be made about training needs to match the level chosen for the design of the training intervention. Thus, the levels-of-analysis perspective is also an organizing framework for considering the complete process of training needs analysis, design, and evaluation (Ostroff & Ford, 1989).

Ostroff and Ford (1990) asserted that there is little research on training needs analysis at the organizational level, regardless of the content area. The emerging literature on levels-of-analysis issues (Goldstein, 1989; Roberts, Hulin, & Rousseau, 1978; Rousseau, 1985) provides a perspective for viewing the analysis of training needs which more adequately addresses the structuring of the organization and complexity of the training function.

Summary

Development of the theory base in total quality management as a
new technology is in its initial stages. In order for total quality
management to develop and advance as a managerial technology, careful
attention needs to be given to building and verifying theory. The studies in
quality management are notably in the manufacturing field of operations
management, and, since most cannot be characterized as empirical
research, they can not be readily generalized to other fields of study. At
the same time, there is interest in applying quality management principles
to the public sector (Milakovich, 1990) even though no studies are cited in
the literature related to the application of quality management in a public
sector organization.

There were no reports in the literature related to the steps that
preceded the introduction of quality management in terms of training
needs assessment. The development of a theoretical framework that
draws upon the linkage between quality management and training needs
assessment underscores the importance of training needs analysis in a
field that is experiencing high interest and undergoing rapid transition.

The empirical research characterized by this study will contribute to
the building of theory, particularly in the application of quality management
technology to a public sector organization. The identification and
empirical testing of the critical factors of quality management and related
performance measures in the Cooperative Extension System will
contribute to the field of quality management research in an educational
organization.

CHAPTER III

METHODOLOGY

The purpose of this study was to identify the critical factors for effective quality management in the Cooperative Extension System (CES) and develop an instrument that measured quality management performance in selected CES organizations as a means of identifying organizational training needs.

Three procedural phases were followed in this study and are described in Figure 1.

Identification of Critical Factors

The first phase in the instrument development process was to identify the critical factors for effective quality management in the Cooperative Extension System. The purpose of the literature review was to extract those factors that were representative of the literature and characterized organization-wide quality management in the context of the Cooperative Extension System (Phase 1 in Figure 1). Content validity was established through an extensive literature review of quality management, training needs assessment and the Cooperative Extension System.

Quality management factors were derived from eminent quality practitioners and supported in the empirical literature. The task was approached through a process of grouping similar quality management requirements found in the literature. Definitions of each critical factor were generated to clarify the meaning and define specific components of each broad factor.

Consultants with extensive knowledge and experience of quality in public sector and education organizations were asked to participate on the expert panel. The purpose of the expert panel review was to verify the categories identified in the literature using a modified expert panel technique. The panel was asked to judgementally assign a response to each of the quality management categories according to the following responses: reject, retain or retain with modifications.

Figure 1
Instrument Development Process

Phase 1: Identify factors

```
                                    review literature
                                          │
                                          ▼
                                  identify quality
                                 management factors ◄──────────────────────┐
                                          │                                │
                                          ▼                                │
                      ╱────────────────────────╲                          │
                    ╱  Are quality management     ╲      No    revise quality      │
                   ╱   factors verified by quality   ╲────────► management factors  │
                    ╲    professionals?             ╱                      │
                      ╲────────────────────────╱                          │
                                  │ Yes                                    │
```
- - - - - - - - - - - - - - - - -│- -
```
Phase 2: Create instrument                │
                                 create initial items to represent each
                                    quality management
                                 factor/aggregate into scales
                                          │
                                          ▼
                                 verify measurement items
                                through Delphi Panel technique ◄──────┐
                                          │                           │
                                          ▼                           │
                      ╱────────────────────────╲                     │
                    ╱   Does the Delphi Panel agree ╲   No   eliminate, modify or
                    ╲     on items for inclusion?   ╱───────► reclassify items
                      ╲────────────────────────╱
                                  │ Yes
                                  ▼
                           pilot test and finalize
                                instrument
```
- - - - - - - - - - - - - - - - -│- -
```
Phase 3: Test Instrument                  │
                                    select test
                                 population to test
                                    instrument
                                          │
                                          ▼
                                  test instrument
                                          │
                                          ▼
(Internal consistency analysis)  ╱────────────────────────╲             delete items to
                               ╱   Are the measurement items ╲   No      improve internal
                               ╲  representing each quality management ───►  consistency
                                ╲  factor internally consistent? ╱
                                  ╲────────────────────────╱
                                          │ Yes
                                          ▼
                               ╱────────────────────────╲            delete items that
                             ╱    Is the assignment of     ╲   No     highly correlate
                             ╲     items to each scale     ╱─────────► w/more than one
                               ╲    appropriate?         ╱              scale
                                  ╲──────────────────╱
                                          │
                                          ▼
(Construct validity analysis)  ╱──────────────────╲
                             ╱   Are scales valid?  ╲────────── No
                               ╲──────────────────╱
                                          │
                                          ▼
                                    instrument
```

Verification of the quality management factors was complete when all of the expert panel responses were considered and incorporated into the proposed critical factors of quality management. Of the critical factors proposed, all factors were accepted, with only minor suggestions for expanding the definitions.

In Phase 1 of the instrument development process, quality management factors were supported in the literature and verified by quality management professionals. Together, these procedures defined the critical factors of quality management in relation to CES organizations and contributed to an instrument that is strongly grounded in the literature.

Creation of the Instrument

Using the critical factors of quality management as a framework, performance measures were generated which were believed to define each critical factor (Phase 2 in Figure 1). Performance measures were defined as operational definitions or behaviors related to quality management philosophy and techniques. The performance measures were aggregated into summated scales to give further meaning to each critical factor and to aid in empirical testing.

Individual items tend to have a low statistical relationship with attributes, while summated scales permit averaging of the relationship with other items and allow more exact distinctions to be made. Thus, the reliability of the responses are enhanced. To be included as a scale, it has to be comprised of a minimum of three relatively homogeneous items (Cook, Hepworth, Wall, & Warr, 1981).

Verification of Measurement Items

The performance measures were then verified by an iterative panel to establish content validity (B.J. Sawer, personal communication, July, 1991). The iterative panel, a modified Delphi technique, was selected using the following criteria: (a) no less than 3 years of current work experience in the CES system, preferably in an administrative or management position; or (b) no less than 3 years

of consulting and/or work experience in quality management in education or public sector organizations.

The five-member iterative panel was comprised of three Extension professionals and two quality management professionals. The panel included an associate Extension director, Extension program leader, staff and personnel director, director of quality at a land-grant institution and a quality manager at a land grant institution. Panel members represented five states: Oregon, Wisconsin, Nebraska, Texas and Missouri.

The purpose of the first iteration was to determine if there was ambiguity or redundance within the listing of the performance measures. Each panel member was asked to respond to each item by (a) retaining the item, (b) rejecting the item, or (c) retaining the item with further clarification.

Members of the iterative panel were also encouraged to contribute new items for the instrument at this stage to address any perceived gaps in measuring the critical factors of quality management.

Upon return of the first iteration, each performance measure was clarified or eliminated if the panel members agreed that the item be rejected. Additional items were added as suggested by the iterative panel.

Modification of the Measurement Items

After modifying the measurement items, removing duplicates and adding performance measures as suggested by the iterative panel, the remaining items were subjected to a second iteration. A five-point scale was utilized to ascertain the agreement level of the performance measures to be included in the final instrument. The Likert scale carried the following categories: strongly disagree (1), mildly disagree (2), neither agree nor disagree (3), mildly agree (4), and strongly agree (5).

The uncertain position on the Likert scale of "neither agree nor disagree" was given a value of 3 on the 5-point interval scale. While uncertain positions are often deleted from the Likert scale format, the numeric value of 3 can also suggest a noncommittal position which essentially lies between mildly disagree (2) and mildly agree (4) (W. Courtney personal communication, December, 1991).

Agreement was considered established when the iterative panel was in agreement on the performance measures 80% of the time. Of the original items presented in the second iteration, those items that fell below the 4.0 level were deleted. The remaining items carrying a mean score of 4.0 level or above on the agreement scale were considered appropriate for inclusion in the instrument.

Construction of the Instrument

The mail questionnaire, more than any other type of questionnaire, requires careful construction, because, in the absence of an interviewer, the respondent has complete control regarding completion and return of the instrument. Dillman (1978) recommended a number of ordering principles beginning with relatively simple items to dispel the fears that the questionnaire may be difficult and time-consuming. Questions are ordered along a descending gradient of social usefulness, and questions with similar content should be grouped together. In this instrument, the simpler items were placed at the beginning. Items were grouped by scales to take advantage of cognitive ties that respondents are likely to make among groups of questions and to build a sense of continuity throughout the questionnaire (Dillman, 1978).

To prevent respondents from being lulled into marking the same response for each item, up to one-third of the items in the instrument were reverse scored. In other words, the preferred choice was placed at one extreme in some items, while in the remainder of the items the preferred choices appeared at the other extreme (Alreck and Settle, 1985).

After the items were assigned to scales, an instrument was developed using a Likert scale to ascertain the agreement level of each item. The interval data obtained from Likert-type scales are useful when a range of positions is on certain issues or ideas is sought. Interval data are also more readily analyzed than open-ended attitude questions (Courtney, 1990).

The interval position "neither agree nor disagree" was used in the instrument as a method for circumventing nonresponse on items in which respondents were uncertain. A value of "don't know" was considered and

rejected because the response represented a nominal value and would be incongruent with the interval scale (W. Courtney, personal communication, December, 1991).

Pilot Testing the Instrument

Pilot testing has been considered one of the most important and instructive steps in the construction of a measurement instrument. The pilot test provides feedback on ease of completion, clarity of concepts and whether or not the concepts are out of the range or the responsibility of the respondent (Flynn et al., 1990). While it is acceptable to select a convenience sample to pilot test the instrument, administering the preliminary questionnaire to a small representative group of typical respondents provides more accurate feedback. Dillman (1978) has recommended testing the instrument with three test groups consisting of colleagues, potential end users of the data, and a test population.

The draft instrument was reviewed by a colleague representing the Oregon Extension Service and two graduates from the training and development program at Oregon State University. The instrument was slightly modified to increase clarity, yet all measurement items were kept intact.

Next, the instrument was subjected to a formal pilot-test involving a small sample of five professionals associated with the Oregon State University Extension Service. The sample included one Extension administrator, one department head, two Extension specialists and one Extension agent chairperson. During the pilot-test, the instrument was administered, and a structured interview related to the instrument was conducted.

The sentences were shortened to improve readability based on the feedback received from the pilot-test group, and the instrument was finalized for the test population.

Testing the Instrument

Identification of the Test Population

Phase 3 (Figure 1) of the instrument development process involved testing the instrument for the purposes of establishing reliability and validity. The test population consisted of professional workers employed by CES organizations. For reasons of practicality and program similarity, Extension professionals were selected from CES organizations in Washington, Idaho and Oregon.

Participation in the study was solicited by an introductory letter from the Oregon Extension director to Extension directors in Washington and Idaho. The letter was followed by a telephone call from the researcher to the staff development officer in each state requesting that a research coordinator be appointed. The role of the research coordinator was to serve as a liaison between the researcher and facilitate the selection of the test population. Following the telephone contact, a confirmation letter was sent including a position description for the research coordinator and criteria for selection of the test population (Appendix A).

The research coordinators representing each state were asked to independently select approximately 30 Extension professionals employed by CES organizations in Washington, Idaho and Oregon. The sample represented the population of professionals employed by CES organizations in the Pacific Northwest. The test population included associate Extension directors, department heads, Extension specialists, Extension agents with administrative responsibilities and Extension agents.

Because of the innovation associated with the introduction of quality management technology, those individuals were sought who were considered to be forward-thinking and respected by their peers. Since the objective was to assess quality management performance across the entire organization, Extension professionals were selected that represented both rural and urban areas throughout Washington, Idaho and Oregon. Extension professionals assigned to sparsely populated

areas were not considered in the test population. Perceptions of quality management performance in extremely small Extension program units may vary in relation to other program units.

The research coordinators selected the test population using the following criteria: (a) three or more years of employment experience or departmental association with the respective Extension System organization; (b) assigned to an Extension program unit that has a population center in the county or area that is greater than 10,000; and (c) recognized by their peers as an competent and forward-thinking professional.

The research coordinators selected a total of 91 Extension professionals according to the specified criteria and provided names, addresses and telephone numbers to the researcher.

Administering the Instrument

Research surveys conducted in the social sciences that have received less than a 40% rate of return are regarded as suspect and highly unreliable (Flynn et al., 1990). With this in mind, Dillman (1978) suggested a detailed process to increase response rate where particular attention was given to the cover letter, return envelope and follow-up mailings.

One effective means for increasing the response rate was to contact potential respondents and encourage their commitment to complete the instrument. The research coordinators were asked to send a letter to the test population one week prior to when the researcher mailed the instrument. The research coordinator encouraged the test population to participate in the survey.

Dillman (1990) reported that a well-written cover letter that described the study and its value to the respondents and reassured them that aggregated responses would remain confidential increased response rates. In addition, researchers enhanced their response rate by including a stamped envelope, and sending a reminder letter to all recipients of the questionnaire, that instructed them to disregard the letter if the questionnaire was already completed and returned.

In this study, testing was administered by mailing the instrument (coded for identification and follow-up) to the test population, and including a cover letter and pre-addressed stamped envelope to be returned to the researcher. A follow-up postcard was sent one week after the instrument was distributed. Individuals who wished to receive an executive summary of the study were instructed to print "executive summary" on their business card and attach the card to the completed instrument.

The final step in the instrument testing process was to check each returned instrument for completeness before the data were submitted for statistical analysis.

Instrument Reliability

Throughout the stages of developing a measurement instrument, consistent attention must be focused on collecting data that will be both reliable (i.e,consistent) and valid in terms of what it purports to measure (Courtney, 1982). Data collected from instruments is of little use by other researchers as well as data users unless its reliability and validity have been demonstrated.

Reliability measures the extent to which a questionnaire, summated scale or item that has been repeatedly administered to the same people, yields the same results. Thus, it measures the ability to replicate the study (Flynn et al., 1990).

The internal consistency of a set of measurement items refers to the degree to which items in the set are homogeneous. One method for estimating the internal consistency of the scores collected from testing an instrument can be determined using an analysis of variance (ANOVA), as described by Hoyt and Stunkard (Courtney, 1982). Although analysis of variance (ANOVA) is common in the educational sciences, another widely accepted measure of internal consistency is Cronbach's Alpha (Cronbach, 1970; Flynn et al., 1990). Of the quality management studies reviewed, all used Cronbach's alpha to estimate internal consistency. Cronbach's Alpha is popular because it represents all possible split of the scale in its calculation. The minimum generally acceptable Alpha value is .70; however, Nunnally (1970) has suggested allowing a somewhat lower

threshold, such as .60, for exploratory work involving the use of newly developed scales. Because these are considered exploratory scales, the alpha value for this study was set at .60.

Based on the analysis, scales were retained without changes if the scale had an alpha value of at least .60 or above, with consistent correlation values between the individual items in the scale. Those scales with acceptable but not high alpha values (.60 - .70), were reviewed to determine whether the alpha value could be improved with the removal of some items in the scale without significantly modifying the content. Those scales which had a relatively low correlation value, less than .60 alpha value, were considered unacceptable.

Validity Analysis

The instrument developed in this study was intended to measure quality management performance in selected CES organizations. For the instrument to be considered valid, the scales should measure this information accurately and with meaning. Content validity was established through the extensive literature review, the iterative panel technique and structured interviews conducted during the pilot-test.

Construct validity is a combination of logical and empirical processes. It conceptually draws likely relationships with other variables and then examines the evidence to determine the extent to which there is a relationship (Courtney, 1990; Flynn et al., 1990). If a measure behaves as predicted, the construct validity is enhanced. Factor analysis was the technique used in assessing construct validity in testing the assessment instrument. Measurement instruments using Likert scaling procedures have resulted in a single factor (construct) when factor analysis was applied to the data. Valid data interpretation was assured when approximately ten respondents per item was required (Courtney, 1983). Hence, for a scale that had five items, the responses equaled or exceeded the results from 50 respondents.

Conducting factor analysis on a single summated scale showed whether all items within the summated scale loaded on the same construct, or instead, measured more than one construct (Flynn et al., 1990). A scale that reflected a single dimension or construct was

characterized as having factor loadings that equaled or exceeded .50 and was said to be unidimensional. Since the scales in this study were based upon a theoretical model, a single dimension implied that the scale had construct validity in terms of its content and use. In the case of scales that loaded on more than one factor, both the rotated and unrotated solutions were examined in order to determine whether the factors beyond the first were meaningful or nuisance items.

Summary

This chapter described the phases of the instrument development process used in designing and testing an instrument to assess organization-wide quality management performance in Cooperative Extension System organizations. Content validity of the instrument was established through an extensive review of the quality literature and verified through an expert panel, iterative panel and structured interviews.

The critical factors that led to successful quality management were identified from the literature. From these factors, performance measures were generated from the literature and approved for inclusion in the instrument by an iterative panel technique. The performance measures were clustered into definitive scales within the critical factors that provided a framework for the measurement instrument and aided in empirical testing.

An instrument using a Likert interval scale was drafted and subjected to three different pilot tests including a structured interview. After modifying the instrument for readability, the instrument was finalized and field-tested with 91 Extension professionals from Oregon, Washington, and Idaho. The characteristics of the test population sample were specified according to criteria provided by the researcher and selected by a research coordinators from each state.

Reliability of the measures used in the instrument was determined empirically using Cronbach's alpha. Construct validity was estimated through the use of factor analysis.

Using the instrument development process described above, an instrument was created to assess quality management performance in selected Cooperative Extension System organizations for the purpose of identifying organizational training needs.

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of this study was to identify the critical factors for effective quality management in the Cooperative Extension System (CES) and develop an instrument that would measure quality management performance in selected CES organizations as a tool to identify organizational training needs. The following questions framed the study:

1. What are the quality management factors that are desirable for the Cooperative Extension System?

2. What are the organizational performance measures that characterize the specified quality management factors in the CES?

3. What empirical utility does Extension professionals place on the organizational performance measures?

The research questions corresponded to the three procedural phases of the instrument development process described in Chapter Three, (Figure 1), the results of which are reported in this chapter.

Identification of Quality Management Factors for the CES

Few attempts have been made to synthesize the literature and formulate a comprehensive framework of organization-wide quality management. While Flynn and her associates (1990) proposed a framework that has contributed significantly to the development of theory in quality management from an organization-wide perspective, there have been no published reports synthesizing the diverse literature of quality management relative to educational organizations. Furthermore, the linkage between quality management from an organization-wide perspective and organizational training needs analysis has not been investigated. This study is believed to be the first of its kind in that it

proposes the essential elements of quality management for a national educational organization and provides a preliminary set of scales for the purpose of assessing organizational training needs in quality management.

Seven quality management factors were derived through the identification and synthesis of the requirements as prescribed by eminent quality practitioners and supported in the empirical literature. The seven factors were verified through a process of utilizing judgements from three quality management professionals in a modified delphi process.

The critical factors that were determined to be desirable for effective quality management in the Cooperative Extension System are listed in Table 1.

Table 1

Critical Factors of Organization-Wide Quality Management for the Cooperative Extension System

Critical Factors of Quality	Explanation of Critical Factors
Administrative support for quality	Developing and maintaining an environment for quality excellence. Administrative leadership, quality values, managing for day-to-day quality. Organizational visibility of quality goals.
Strategic quality planning	Process for achieving quality leadership. Integration of quality goals into mission. Use of quality tools in strategic planning, benchmarking. Relationship between program requirements and program implementation. Resource allocations relative to quality goals.
Continuous quality improvement	How new education, training and services are identified, designed, and introduced. How existing products or processes are improved. Adequacy of resources. Continuous improvement of collaborative processes.
Strategic human resources management	Quality philosophy in personnel process. Employee involvement, supervision, training and staff development. Rewards for quality performance.
Quality information and analysis	Use and management of data to support a prevention-based approach to quality and clientele satisfaction. Scope, validity, adequacy of data, use of scientific knowledge. Use of the data for sustained quality improvement efforts. Assessment/evaluation of quality efforts.
Clientele satisfaction	Knowledge of the client, client systems, responsiveness, and ability to meet needs and expectations. Use of client data sources. Prioritized listing of client needs. Clientele relationships, commitment, conflict resolution.
Quality in education and training	Assurance of quality in program development activities. Training of other providers of education and services (volunteers, subject matter experts, etc.). Quality indicators include competence, courtesy, reliability of information, security, understanding needs, responsiveness, and communication. Integration of quality service into daily program management.

Identifying the critical factors that are desirable for effective quality management in the Cooperative Extension System served to successfully complete phase one of the instrument development process and satisfied the first research question that framed this study.

Using the seven critical factors of quality management as a framework, the researcher generated a total of 68 organizational performance measures from the literature to define the critical factors in terms appropriate to the Extension System (Table 2). The researcher then aggregated the items into preliminary groups that were perceived to define the scope and meaning of each quality management factor. The number of items per category ranged from five (under Critical Factor 5, Quality Information and Analysis) to 18 (under Critical Factor 7, Quality of Education and Training).

The iterative panel members were asked to give their initial reaction to the listing of the 68 performance measures proposed by accepting, rejecting, or clarifying each item as it related to the identified critical factor. Overall reaction on each item is listed with each of the 68 items in Table 2. Three of the 68 performance measures were rejected; 35 were accepted and 30 required clarification.

The iterative panel members suggested 18 additional items to strengthen the critical factors of quality management. For example, under the critical factor of administrative support for quality, it was suggested that the responsibility of administrators for understanding and exhibiting knowledge of systems and variations within systems be included. Performance measures were developed from all of the suggestions received and were included in the second iteration.

After deleting the items rejected by the iterative panel, adding performance measures suggested by panel members, and clarifying remaining measurement items, 83 items were subjected to a second iteration. The second iteration used a five point interval scale to ascertain the agreement level for each of the items to be included in the measurement instrument. The agreement level was defined as the degree to which the item measured quality management in the Cooperative Extension System and should be included in the measurement instrument.

Table 2

Sixty Eight Organizational Performance Measures included in First Iteration

Performance Measure	Panel Reaction
CRITICAL FACTOR 1 **Administrative Support for Quality**	
1) Our Extension administrators accept their responsibility for quality.	ACCEPT
2) Our administrators are knowledgeable about quality and quality management practices.	ACCEPT
3) Our administrators strongly encourage involvement of staff in the program development process.	ACCEPT
4) Quality goals are integrated into day to day leadership.	ACCEPT
5) Overall, Extension administrators consider quality improvement as a way to increase accountability with local, state and federal funding bases.	ACCEPT
6) Our Extension administrators promote quality awareness and sharing of quality policies and improvement activities to those outside the organization.	ACCEPT
7) Extension administrators consider quality improvement efforts as a way to increase opportunities for improved delivery of Extension programs.	ACCEPT
8) Quality values are projected in a consistent manner and administrators are committed to the adoption of quality values throughout the organization.	CLARIFY: SEPARATE INTO TWO QUESTIONS
9) All of our administrators have participated in quality management training.	CLARIFY
10) Extension administrators provide personal leadership for improving quality education and service and quality improvement.	CLARIFY
11) Administration supports the long-term quality improvement process.	REJECT
12) The top priority of Extension administrators in evaluating program performance is quality of education and service.	REJECT

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Table 2, continued

Performance Measure	Panel Reaction

CRITICAL FACTOR 2
Strategic Quality Planning

1) All department heads and administrators associated with the Extension System use quality management tools in strategic planning and organizational decision-making. ACCEPT

2) Resources are allocated according to stated quality goals. ACCEPT

3) Everyone in our organization has a clear vision of the Extension mission and know how their work "fits" within the mission. ACCEPT

4) Clientele groups are surveyed during the strategic planning process. CLARIFY

5) Competitive comparisons with similar organizations and activities are sought out to improve education and service quality. CLARIFY

6) Once the benchmark data is collected, the uses of competitive and benchmark data is improved upon. CLARIFY

7) World class benchmarks are used to support quality planning, evaluation and improvement. CLARIFY

CRITICAL FACTOR 3
Continuous Quality Improvement

1) In our organization, people often have trouble getting through the "red tape" to get the job done. ACCEPT

2) Clientele feedback is thoroughly analyzed when evaluating an existing Extension program. ACCEPT

3) The equipment and facilities we have are in good shape and contribute to the productivity of our unit. ACCEPT

4) We work in teams with staff from a variety of departments when developing a new Extension program. ACCEPT

5) There is little involvement of end users or target clientele in the early design of our educational programs. CLARIFY

6) There are processes in our unit or organization that should be redesigned, to better serve our clientele. CLARIFY

7) Volunteers and others invested in the process are involved to a great extent (on teams or consulted) before launching a new Extension program. CLARIFY

Table 2, continued

Performance Measure	Panel Reaction
8) When designing an Extension program, we often conduct customer surveys of audiences currently under-represented.	CLARIFY
9) People in our organization believe that adaption is an important competitive advantage.	CLARIFY

CRITICAL FACTOR 4
Strategic Human Resources Management

1) Our organization forms teams to solve problems.	ACCEPT
2) Staff at all levels are trained in the quality philosophy and use of quality management tools.	ACCEPT
3) Collaboration is encouraged with other departments and with other agencies with similar missions.	ACCEPT

Performance Measure	Panel Reaction
4) Staff in our Extension organization have relatively lower skills, compared with other Extension organizations.	CLARIFY
5) The organization releases individuals from regular work responsibilities in support of work on teams.	CLARIFY
6) In our organization, the system rewards individual accomplishment over accomplishments of group goals.	CLARIFY
7) Evaluation is based on group goal accomplishment rather than individual accomplishment.	CLARIFY
8) If I improve quality in the work I do, "management" will reward me.	CLARIFY

CRITICAL FACTOR 5
Quality Information and Analysis

1) We use research based information when planning and presenting educational programs.	ACCEPT
2) When we collect data, we don't always use it to improve our processes.	ACCEPT
3) Decisions are driven by tradition, not data.	ACCEPT
4) The data we collect is often represents only a few of our clients perceptions.	CLARIFY
5) Sometimes we value the opinions of some client groups over others.	CLARIFY

Table 2, continued

Performance Measure	Panel Reaction

CRITICAL FACTOR 6
Clientele Satisfaction

1) Our clientele groups frequently give us feedback on quality and delivery of the education or service we provide. — ACCEPT

2) We regularly ask clientele for feedback on the quality and delivery of the education or service we provide. — ACCEPT

3) We get back to our clientele regarding the changes made to improve the problematic situation. — ACCEPT

4) Our processes for determining clientele needs is formal and systematic. — ACCEPT

5) I have frequent, direct contact with clientele. — ACCEPT

6) Our processes for responding to clientele needs is predictable and unambiguous. — CLARIFY

7) The programs we offer are important to clientele and/or clientele groups relative to other programs. — CLARIFY

8) A coherent listing of client needs is synthesized from a variety of data sources. — CLARIFY

9) We have a systematic approach for handling complaints from our clientele. — CLARIFY

CRITICAL FACTOR 7
Quality of Education and Training

1) A thorough training needs assessment is conducted before designing a training program for clientele. — ACCEPT

2) Clientele groups invested in Extension (advisory groups, etc.) are aware of our quality values and quality improvement activities. — ACCEPT

3) The information that is drawn upon and presented during training programs is reliable, scientific based knowledge. — ACCEPT

4) Staff value responsiveness to clientele as a characteristic of quality (in Extension). — ACCEPT

5) Quality values are integrated into training to clientele who assist in the delivery of the program. — ACCEPT

6) Programs and services are conveniently and appropriately located relative to the targeted clientele group. — ACCEPT

Table 2, continued

Performance Measure	Panel Reaction
7) Our Extension organization has access to research and capability to accurately recommend a course of action.	ACCEPT
8) Extension faculty and staff are consistently polite when answering the telephone or meeting with the public.	ACCEPT
9) Extension staff refrain from acting busy or being rude when a client asks questions.	ACCEPT
10) The quality of the program/training/service has a good reputation with local clientele groups.	ACCEPT
11) Information is non-biased, credible, consistent with the mission of land grant institution.	ACCEPT
12) Clients can feel confident that the end users safety is considered at all times relative to information, programs, and delivery.	CLARIFY
13) When a client calls, the person at the other end of the telephone line is able to answer their question.	CLARIFY
14) Extension professionals avoid overuse of scientific or technical jargon in presentation to clientele groups.	CLARIFY
15) Considers learning styles and adult learning theory when designing programs for adult clientele groups.	CLARIFY
16) The time commitment and level of resources requested is consistent with what volunteers can afford to give.	CLARIFY
17) Generally, Extension staff are easy to reach via telephone.	CLARIFY
18) Our staff are recognized as competent in their interactions with clientele.	CLARIFY

The interval scale carried the following categories: strongly agree, mildly agree, neither agree nor disagree, mildly disagree, strongly disagree. Table 3 illustrates the level of agreement of the organizational performance measures by each iterative panel member in the second iteration.

The "strongly agree" column clearly dominates the agreement level responses. The panel members' responses also showed evidence of considerable balance. For example, one panel member did not skew the group by consistently disagreeing to items while the others were in agreement.

Table 3

Agreement Level Responses to Organizational Performance Measures

Iterative Panel Member	Strongly agree	Mildly agree	Neither agree nor disagree	Mildly disagree	Strongly disagree
Panel Member 1	43	23	5	10	2
Panel Member 2	67	15	1	0	0
Panel Member 3	27	28	14	11	3
Panel Member 4	59	9	8	5	2
Panel Member 5	71	8	4	0	0

The mean score and standard deviation of the 83 items presented in the second iteration are listed in Table 4. Thirteen items which fell below the mean score of 4.0 level were deleted and are noted (*) in Table 4. The remaining 69 items, carrying a mean score of 4.0 level or above on the agreement scale, were included in the final version of the instrument.

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Table 4

Ratings of 83 Quality Management Performance Measures for Inclusion in Final Instrument[a]

Performance Measure	Mean	Sd
Critical Factor 1 **Administrative Support for Quality** (11 items accepted; 4 rejected)		
1) Our Extension administrators accept their responsibility for quality.	4.2	1.30
2) Extension administrators provide leadership for improving quality education and service and quality improvement.	4.2	.84
3) Our administrators are knowledgeable about quality and quality management practices.	4.6	.89
4) All of our top administrators have participated in quality management training.	4.6	.55
5) Quality goals are integrated into day to day leadership.	4.8	.45
6) Quality values are projected in an inconsistent or uneven manner throughout the organization.(reverse scored)	4.4	.55
7) Administrators are committed to the adoption of quality values throughout the organization.	4.8	.45
*8) Our Extension administrators promote quality awareness and sharing of quality policies and improvement activities to those outside the organization.	3.8	1.30
9) Overall, Extension administrators consider quality improvement as a way to increase accountability with local, state and federal funding bases.	4.0	1.41
10) Extension administrators consider quality improvement efforts as a way to increase opportunities for improved delivery of Extension programs.	5.0	-
*11) Administrators understand and exhibit knowledge of systems and variations within systems.	3.8	1.30
12) Administrators understand and acknowledge management's responsibility for quality.	4.6	.89

[a] italics denotes item not included in final instrument

Table 4, continued

Performance Measure	Mean	Sd
*13) Administrators understand and acknowledge that expanding cooperation reduces competition both inside and out the organization.	3.8	1.64
14) Clientele groups invested in Extension (advisory groups, etc.) are aware of our quality values and quality improvement activities.	5.0	-
*15) Administrators strongly encourage involvement of staff in the program development process.	3.8	1.30

CRITICAL FACTOR 2
Strategic Quality Planning
(10 items accepted; 1 rejected)

	Mean	Sd
1) Department heads and administrators associated with the Extension System use quality management tools in strategic planning and organizational decision-making.	4.2	1.78
2) Resources are not necessarily allocated according to stated quality goals. (reverse scored)	4.8	.45
3) Everyone in our organization has a clear vision of the Extension mission and know how their work "fits" within the mission.	4.8	.45
4) Clientele groups are surveyed routinely when making organizational decisions.	4.8	.45
5). Comparisons with similar organizations and activities are sought out to improve education and service quality.	4.6	.89
*6) Once the benchmark data is collected, the uses of competitive and benchmark data is improved upon.	3.8	1.64
7) World class benchmarks are used to support quality planning, evaluation and improvement.	4.0	.71
8) Top administrators have clarified a vision of where the organization wants to go in the next five or ten years.	4.6	.55
9) Goals and objectives that move the organization toward its vision have been identified.	4.2	1.30

* item not included in final instrument

Table 4, continued

Performance Measure	Mean	Sd
10) Administrators communicate this vision and the methods by which the vision will be be reached to all employees in the organization.	5.0	-
11) A structure is provided for monitoring progress toward the vision.	5.0	-

CRITICAL FACTOR 3:
Continuous Quality Improvement
(10 items accepted; 1 rejected)

	Mean	Sd
1) In our organization, people often have trouble getting through the "red tape" to get the job done. (reverse scored)	4.0	1.41
*2) The equipment and facilities we have are in good shape and contribute to the productivity of our unit.	3.4	1.67
3) When designing an Extension program, we survey clientele groups that are not currently being reached.	4.0	1.73
4) Our clientele groups have little involvement in the early design of our educational programs.(reverse scored)	4.4	.89
5) There are processes ("how we do things") in our unit or organization that should be redesigned, to better serve our clientele. (reverse scored)	4.0	1.73
6) Volunteers and other clientele groups are involved to a great extent (on teams or consulted) before launching a new Extension program.	4.8	.45
7) Clientele feedback is thoroughly analyzed when evaluating an existing Extension program.	5.0	-
8) Adapting to the current and future needs of clientele groups is viewed as an important competitive advantage in our organization.	4.6	.89
9) The people in our organization understand that quality improvement is a long term, incremental improvement strategy.	5.0	-
10) People in our organization spend a lot of time "putting out fires".	4.6	.55
11) Administrators and staff use continuous improvement terminology and system language.	4.2	1.78

* item not included in final instrument

Table 4, continued

Performance Measure	Mean	Sd

CRITICAL FACTOR 4
Strategic Human Resources Management
(8 items accepted; 3 rejected)

1) Our organization forms teams to solve problems.	4.8	.45
2) Staff at all levels are trained in the quality philosophy and the use of quality management tools.	4.8	.45
3) Collaboration with other departments and other agencies with similar missions is discouraged. (reverse scored)	4.0	1.22
4) The organization releases individuals from regular work responsibilities in support of work on teams.	4.8	.45
*5) In our organization, individual accomplishment is rewarded over accomplishments of group goals. (reverse scored)	3.8	1.09
*6) Individual evaluation is based on group goal accomplishment rather than individual accomplishment.	3.8	1.34
*7) Ranking of individual performance is gradually being eliminated from employee programs in our organization.	3.0	1.58
8) Our organization hires people who work well in groups and who believe in quality improvement.	4.6	.55
9) Individuals that understand "customer service" and exhibit a strong desire to serve clientele are hired at all levels.	4.6	.55
10) Quality values are integrated into training to clientele who assist in the delivery of the program.	4.8	.45
11) We work in teams with staff from a variety of departments when developing a new Extension program.	4.8	.45

CRITICAL FACTOR 5
Quality Information and Analysis
(5 items accepted; 3 rejected)

*1) We use research based information when planning and presenting educational programs.	duplicate	-
*2) The data we collect is often represents only a few of our clients needs and perceptions. (reverse scored)	3.6	1.34
3) Sometime we value the opinions of some client groups over others. (reverse scored)	4.2	1.30
4) Decisions are driven by tradition, not data. (reverse scored)	5.0	-

* item not included in final instrument

Table 4, continued

Performance Measure	Mean	Sd
5) Occasionally, we collect data that would help us improve our processes ("how we do things"), but we don't always use it. (reverse scored)	4.6	.55
6) In our unit, planning and advisory groups are representative of both urban and rural clientele.	4.0	1.41
7) In our organization, administrators and staff have all levels of income, race and gender represented on planning and advisory groups.	4.4	.89
*8) The information that is drawn upon and presented during training programs is reliable, scientific based knowledge.	duplicate	-

CRITICAL FACTOR 6
Clientele Satisfaction
(10 items accepted; 0 rejected)

	Mean	Sd
1) Our clientele groups frequently give us feedback on quality and delivery of the education or service we provide.	4.2	1.30
2) Clientele are routinely asked for feedback on the quality and delivery of the education or service we provide.	5.0	-
3) We have a standardized approach for handling complaints from our clientele.	4.6	.55
4) Our processes for determining clientele needs is formal an systematic.	4.4	.54
5) Our processes for responding to clientele needs and requests are not uniform which sometimes is confusing to clientele. (reverse scored)	4.2	1.30
6) Some of the programs we offer are not as important when you consider some of the programs we should be offering to clientele groups.(reverse scored)	4.2	1.3
7) We routinely evaluate current and future needs of clientele against our existing programs.	5.0	-
8) I have frequent, direct contact with clientele.	4.2	1.09
9) Current and future needs of clientele are synthesized from a variety of data sources.	4.6	.89
10) In our organization, we make it a high priority to get back to our clientele about the changes we have made to improve a problematic situation.	4.8	.45

* item not included in final instrument

Table 4, continued

Performance Measure	Mean	Sd

CRITICAL FACTOR 7
Quality of Education and Training
(14 accepted; 1 rejected)

	Mean	Sd
1) A thorough training needs assessment is conducted before designing a training program for clientele.	4.2	1.30
2) Our staff are recognized as skilled in their interactions with clientele.	4.6	.55
3) "Responsiveness to clientele" is a characteristic that is valued in Extension.	4.8	.45
4) Extension faculty and staff are consistently courteous when answering the telephone or meeting with the public.	4.0	1.41
5) When a client calls, the person answering the telephone line is able to answer their question or can refer them to someone who can help them.	5.0	-
6) Our Extension organization has access to research and capability to accurately recommend a course of action.	4.0	1.41
*7) Extension staff refrain from acting busy or being rude when a client asks questions.	3.2	1.78
8) The quality of the program/training/service has a good reputation with local clientele groups.	4.2	1.30
9) In our organization, the client's safety is considered a high priority in relative to information, programs, and delivery.	4.4	.54
10) Information presented to clientele is non-biased, credible, and consistent with the mission of the land grant institution.	4.8	.45
11) Programs and services are conveniently and appropriately located relative to the targeted clientele group.	5.0	-
12) Extension professionals avoid overuse of scientific language or technical jargon when presenting to clientele groups.	5.0	-
13) Extension professionals understand and exhibit knowledge of learning styles and adult learning theory.	4.8	.45

* item not included in final instrument

Table 4, continued

Performance Measure	Mean	Sd
14) The time commitment and out-of-pocket-expenses estimated when volunteers are asked to become involved is consistent with what they can afford to give.	4.2	.84
15) The information that is drawn upon and presented during training programs is reliable, scientific based knowledge.	4.4	.89

* item not included in final instrument

The researcher then reviewed the 69 items approved by the iterative panel and further considered their appropriateness to each assigned critical factor. There was a total of 14 scales, comprised of four to seven items per scale. Table 5 lists each critical factor and the corresponding scale title that defines that grouping of items. The critical factors, corresponding scales and related items that were specified for each critical factor of quality management are listed in Table 6.

Table 5

Critical Factors of Quality Management and Corresponding Scales

Critical Factor	Scale
Administrative Support for Quality	Quality Values Leadership for Quality Management for Quality
Strategic Quality Planning	Strategic Quality Planning
Continuous Quality Improvement	Clientele-driven Quality Process Improvement-Organizational Process Improvement-Clientele
Strategic Human Resources Management	Strategic Human Resources Management Recognition for Teamwork and Collaboration
Quality Information and Analysis	Quality Information/Use of Data
Clientele Satisfaction	Determination of Needs Quality Assessment
Quality of Education and Training	Clientele Needs/Expectations Competency/Reliability of Information

Table 6
Initial 69 Performance Measures Used in Exploratory Scales Corresponding to the Critical Factors of Quality Management [a]

Critical Factor 1: Administrative Support for Quality

Scale: Quality Values

1) Administrators consider quality improvement as a way to increase accountability with local, state and federal funding bases.

2) Extension administrators consider quality improvement efforts as a way to improve delivery of Extension programs.

3) Administrators acknowledge management's responsibility for quality as a means of exceeding clientele expectations.

4) Clientele groups invested in Extension are aware of our quality values and quality improvement activities.

Scale: Leadership for Quality

1) Our administrators are knowledgeable about quality and quality management practices.

2) Our Extension administrators accept their responsibility for quality.

3) All of our top administrators have participated in quality management training.

4) Extension administrators provide resources for staff to participate in quality management training

5) Administrators are committed to the adoption of quality values throughout the organization.

Scale: Management for Quality

1) Top administrators use quality management systems and process in organizational decision-making.

2) Resources are not necessarily allocated according to stated (quality) goals. (reverse scored)

3) Quality goals are integrated into day to day leadership.

4) Quality values are projected in an inconsistent or uneven manner throughout the organization. (reverse scored)

[a] italics denote items ultimately removed to improve reliability of the instrument

Table 6, continued

Critical Factor 2: Strategic Quality Planning

Scale: Strategic Quality Planning

1) Everyone in our organization has a clear vision of the Extension mission and know how their work "fits" within the mission.

2) Top administrators have clarified a vision of where the organization wants to go in the next five or ten years.

3) Critical processes and systems that move the organization toward its vision have been identified.

4) The vision is passed back and forth between administrators and employees to gain clarity and ownership of the vision.

5) A structure is provided for monitoring progress toward the vision.

Critical Factor 3: Continuous Quality Improvement

Scale: Client-Driven Quality

1) I have frequent, direct contact with clientele.

*2) Adapting to clientele needs is viewed as an important competitive advantage in our organization.

3) Clientele groups are surveyed routinely when making organizational decisions.

4) "Responsiveness to clientele" is a characteristic that is valued in Extension.

Scale: Process Improvement-Organizational

1) In our organization, people often have trouble getting through the "red tape" to get the job done. (reverse scored)

2) The people in our organization understand that quality improvement is a long term, incremental improvement strategy.

3) People in our organization spend a lot of time "putting out fires". (reverse scored)

4) Administrators and staff use continuous improvement terminology and system language.

Scale: Process Improvement-Clientele
1) We have a standardized approach for handling complaints from our clientele.

* denotes items ultimately removed to improve the reliability of the instrument

Scale: Process Improvement-Clientele

*2) Our processes ("how we do things") for responding to clientele needs is confusing to clientele. (reverse scored)

3) We make it a high priority to get back to our clientele about the changes made to improve our processes.

4) Our processes ("how we do things") and systems keep us from meeting the needs of our clientele. (reverse scored)

*5) Extension faculty and staff are consistently courteous when answering the telephone or meeting with the public.

Critical Factor 4: Strategic Human Resource Management

Scale: Human Resource Management

1) Staff at all levels are trained in the quality philosophy and the use of quality management processes.

2) Our organization hires people who work well in groups.

3) Individuals that exhibit a strong desire to serve clientele are hired at all levels.

4) The quality philosophy is integrated into training to clientele who assist in the delivery of the program.

Scale: Recognition for Teamwork and Collaboration

1) Our organization forms teams of staff who are directly involved with the process regardless of their position.

2) The organization releases individuals from regular work responsibilities in support of work on teams.

3) We work in teams with staff from a variety of departments when developing a new Extension program.

*4) Individual accomplishment is rewarded over accomplishments of group goals. (reverse scored)

5) Collaboration with other departments and other agencies with similar missions is not rewarded. (reverse scored)

Critical Factor 5: Quality Information and Analysis

Scale: Quality Information/Use of Data

1) Decisions are driven by tradition, not data. (reverse scored)

*2) We collect data that would help us improve our processes ("how we do things"), but we don't always use it. (reverse scored)

* denotes items ultimately removed to improve the reliability of the instrument

Table 6, continued

Scale: Quality Information/Use of Data

3) Planning and advisory groups are representative of both urban and rural clientele.

4) All levels of income, race and gender are represented on planning and advisory groups.

5) Comparisons with similar organizations and activities are sought out to improve education and service quality.

6) World class benchmarks are used to support quality planning, evaluation and improvement.

Critical Factor 6: Clientele Satisfaction

Scale: Determination of Needs

1) Our processes for determining clientele needs is systematic.

2) Current needs of clientele are synthesized from a variety of data sources.

3) We routinely evaluate future needs of clientele against our existing programs.

*4) Some of the programs we offer are not as important when you consider some of the programs we should be offering. (reverse scored)

5) When designing an Extension program, we survey clientele groups that are not currently being reached.

Scale: Quality Assessment

1) Our clientele groups frequently give us feedback on the quality of the educational service we provide.

2) Clientele are routinely asked for feedback on the quality of the educational service received.

3) Clientele feedback is analyzed when evaluating an existing Extension program.

*4) We value the opinions of some client groups over others. (reverse scored)

Critical Factor 7: Quality of Education and Training

Scale: Clientele Needs/Expectations

1) Clientele groups have little involvement in the early design of our educational programs.(reverse scored)

2) Volunteers and other clientele groups are involved (on teams or consulted) before launching a new Extension program.

* denotes items ultimately removed to improve the reliability of the instrument

Table 6, continued

Scale: Clientele Needs/Expectations

*3) Extension professionals tend to overuse of scientific language or technical jargon when presenting to clientele groups. (reverse scored)

4) Extension professionals understand and exhibit knowledge of learning styles and adult learning theory.

5) The client's safety is considered a high priority relative to information, programs, and staffing.

6) Programs and services are conveniently located relative to the targeted clientele group.

7) Time commitment and out-of-pocket-expenses are consistent with what volunteers can afford to give.

Scale: Competency/Reliability of Information

1) Our staff are recognized as skilled in their interactions with clientele.

2) When a client calls, the person answering the telephone is able to answer their question or can refer them to someone who can help them.

3) Our Extension organization has access to research and capability to accurately recommend a course of action.

4) Training needs assessment is conducted before designing training programs for clientele.

5) The information presented during educational programs is reliable, scientific based knowledge.

6) The quality of our Extension programs have a good reputation with local clientele groups.

7) Information presented to clientele is non-biased and consistent with the mission of the land grant institution.

[a] denotes items ultimately removed to improve the reliability of the instrument.

Testing for Reliability and Validity

The research instrument, consisting of 69 performance measures defining the seven critical factors(Table 6), was administered to a test population to determine the empirical utility that Extension professionals placed on the organizational performance measures. The instrument used a five point interval scale to ascertain the agreement level for each of the

performance measures characterizing quality management in the CES. The interval scale carried the following categories: strongly agree, mildly agree, neither agree nor disagree, mildly disagree, strongly disagree.

A total of 91 Extension professionals was selected from Washington, Idaho and Oregon CES organizations to test the reliability and validity of the instrument. Testing was administered by mailing the instrument to the test population, including a cover letter and pre-addressed stamped envelope to be returned to the researcher. A follow-up postcard was sent one week after the instrument was distributed.

A 92% response rate was achieved; however, only 89% of the responses were received after a four week period in time to be included in the data analysis. Respondents who wished to receive an executive summary of the study were requested to return their business card with the completed questionnaire; 32 did so.

A description of the test population is summarized in Tables 7 and 8. The test population represented the criteria specified in the selection process. No attempt was made to have the test population representative of the population other than by job responsibilities and nature of assignment. The test population was selected so that all employee classifications were reflective of the CES organizational structure without intent to be proportionally representative. The test population reported a balance of 40 females and 41 males. Respondents reported a range of 4 to 30 years of experience, with a median of 16 years.

Testing for Reliability

An internal consistency analysis was estimated separately for the items of each of the fourteen scales using Cronbach's Alpha. The reliability analysis revealed that maximization of the alpha coefficient required eliminating from 0-2 items for each scale, a total of 8 items (Table 6).

There were no items removed from the critical factors of Administrative Support for Quality (three scales) or the critical factor of Strategic Quality Planning (one scale). Within the critical factor of Continuous Quality Improvement, three items were removed to maximize

Table 7

Test Population Job Responsibilities

Job Responsibilities	Number of Respondents
Extension Administrator	12
Department Head	7
Extension Specialist	18
Extension Agent/Administrative Responsibility	21
Extension Agent/No Administrative Responsibility	23
Staff/Organizational Development	0
Total	81

Table 8

Nature of Assignment of Test Population

Area of Responsibility	Number of Respondents
Statewide	30
Departmental	4
Over 100,000 population served	21
50,000 - 100,000 served	16
10,000 - 49,000 served	9
Under 10,000 served	1
Total	81

reliability coefficients. The critical factor of Clientele Satisfaction had two items removed (within two scales) to improve reliability. The critical factors of Strategic Human Resources Management, Quality Information and Analysis, Clientele Satisfaction, and Quality in Education and Training each had one item removed to achieve a maximum alpha value. Table 9 lists the items dropped from the original scales, and the reliability alpha value associated with the resulting scales.

The maximized reliability coefficients ranged from .4312 to .8390, indicating that some scales were clearly more reliable than others (Table 9). Nine of the fourteen scales describing the critical factors of quality management were judged to be reliable. The five critical factors and their corresponding scales were: Administrative Support for Quality: Quality Values, Leadership for Quality, and Management for Quality; Strategic Quality Planning: Strategic Quality Planning; Strategic Human Resources Management: Recognition for Teamwork; Quality Information and Analysis: Quality Information and Use of Data; Clientele Satisfaction: Determination of Needs, and Use of Data, and; Quality of Education and Training: Competency and Reliability of Information.

The scales representing these six critical factors showed strong evidence of empirical utility as determined by Extension professionals and can be considered reliable in assessing organizational performance in relation to quality management technology in the CES.

The critical factors of Strategic Human Resource Management, Clientele Satisfaction, and Continuous Quality Improvement had a total of five scales with reliability coefficients that fell below the alpha level of .60. The critical factors and their corresponding scales were Strategic Human Resource Management: Human Resources Management; Clientele Satisfaction: Clientele Needs and Expectations; Continuous Quality Improvement: Clientele-Driven Quality, Process Improvement-Organizational, and Process Improvement-Clientele. The scale entitled Human Resources Management carried only four performance measures which may have contributed to the low reliability of the scale. The Clientele Needs/Expectations scale also requires further consideration to improve its reliability.

The three scales defining the critical factor of Continuous Quality Improvement did not show evidence of reliability. Although it was determined through the review of the literature that continuous quality improvement was an essential component of effective organization-wide quality management, it may not be appropriate to operationally define continuous quality performance as a separate construct.

Table 9

Internal Consistency Analysis of Quality Scales for Critical Factors of Quality Management[a,b]

Critical Factors of Quality Management	Scales	# Items in Scale	#Item(s) Deleted[a]	Alpha
1) Administrative Support for Quality	Quality Values	4	0	.7617
	Leadership for Quality	5	0	.7989
	Management for Quality	4	0	.7204
2) Strategic Quality Planning	Strategic Quality Planning	5	0	.8390
3) Continuous Quality Improvement	*Client-Driven Quality*[b]	*4*	*1*	*.4312*
	Process Improvement- Organization.	*4*	*0*	*.5280*
	Process Improvement- Clientele-Related	*5*	*2*	*.4882*
4) Strategic Human Resource Management	*Human Resources Management*	*4*	*0*	*.4748*
	Recognition for Teamwork	5	1	.7958
5) Quality Information and Analysis	Quality Information/Use of Data	6	1	.6151
6) Clientele Satisfaction	Determination of Needs	5	1	.6909
	Quality Assessment	4	1	.7089
7) Quality of Education and Training	*Clientele Needs/Expectations*	*7*	*1*	*.5898*
	Competency/ Reliability of Information	7	0	.8035

[a] denotes items ultimately removed to improve reliability of the instrument
[b] italics indicate scales that had maximized reliability coefficients less than .60

Testing for Validity

Construct validity was determined through the use of factor analysis with each of the 14 scales representing quality management considered as a separate construct. The corresponding Eigenvalues, indicating the strength of the loading of the individual items, well exceeded 1.0 strongly indicating all have construct validity. The resulting analysis showed that seven of the 14 scales were unifactorial, that is, each of the seven scales loaded on a single construct or idea (Table 10). The critical factor of Administrative Support for Quality as defined by its three scales, Quality Values, Leadership for Quality, and Management for Quality, were unifactorial. The critical factor of Strategic Quality Planning represented by one scale with the same name also loaded on a single construct.

The critical factor of Strategic Human Resources Management and its corresponding scale, Recognition for Teamwork, loaded on a single construct. This was also true for the critical factor of Clientele Satisfaction and its corresponding scale of Quality Assessment. The critical factor of Quality of Education and Training also had one scale, Competency and Reliability of Information, that loaded on a single construct.

This can be used as tentative evidence that these seven scales appear to serve their intended purpose and can be used to assess organizational performance in relation to quality management technology (Table 10).

Two clear second-order constructs were revealed when estimating construct validity for the critical factors of Strategic Human Resources Management , Quality Information and Analysis, Clientele Satisfaction and Quality of Education and Training. Each had a scale that yielded sub-sets of items which differentiated from one another and in the identification of somewhat different constructs than originally determined. The critical factors and the corresponding scales that did not yield construct validity were: Strategic Human Resources Management: Human Resources Management; Quality Information and Analysis: Quality Information /Use of Data; Clientele Satisfaction: Determination of Needs, and; Quality of Education and Training: Clientele Needs/Expectations.

Table 10

Construct Validity of Scales for Critical Factors of Quality Management Loading on Factor One[a]

Critical Factors of Quality Management	Scales	Number of Factors	Item Loading Range for Factor 1	Eigenvalue
Administrative Support for Quality	Quality Values	1	.57 to .87	2.42[*]
	Leadership for Quality	1	.56 to .87	2.42
	Management for Quality	1	.69 to .77	2.18
Strategic Quality Planning	Strategic Quality Planning	1	.50 to .89	3.17
Strategic Human Resource Management	Recognition for Teamwork	1	.68 to .83	2.58
Clientele Satisfaction	Quality Assessment	1	.62 to .89	1.92
Quality in Education and Training	Competency/Reliability of Information	1	.52 to .77	3.45

[a] All Eigenvalues, indicating strength of the loading of individual items, exceed the criterion value of 1.0.

None of the scales within the critical factor of Continuous Quality Improvement was determined to have construct validity. These included the scales relating to Client-Driven Quality, Process Improvement-Organizational, and Process Improvement-Clientele. As a further analysis, the three scales were combined and reanalyzed to determine if stronger factors would emerge. The combined scales yielded three second-order constructs labeled Factors 1, 2, and 3 (Table 11). The strongest construct was interpreted as simplicity of the program planning process.

Even though continuous quality improvement is a critical element in effective quality management, the performance measures did not capture the essence of this aspect of quality management. Corresponding scales defining this critical factor showed weak evidence of both reliability and construct validity. Further exploration of the quality literature may result in more closely defining continuous quality improvement in relation to program design functions of the Cooperative Extension System.

Table 11

**Factor Matrix for Combined Scales for Continuous Quality Improvement
Critical Factor**

Performance Measure	Factor 1	Factor 2	Factor 3
Clientele groups are surveyed routinely when making organizational decisions.		.5977	
In our organization, people often have trouble getting through the "red tape" to get the job done.	.7657		
People in our organization understand that quality improvement is a long term, incremental improvement strategy.			.7169
People in our organization spend a lot of time "putting our fires."	.6030		
Administrators and staff use continuous improvement terminology and system language.			.8959
We have a standardized approach for handling complaints received from our clientele.		.8563	
We make it a high priority to get back to our clientele about the changes made to improve our processes.		.6267	
Our processes ("how we do things") and systems keep us from meeting needs of our clientele.	.7763		
Eigenvalue	3.24	1.68	1.41
Alpha	.6110	.5961	.6377

The other five scales that did not load on one construct in the factor analysis were also explored further. In the Human Resources Management scale (part of critical factor 4, Strategic Human Resources Management) two constructs emerged, constituting a factor that can be interpreted as a quality training factor and a quality philosophy in hiring factor (Table 12).

The Determination of Needs scale (part of critical factor 6, Clientele Satisfaction) had a maximized reliability coefficient of .6909 indicating that the scale was reliable. Nevertheless, two factors formed when construct validity was estimated. One related to the processes and data used to determine needs of clientele, and another was interpreted as a needs assessment factor (Table 13).

Although the Quality Information /Use of Data scale (part of critical factor 5, Quality Information and Analysis) also showed evidence of reliability, two factors emerged in the factor analysis. One constituted a factor that was interpreted as an advisory group factor, and another as a benchmarking factor (Table 14).

In the Clientele Needs/Expectations scale (part of critical factor 7, Quality of Education and Training), items that loaded on Factor 1 related to knowledge of learning styles and safety of the clientele. Items that loaded on Factor 2 were interpreted as a volunteer involvement factor (Table 15).

Table 12

Factor Matrix for Human Resources Management Under Strategic Human Resources Management Critical Factor

Performance Measure	Factor 1	Factor 2
Staff at all levels are trained in the quality philosophy and the use of quality management processes.		.7666
Our organization hires people who work well in groups.	.8165	
Individuals that exhibit a strong desire to serve clientele are hired at all levels.	.7824	
The quality philosophy is integrated into training to clientele who assist in the delivery of the program.		.8341
Eigenvalue	1.56	1.07

Table 13

Factor Matrix for Determination of Needs Scale Under the Clientele Satisfaction Critical Factor

Performance Measure	Factor 1	Factor 2
Our processes for determining clientele needs is systematic.	.8586	
Current needs of clientele are synthesized from a variety of data sources.	.8502	
We routinely evaluate future needs of clientele against our existing programs.		.6223
When designing an Extension program, we get input from clientele groups that are not currently being reached.		.5829
Eigenvalue	2.15	1.00

Table 14

Factor Matrix for Quality Information/Use of Data Scale under the Quality Information and Analysis Critical Factor

Performance Measure	Factor 1	Factor 2
Decisions are driven by tradition, not data.	.6879	
Planning and advisory groups are representative of both urban and rural clientele.		.8641
All levels of income, race and gender are represented on planning and advisory groups.		.8375
Comparisons with similar organizations and their processes are sought out to improve our education and service quality.	.7901	
"Benchmarks" or comparisons are used to support quality planning, evaluation and improvement.	.7702	
Eigenvalue	2.09	1.19

Table 15

Factor Matrix for Clientele Needs and Expectations under the Quality of Education and Training Critical Factor

Performance Measure	Factor 1	Factor 2
Volunteers and other clientele groups are involved (on teams or consulted) before launching a new Extension program.		.6225
Extension professionals exhibit knowledge of learning styles and adult learning theory.	.8078	
The client's safety is considered a high priority relative to information, facilities, and staffing.	.8198	
Programs are held in a convenient location relative to the targeted clientele group.		.5921
Time commitment and out-of-pocket expenses are consistent with what volunteers can afford to give.		.7845
Eigenvalue	1.98	1.21

In summary, use of factor analysis resulted in seven of the fourteen scales loading on a single construct (Table 10). The remaining seven scales yielded two (or three) clear second-order factors resulting in subsets of items that differentiated from one another and in the identification of somewhat different constructs than originally determined. Based on the factors that emerged, the critical factors of quality management and corresponding constructs are summarized in Table 16.

Table 16

Critical Factors of Quality Management
and Identification of Constructs After Factor Analysis [a, b]

Critical Factors	Preliminary Scales	Resulting Constructs [a]
Administrative Support for Quality	Quality Values	Quality Values
	Leadership for Quality Management for Quality	Leadership for Quality Management for Quality
Strategic Quality Planning	Strategic Quality Planning	Strategic Quality Planning
Continuous Quality Improvement[b]	Client-Driven Quality Process Improvement-Organizational Process Improvement-Clientele	*Simplicity of Program Planning Process*
Strategic Human Resource Management	Human Resources Management	*Quality Training Philosophy in Hiring*
	Recognition for Teamwork	Recognition for Teamwork
Quality Information and Analysis	Information/Use of Data	*Use of Advisory Groups Benchmarking*
Clientele Satisfaction	Determination of Needs	*Processes/Data Needs Assessment*
	Quality Assessment	Quality Assessment
Quality Education and Training	Client Needs/Expectations	*Concern for learning styles/safety*
		Volunteer Involvement
	Competency/Reliability of Information	Competency/Reliability of Information

[a] italics indicate a different construct emerged as a result of factor analysis
[b] scales combined; construct validity estimated for new factors

Discussion

This study has established the relationship between the characteristics of quality management and the process of training needs analysis to propose a conceptual model of quality management in an educational organization. While the results and findings of the study are not as finite as in a more established theoretical construct, a framework for subsequent theory building is explicitly acknowledged.

Theoretical Model of Quality Management

A theoretical framework for more systematic research on quality management performance in educational organizations has emerged as a result of this study. Because of the exhaustive review of the literature and the development of empirical measures, the study serves as a basis for subsequent theory building.

Results and findings of the study are of a formative nature because the theory of quality management in an educational organization is in its infancy from an empirical research perspective. More definitive studies integrating quality management and the relationship of training needs analysis at the organizational level are also necessary for critically viewing the complex role of training and development in relation to introducing and sustaining quality management performance in an organization.

Several of the critical factors that emerged in this study reinforce the literature and suggest implications for application and direction. For example, scale development for the critical factor of Administrative Support for Quality was exceptionally strong. This comes as no surprise since the contribution of top management support for quality is explicitly described in the literature. Nevertheless, the strength of this critical factor confirms the role of administrative support in quality performance in an educational organization and its place in the theoretical framework of this study.

Based on the strength of this finding, it can be assumed that training in the CES organization would begin with this audience. The performance

measures specified in the three scales under the critical factor of Administrative Support for Quality provide a framework for educational outcomes when designing quality management training for CES administrators.

Garvin (1984) reported that high levels of organizational performance were always accompanied by an organizational commitment to that goal. The evidence of Strategic Quality Planning as a contributing factor to quality management in the CES confirmed the importance of organizational commitment and focused upon the need for organization-wide strategies and processes that move the organization toward its goals.

Another critical factor, Continuous Quality Improvement, was determined in this study to be problematic. All of the accompanying scales defining this critical factor failed to survive the preliminary testing in both reliability and validity (Table 9 and Table 11). Consideration should be given to a further review of the literature, or determining if the element of continuous quality improvement is sufficiently embodied in the other critical factors of quality management.

The intended purpose of the critical factor Continuous Quality Improvement was to address the identification of new programs, balancing new programs with existing programs and resources, and the simplicity of the program planning process. The contribution of continuous quality improvement in the CES may be best defined by comparing program planning models in the CES with product design theory found in the quality literature. A newly defined critical factor may also include the performance measures that strongly emerged from the critical factor of Continuous Quality Improvement in this study.

The critical factor of Strategic Human Resources Management was present in the literature, and the strength of the Recognition for Teamwork scale strongly confirms the participative management theory that is inherent in quality theory and practice. The Human Resources Management scale pointed out the need to expand the number of performance measures related to hiring and training of employees. Although this is relatively undeveloped in the empirical literature in relation to quality, there is a wealth of empirical literature in the area of Human Resources Management to define the component more completely.

Less clear was the lack of support for those performance measures that characterized rewards for quality. It has been reported that if quality performance is the desired outcome, then quality performance should be rewarded. For example, an organization that is committed to quality would not use an incentive system based on productivity. Rather, a pay-for-skill approach encourages employees to value job mastery. Likewise, group forms of compensation are favored which encourage employees to work cooperatively to solve problems, rather than compete with each other for rewards and recognition (Flynn, et al., 1990).

Nevertheless, in this investigation the performance measures related to rewards for quality were categorically removed through the iterative panel and instrument testing process. It might be speculated that the university promotion and tenure process, and the university performance appraisal process in general, is incongruent with quality values related to recognition and rewards. Whatever the reasons, rewards and performance continue to reinforce each other, creating a cycle of continuous improvement. Further examination is needed in this area as it relates to the Cooperative Extension System within a university culture.

The critical factor of Quality Information and Analysis and its related performance measures would appear to be more complicated. The essence of quality management is the use and management of data which drives the decisions toward Clientele Satisfaction. It might be speculated that assessment and evaluation of data are less familiar territory for Extension professionals and are conducted in an informal rather than systematic way. This critical factor may be the most difficult to operationally define and deploy in the Cooperative Extension System, and educational organizations in general, yet is suspected to have the most potential for developing and sustaining organizational improvement.

The performance measures related to the critical factor of Clientele Satisfaction were perhaps the most congruent with the values and goals of the Cooperative Extension System. The measures related to assessment were familiar to Extension professionals, and this was evident in the exceptional empirical utility of this scale. The performance measures related to the Determination of Needs scale appear to have more potential by combining it under the program design function.

The identification of the critical factor of Quality of Education and Training is noteworthy because much of the quality literature base was derived from a manufacturing and service perspective. Reliability and competency was a predominant theme in the quality in service literature (Zeithaml, Parasuraman & Berry, 1990). However, specifying organizational performance measures in relation to an education and training function was significantly different from any of the studies reported. The identification of Quality of Education and Training as a contributing factor to quality performance signifies a turning point for the application of quality management in educational organizations and is a hallmark of program design in the Cooperative Extension System.

The second scale under the critical factor of Quality of Education and Training, Clientele Needs/Expectations, was less well-defined. A closer look at the performance measures revealed an emphasis on needs assessment and evaluation to continuously be responsive to clientele needs and expectations. Consideration should be given to modifying the content of this scale or combining the performance measures related to Clientele Needs/Expectations in a program design construct.

It is suggested that all of the constructs that emerged that were interpreted as having a close association with the program design function (assessment, design, development, implementation and evaluation) be combined and refactored. The addition of other performance measures generated from further exploration of the literature should also be examined. This examination may reveal the identification of a new critical factor encompassing quality in program design.

Performance measures related to human resources management, volunteer development, and incentives and rewards for quality were gradually eliminated through the iterative panel and instrument testing process. The examination of these and other performance measures would add greater detail to the critical factors and facilitate the attainment of quality goals that are reflected in the theoretical framework.

Empirical Utilization of the Critical Factors

The empirical utility of the instrument should continue to be strengthened and refined by improving the reliability and construct validity of the initial scales. Nunnally (1978) suggested that frequently used scales should have a minimum alpha value of .80. Reliability could be enhanced by modifying the items, or adding items to the scales. It is also suspected that the quality language used in the instrument may have contributed to lowering the reliability of the scales. Finally, the utilization of a six-point scale may encourage more variance than the non-committal position and increase reliability of the measures.

In terms of validity, further investigation is needed to determine whether or not the constructs, beyond the first, substantially define the critical factor or if the emerging constructs are embodied in other scales.

While the purpose of the instrument was to assess quality management performance, audience receptivity is implicit in its design. Testing the instrument with a sample of the general Extension population, rather than with those designated as forward-thinking Extension professionals, may result in reliability differences of the scales. It can be speculated that the readiness for the introduction of quality management would be higher for change agents in the Extension professional than with other Extension professionals. Consideration should also be given to testing the instrument with a larger sample size and selecting samples from other Cooperative Extension System organizations other than in the Pacific Northwest.

Application of the Study

It has been implied that the theory of quality management as an organization-wide managerial technology can be applied to CES organizations. In addition, the utilization of the critical factors and their performance measures identified in this study show promise in determining quality management performance. But the question remains, "Why conduct an organizational analysis related to quality management?"

The decision by a CES organization to adopt a quality strategy may help to define the organization's long-range goals, and the use of quality as a managerial technology might then be adopted to accomplish the goals. This decision carries with it the demand for the acquisition of knowledge and skills related to quality management. Therefore, the introduction of quality management is hinged on the balance between organizational commitment to improved quality and an equal commitment to the training associated with the acquisition of quality management skills. The need for assessing organization-wide training needs preceding the introduction of quality management grows out of the organizational strategy and becomes vital to the accomplishment of organizational goals.

Attempting to introduce a managerial technology that is not yet perfected, to people who do not yet understand the potential application of the technology, on issues that have not been adequately defined, may produce resistance and disillusionment. Thus, the introduction of the quality management philosophy must occur gradually. There is a deep conviction pervading CES organizations that its organizational structure and educational processes must be democratic (Bishop & Carter, 1976). Conducting an organizational analysis capitalizes on this characteristic by recognizing the experiences of CES employees as rich resources for identifying perceptions and solving problems related to quality.

Finally, administering the assessment instrument becomes a treatment in itself, symbolizing the commitment to quality by Extension leadership and raising the visibility of performance expectations associated with quality.

The assessment instrument developed in this study lays the groundwork for assessing organizational needs and begins to establish a climate for readiness for introducing quality philosophy in a CES organization. However, the utilization of the instrument in its current form carries some precautions.

Only five of the seven critical factors showed evidence of empirical utility. These included: (a) Administrative Support for Quality, (b) Strategic Quality Planning, (c) Strategic Human Resources Management, (d) Clientele Satisfaction, and (e) Quality in Education and Training. The seven corresponding scales: (a) Quality Values, (b) Leadership for Quality,

(c) Management for Quality, (d) Strategic Quality Planning, (e) Recognition for Teamwork, (f) Quality Assessment, and (g) Competency and Reliability of Information showed evidence of reliability and validity and can be used with confidence to assess these aspects of quality management in a CES organization.

It can be speculated that these five critical factors of quality management are most apparent at the initial stages of the adoption process and, in fact, a sequencing or cascading effect may occur during the introduction of quality management technology. With this in mind, the scales that showed strong empirical utility related to these five factors may be useful as a litmus test to determine readiness of the organization.

The critical factors of Quality Information and Analysis and Clientele Satisfaction each had a scale that showed evidence of reliability but yielded two clear second-order constructs. The scales were (a) Quality Information/Use of Data, and (b) Determination of Needs. While data could be collected using these scales, it should be noted that the data may not accurately represent these aspects of quality management and would require further exploration.

The critical factors of quality management that had scales which showed evidence of empirical utility easily parallel the CES philosophy. It is possible that defining the critical factor of Quality Information and Analysis may be more accurate as the quality management technology is implemented at the operational level.

Finally, the critical factors of Strategic Human Resources Management, Continuous Quality Improvement, and Quality in Education and Training each had a scale that did not show evidence of reliability or construct validity. The scales were: (a) Human Resources Management, and (b) Client Needs/Expectations. The three scales within the critical factor of Continuous Quality Improvement did not show evidence of empirical utility. The three scales were (a) Client-Driven Quality, (b) Process Improvement-Organizational, and (c) Process Improvement-Clientele. These scales would not provide an accurate assessment of quality management performance in a CES organization and should not be used as they currently stand.

It should be emphasized that if the assessment instrument is used as recommended by the researcher (based on its empirical utility), the critical factors of Quality Information and Analysis, Strategic Human Resources Management, and Continuous Quality Improvement may not be adequately reflected in the organization-wide assessment of quality management in a CES organization. The resulting analysis will not provide the scope of quality management as described in the theoretical framework. Nevertheless, collecting data using the assessment instrument is encouraged to improve its utility and to simplify and strengthen the measurement instrument.

Summary

This chapter has described the results of the development of an instrument designed to assess organization-wide quality management performance in Cooperative Extension System organizations. Seven critical factors were identified as desirable for effective quality management in the Cooperative Extension System (Table 1) and show evidence of content validity. The critical factors are (a) Administrative Support for Quality, (b) Strategic Quality Planning, (c) Continuous Quality Improvement, (d) Strategic Human Resources Management, (e) Quality Information and Analysis, (f) Clientele Satisfaction, (g) Quality of Education and Training.

A total of 83 organizational performance measures were generated by the researcher and iterative panel members. This list was reduced to 69 performance measures (Table 4) which operationally define quality management practices in the Cooperative Extension System. Scales were developed from the performance measures to give further meaning to the critical factors of quality management and to aid in testing for reliability and validity (Table 5).

The instrument was finalized and administered to Extension professionals in three CES organizations to determine the empirical utility of the performance measures. Reliability of the measures used in the instrument was determined by using Cronbach's alpha. Construct validity was estimated through the use of factor analysis.

Five of the critical factors showed evidence of empirical utility including: (a) Administrative Support for Quality, (b) Strategic Quality Planning, (c) Strategic Human Resources Management, (d) Clientele Satisfaction, and (e) Quality in Education and Training. The alpha values obtained on the corresponding scales for these critical factors all exceeded the minimum criterion of .60 (Table 9) and were considered to be stable (Table 10). The seven corresponding scales: (a) Quality Values, (b) Leadership for Quality, (c) Management for Quality, (d) Strategic Quality Planning, (e) Recognition for Teamwork, (f) Quality Assessment, and (g) Competency and Reliability of Information showed evidence of reliability and validity and can be used to assess organizational performance in relation to quality management in the CES.

The critical factors of Quality Information and Analysis and Clientele Satisfaction each had a scale that showed evidence of reliability but yielded two clear second-order constructs. The scales of (a) Quality Information /Use of Data and (b) Determination of Needs require further examination.

The critical factors of Strategic Human Resources Management and Quality of Education and Training each had a scale that did not show evidence of empirical utility. The scales were: (a) Human Resources Management and (b) Clientele Needs/Expectations. The three scales within the critical factor of Continuous Quality Improvement also did not show evidence of empirical utility. The three scales were (a) Client-Driven Quality, (b) Process Improvement-Organizational, and (c) Process Improvement-Clientele.

This study proposed a theoretical model of quality management in the Cooperative Extension System and empirically tested performance measures that characterized quality management behavior. The results and findings of this study are of a formative nature because the theory of quality management in an educational organization is in its infancy from an empirical research perspective. While the results of this study are encouraging, more definitive studies are needed to further articulate the theoretical model and improve the empirical utility of the assessment instrument.

Integrating quality management and the relationship of training needs analysis at the organizational level should continue to be examined in relation to introducing and sustaining quality management performance in an organization.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine the critical factors for effective quality management in the Cooperative Extension System and develop an instrument that measures quality management performance in selected Cooperative Extension System organizations as a means of assessing organizational training needs.

Three procedural phases were applied in this study. First, seven critical factors of quality management were identified through an extensive literature review and verified by an expert panel. Second, performance measures defining each critical factor were generated from the literature, approved by an iterative panel and assigned to scales. Finally, an instrument was developed, and administered to a test population for purposes of establishing reliability and validity of the scales.

The significant outcomes based on the research questions are highlighted as follows:

Significant Outcomes

Quality management factors were defined for the Cooperative Extension System.

• Seven critical factors were identified as contributing to effective organization-wide quality management in the Cooperative Extension System. These factors are: (a) Administrative Support for Quality, (b) Strategic Quality Planning, (c) Continuous Quality Improvement, (d) Strategic Human Resources Management, (e) Quality information and Analysis, (f) Clientele Satisfaction, and (g) Quality in Education and Training.

• Six of the identified critical factors emerged as essential to effective quality management in the Cooperative Extension System. These factors are: (a) Administrative Support for Quality, (b) Strategic

Quality Planning, (c) Strategic Human Resources Management, (d) Quality Information and Analysis, (e) Clientele Satisfaction, and (f) Quality in Education and Training. The seventh critical factor of Continuous Quality Improvement was determined to be implicit in all of the critical factors of quality management and requires further exploration.

Organizational performance measures characterizing the specified quality management factors were identified.

- As a result of the literature review, iterative panel and structured interview processes, 69 performance measures were selected that characterized the quality management factors in the CES. The performance measures accurately represented quality management practices in terms of content validity and operationally define organizational quality management performance in a Cooperative Extension System organization.

- An instrument, comprised of the performance measures, was designed for assessing quality management performance in a CES organization as a means for analyzing organizational training needs.

Empirical utility (reliability and validity) of the organizational performance measures was supported:

- Five of the critical factors showed evidence of empirical utility including: (a) Administrative Support for Quality, (b) Strategic Quality Planning, (c) Strategic Human Resources Management, (d) Clientele Satisfaction, and (e) Quality in Education and Training. The seven corresponding scales: (a) Quality Values, (b) Leadership for Quality, (c) Management for Quality, (d) Strategic Quality Planning, (e) Recognition for Teamwork, (f) Quality Assessment, and (g) Competency and Reliability of Information, showed evidence of reliability and validity and can be used to assess organizational performance in relation to quality management in the CES.

- The critical factors of Quality Information and Analysis and Clientele Satisfaction each had a scale that showed evidence of reliability but yielded two clear second-order constructs. The scales were: (a) Quality Information/Use of Data, and (b) Determination of Needs.

- The critical factors of Strategic Human Resources Management, Continuous Quality Improvement, and Quality in Education and Training each had a scale that did not show evidence of reliability or construct validity. The scales were: (a) Human Resources Management, and (b) Client Needs/Expectations. The three scales within the critical factor of Continuous Quality Improvement did not show evidence of empirical utility. The three scales were: (a) Client-Driven Quality, (b) Process Improvement-Organizational, and (c) Process Improvement-Clientele.

Conclusions

Based on the findings in this study, the following conclusions can be drawn.

- The theory of quality management as an organization-wide managerial technology can be applied to educational organizations and shows promise for effective utilization to increase accountability, and improve program delivery at all levels of the organization in order to meet, and ultimately surpass, clientele expectations.

- The critical factors of quality management and their related performance measures can be operationally defined and empirically measured to facilitate the attainment of quality goals at the organizational level of the Cooperative Extension System.

- The organizational commitment to improve quality, accompanied by the assessment of training needs relative to quality management, has potential for producing improved levels of performance in the Cooperative Extension System. This study offers a promising model for analyzing such training needs preceding the introduction of quality

management technology and begins to establish a climate of readiness for introducing quality concepts in the Cooperative Extension System.

Recommendations for Further Study

The identification of critical factors of quality management for the CES, the determination of performance measures that operationalize the critical factors and the strong evidence of empirical utility of the assessment instrument contributed significantly to the theoretical and empirical study of quality management as a managerial technology in an educational organization. While the initial results of this study are encouraging, the following recommendations are made for further research:

- The theory of quality management in the Cooperative Extension System should continue to be articulated. It is particularly important to refine the critical factors that had scales that required further investigation. The inclusion of a critical factor that addresses the aspect of program design in the Cooperative Extension System should also be explored.

- Performance measures that characterize organizational aspects of the critical factors that may have been gradually eliminated through the instrument development process should be explored to adequately reflect all facets of quality management in the Cooperative Extension System.

- Data should be collected using the assessment instrument to determine its utility in terms of analyzing organization-wide training needs in a Cooperative Extension System organization. Utilization of the assessment instrument would result in improved, simplified scales and strengthen the empirical utility of the instrument. Thus, the process of developing reliable and valid measurement instruments is a continuous one.

BIBLIOGRAPHY

Adam, E., Hershauer, J., & Ruch, W.A. (1981). *Productivity and quality: Measurement as a Basis For Improvement.* Englewood Cliffs, NJ: Prentice-Hall.

Alreck, P. & Settle, R. (1985). *The Survey Research Handbook.* Homewood, IL. Richard D. Irwin Co.

Application Guidelines. (1991). *Malcolm Baldridge national quality award.* United States Department of Commerce, National Institute of Standards and Technology, Gaithersburg, Maryland.

Benson, P.G., Saraph, J.V. & Schroeder, R.G. (1991). The effects of organizational context on quality management: an empirical investigation. *Management Science, 9,* 1107-1124.

Bozeman, B. (1987). *All Organizations are Public:* ~~Bringing~~ *Bridging public and private organizational theory.* San Francisco: Jossey-Bass Inc.

Campbell, J.P. & Campbell, R.J. and Associates (1988). *Productivity in Organizations: New perspectives from industrial and organizational psychology.* San Francisco: Jossey-Bass, Inc.

Coate, E. L. (1990). *Implementing Total Quality Management in a University Setting.* Oregon State University. July.

Cook, J.D., Hepworth, S.J., Wall, T.D. & Warr, P.B. (1981). *The Experience of Work: A Compendium and Review of 249 Measures and Their Use.* New York: Academic Press.

Cooperative Extension System (1990). Planning information for 1990. Accountability and Evaluation Reporting System. Extension Service, U.S. Department of Agriculture. February.

Cooperative Extension System. (1990). Strategic directions of the Cooperative Extension System. Extension Service, U.S. Department of Agriculture, Extension Committee on Organization and Policy (ECOP). November.

Courtney, W. (1987). *Basic Empirical Methods*. Corvallis, Oregon: Sanderling Press.

Courtney, W. (1988). *Techniques of Research*. Corvallis, Oregon: Sanderling Press.

Courtney, W. (1990). *Scaling*. Corvallis, Oregon: Sanderling Press.

Courtney, W. (1991). Personal communication. Oregon State University, December.

Cronbach, L.J. (1970). *Essentials of Psychological Testing*. New York: Harper & Row.

Crosby, P.B. (1979). *Quality is Free*. New York: New American Library.

DeCarlo, N.J., and Sterett, W.K. (1988). History of the Malcolm Baldrige national quality award. *Quality Progress, 3*, 21-27.

Deming, W.E. (1986). *Out of Crisis*. Cambridge, MA: MIT Center for Advanced Engineering.

Deming, W.E. (1981, 1982, 1986). *Quality, Productivity, and Competitive Position. Cambridge*, MA: MIT Center for Advanced Engineering.

Dillman, D.A. (1978). *Mail and Telephone Surveys: The Total Design Method*. New York: Wiley & Sons.

Dillman, D.A. (1986). Cooperative Extension at the beginning of the 21st century. *Rural Sociologist, 2,* 102-119.

Dillman, D.A. (1991). *Mail Surveys: A Comprehensive Bibliography.* Chicago: Council of Planning Librarians.

Dooley, K.J., Bush, D., Anderson, J.C. & Rungtusanatham, M. (1990). The United States' Baldridge award and Japan's Deming prize: two guidelines for total quality control. *Engineering Management Journal, 3,* 9-16.

Ebrahimpour, M. (1986). *An empirical study of the implementation of the Japanese approach to quality management and its impact on product quality in U.S. manufacturing firms.* Unpublished doctoral dissertation, University of Nebraska, Lincoln.

Edgeman, R.L. (1988). Quality, reliability and productivity education: America's hope for enhanced competitive position. *Innovative Higher Education, 1,* 21-27.

Feigenbaum, A.V. (1983). *Total quality control: engineering and management.* New York: McGraw-Hill.

Flynn, B.B., Schroeder, R.G., and Sakakibara, S. (1990). *A proposed quality management theory and associated measurement instrument.* Manuscript submitted for publication.

Flynn, G.G., Sakakibara, S., Schroeder, R.G., Bates, K.A., & Flynn, E. J. (1991). Empirical research methods in operations management. *Journal of Operations Management, 2,* 250-284.

Gagne, R. (1962). *Psychological principles in system development.* New York: Holt, Rinehart & Winston.

Garvin, D.A. (1983). Quality on the line. *Harvard Business Review, 5,* 65-75.

Garvin, D.A. (1986). Quality problems, policies and attitudes in the U.S. and Japan: an exploratory study. *Academy of Management Journal, 29*, 653-673.

Gill, S.J. (1989). Using evaluation to build commitment to training. In R.O. Brinkehoff (Ed.) *Evaluating Training Program in Business and Industry*. New Directions for Program Evaluation No. 44, San Francisco: Jossey-Bass, 35-43.

Gitlow, H.S. (1990). *Planning for quality, productivity and competitive position*. Homewood, Illinois: Dow Jones-Irwin.

Glaser, W. (1990). The quality school. *Phi Delta Kappan, 2,* 425-435.

Glick, W.H. (1985). Conceptualizing and measuring organizational psychological climate: Pitfalls of multilevel research. *Academy of Management Review, 10,* 601-616.

Golbeli, D. (1990). Personal communication. Oregon State University, December.

Goldstein, I.L. (1986). *Training in organizations: Needs assessments, development, and evaluation*. (2nd ed.) Monterey, CA: Brooks/Cole.

Hage, J. (1988). The new rules of competition. In Hage, J.(Ed.) *Futures in organizations*. Lexington, Mass.: Lexington Books. (pp. 1-24).

Harliss, J. (1970). *An ounce of analysis*. Fall Church, VA.: Harless Educational Technology.

Hodgekinson, H. (1988). *The same client.*. Washington, D.C.: Institute for Educational Leadership, Center for Demographic Policy.

Ishikawa, K. (1976). *Guide to quality control*. Tokoyo: Asian Productivity Organization.

Jenkins, R. (1990). Staying alive: Managing the process of change for quality improvement. American Supplier Institute. *Youth Policy, 3,* 5-15.

Jimmerson, R.M. (1989). What values will guide Extension's future? *Journal of Extension, Fall,* 16-18.

Juran, J.M. (1990). *Leadership for quality.* New York: McGraw-Hill.

Juran, J.M. (1974). *Quality control handbook* (3rd Ed.). New York: McGraw-Hill.

Kaufman, R. A. & English, F.W. (1979). *Needs assessment: Concept and application.* Englewood Cliffs, N.J.: Educational Technology Publication.

Kaufman, R. A. (1982). *Identifying and solving problems: A systems approach.* San Diego: University Associates.

Ledford, G.E., Lawler, E.E., & Mohrman, S.A. (1988). The quality circle and its variations. In J.P., Campbell, R.J. Campbell & Associates (Eds.) *Productivity in organizations: New perspectives from industrial and organizational psychology.* San Fransisco: Jossey-Bass, (pp.255-294).

Leonard, F.S. & Sasser, W.E. (1982). The incline of quality. *Harvard Business Review, 60,* 163-71.

McGehee, W., & Thayer, P.W. (1961). *Training in business and industry.* New York: Wiley.

McLagan, P.A. (1988). Flexible job models: a productivity strategy for the information age. In J.P., Campbell, R.J. Campbell & Associates (Eds.) *Productivity in organizations: New perspectives from industrial and organizational psychology.* San Fransisco: Jossey-Bass, (pp. 369-387).

Meade, J. (1991). Keeping the customer satisfied. American Society of Electrical Enginners, *Prism, 12,* 22-25.

Milakovich, M.E. (1991). Total quality management in the public sector. *National Productivity Review, Spring,* 195-213.

Moore, M.L., & Dutton, P. (1978). Training needs analysis: Review and critiques. *Academy of Management Review, 2,* 532-545.

Mossholder, K.W., & Bedeian, A.S. (1983). Cross-level inference and organizational research: Perspectives on interpretation and application. *Academy of Management Review, 8,* 547-558.

Mueller, M.R. (1991). Quality means results. *Journal of Extension, Spring,* 10-14.

Nunnally, J. (1967). *Psychometric Theory.* New York: McGraw-Hill.

Ostroff, C. and Ford, J.K. (1989). Assessing training needs: Critical levels of analysis. In I.L. Goldstein (Ed.), *Training and development in organizations.* San Francisco: Jossey-Bass, (pp. 25-62).

Patterson, T.F. (1991). Tomorrow's extension educator--learner, communicator, systemcist. *Journal of Extension, Spring,* 31-32.

Patton, M.Q. (1989). *Journal of Extension, Winter,* Editor's page.

Price, J.L., & Mueller, C.M. (1986). *Handbook of organizational measurement.* Marshfield, Mass: Pitman.

Rasmussen, W.D. (1989). *Taking the university to the people: Seventy-five years of Cooperative Extension.* Ames, Iowa: Iowa University Press.

Reimann, C.W. (1990). Written correspondence accompanying the 1991 application guidelines. *Malcolm Baldridge National Quality Award.* United States Department of Commerce, National Institute of Standards and Technology, Gaithersburg, Maryland.

Roberts, K.H., Hulin, C.L., & Rousseau, D.M. (1978). *Developing an interdisciplinary science of organizations.* San Francisco: Jossey-Bass.

Rosander, A. C. (1989). *The quest for quality in services.* American Society for Quality Control, Milwaukee, WI.: Quality Press.

Rosow J.M. & Zager, R. (1988). *Training, the competitive edge: Introducing new technology into the workplace.* San Francisco: Jossey-Bass.

Rossett, A. (1987). *Training needs assessment.* Englewood Cliffs, N.J.: Educational Technology Publications, Inc.

Rousseau, D.M. (1988). Human resource planning for the future. In J. Hage (Ed.), *Futures in Organizations,* Lexington, Mass.: Lexington Books

Samson, C.H. & Yao, T.P. (1990). TQM: let's practice what we teach. *Engineering Management Journal, 3,* 51-57.

Saraph, J.V., Benson, P.G. & Schroeder, R.G. (1989). An instrument for measuring the critical factors of quality management. *Decision Sciences, 20,* 810-829.

Sawer, B.J. (1991). Personal communication. Oregon State University, July.

Sensenbrenner, J. (1991). Quality comes to city hall. *Harvard Business Review, 3-4,* 64-75.

Smith, M.F. (1991). Criteria for judging excellence. *Journal of Extension. Spring,* 14-16.

Stiehl, R. (1991). Personal communication. Oregon State University, April.

Strategic Directions of the Cooperative Extension System. (1990). Extension Service, U.S. Department of Agriculture, Extension Committee of Organization and Policy.

Thompkins, R.B. (1989). No time to be timid. *Journal of Extension, Winter*, 4-6.

Vansina, L.S. (1989-90). T.Q.C.: an overall organizational improvement strategy. *National Productivity Review*, 9, 59-73.

Walton, M. (1986). *The Deming management method.* New York, NY: Dodd, Mead & Company.

Warner, P.D. & Christenson, J.A. (1984). *The Cooperative Extension Service: A national assessment.* Boulder: Westview Press.

Weber, M. (1946). *Essays in Sociology.* Translated and edited by H.H. Gerth & C.W. Mills. Oxford University Press., N.Y.

Zeithaml, V.A., Parasuraman, A., and Berry, L.L. (1990). *Delivering quality service: balancing customer perceptions and expectations.* Free Press, Macmillan, Inc., New York.

APPENDICES

APPENDIX A

Information for Research Coordinators

July 1, 1991

TO: Research Coordinators

TOTAL QUALITY MANAGEMENT IN THE COOPERATIVE EXTENSION SYSTEM

I am conducting a research study through Oregon State University on the topic of total quality management in the Cooperative Extension System. Total Quality Management (TQM) is an organizational transformation strategy which focuses on 1) clientele satisfaction, 2) continuous improvement of processes and 3) organization-wide cooperation. Total Quality Management strategies are now being employed extensively to improve a wide range of service organizations, federal executive agencies, hospitals and public utilities, as well as state and local governments. In fact, TQM has recently been designated the official management-improvement system for all federal executive agencies.

The current interest in applying Total Quality Management techniques to university settings provides a promising model for launching a Total Quality Management (TQM) improvement strategy for the Cooperative Extension System.

The purpose of my research is to design and test an instrument which will assess organization-wide quality management practices in the Cooperative Extension System, along with groupings of performance tasks. The data derived from the instrument can be used to assess organization-wide training needs for deploying Total Quality Management (TQM) in the Cooperative Extension System. The study will also provide insight into determining organizational readiness for the application of quality-improvement efforts.

I would like you to serve as the research coordinator for this study. The role of the research coordinator is to facilitate the selection of a test population within the Washington Cooperative Extension Service organization and serve as a liaison between the researcher and the test population. At the completion of the study, an executive summary and a copy of the instrument will be sent to the Washington Extension Service.

I have enclosed a description of the responsibilities of the research coordinator and the criteria for the selection of the test population. I will contact you next week to discuss the study and if you are willing to participate as the research coordinator. I would be please to talk with you about the study and am available at the following number: 503-737-1315.

Thank you in advance for sharing your scarce time and dedication to the investigation of quality improvement efforts in the Extension Service.

Sincerely,

Barbara Boltes

Position: Research Coordinator

Description of the Position: Facilitate the selection of a test population (approximately 30 individuals) within the respective Cooperative Extension Service organization and serve as a liaison between the researcher and the test population.

Approximate Time Required: 8 hours between July 15 and September 1, 1991.

Principal Investigator/Contact Person: Barbara Boltes, Extension Specialist, 4-H Youth Development, Oregon State University Extension Service. Mailing address: Ballard Extension Hall-105, Corvallis, OR. 97333. Telephone:503/737-1315. FAX: 503/737-4423.

Responsibilities of the Research Coordinator:

1) Identify the test population for the study from the respective Extension system. The test population must include and proportionately represent three groups: (a) Extension directors or associate directors, (b) Department heads, (c) Extension specialists or Extension agent chairs, and (d) Extension agents.

2) Select the test population using the following specific criteria: (a) three or more years of employment experience in the respective Extension System organization, (b) assigned to an Extension program unit that has a population center in the county or area that is greater than 10,000, (c) recognized as an competent and forward-thinking Extension professional by their peers.

4) Provide the researcher with the name, address and telephone number of each of the individuals selected to test the instrument by August 10, 1991.

5) Send a letter those individuals selected encouraging them to completing the instrument, prior to when the researcher sends out the questionnaire. The researcher will alert you when the instrument will be ready to mail.

Description of the Study:

The purpose of the study is to design and test an instrument which will assess organization-wide total quality management (TQM) practices in the Cooperative Extension System. The quality management scales are developed from an extensive literature review and verified by an expert panel, followed by a Delphi panel technique. The instrument has been pilot tested on small representative sample of professionals employed by the Oregon State University Extension Service.

The data derived from the instrument can be used to assess organization-wide training needs for deploying Total Quality Management (TQM) in the Cooperative Extension System. The study will also provide insight into determining organizational readiness for the application of quality-improvement efforts.

Testing Procedures: Testing will be administered by mailing the instrument (coded for identification and follow-up), with a pre-addressed stamped envelope to be returned to the researcher. A five point (Likert-type) scaling will require responses of the level of agreement of items considered quality management performance measures in CES organizations.

Completed research instruments will be mailed directly to the researcher, ensuring confidentiality and aggregate responses will be anonymous.

Individuals within the test population who have not responded within a two week period after the mailing date will be sent a follow-up postcard reminder. All data will be collected within a period of four (4) weeks.

APPENDIX B

Cover Letter for Test Population

September 21, 1991

You were selected as one of a small number to participate in a test population from the Washington, Idaho and Oregon Extension Services. Selection was based on position, experience and peer recognition as a forward thinking professional. The purpose of the instrument you will be testing is to measure quality management performance in the Extension System in order to identify organizational training needs.

Total Quality Management (TQM) has recently been adopted as an organizational improvement strategy by a number of universities. Total Quality Management focuses on a) clientele satisfaction; b) continuous improvement of processes; and c) organization-wide cooperation. The current interest in applying TQM to educational settings provides a promising model for launching a Total Quality Management (TQM) improvement strategy for the Cooperative Extension System.

In order for this instrument to be truly useful, your expert opinion is needed. Your responses will remain completely confidential. The questionnaire has an identification number so that your name can be checked off the mailing list when the questionnaire is returned.

Please return the questionnaire by October 4, so your data can be considered in the analysis. It should only take about 15 minutes to complete.

I would be happy to answer any questions about this study. Please write or call. The telephone number is (503) 737-1315. Thank you in advance for sharing your scare time. I sincerely appreciate your assistance in testing this instrument.

Sincerely,

BARBARA V. BOLTES
Research Investigator

APPENDIX C

Assessment Instrument

Quality Management Factors In the Cooperative Extension System

Attention to quality management techniques is a hallmark of doing good business. The application of these same techniques to educational settings has generated a lot of interest as a possible means of improving overall organizational quality.

This questionnaire is designed to assess quality management practices as it might be specifically applied to the Extension System.

Listed below are 69 items relating to aspects of organizational quality. As you read each item, determine the extent you agree or disagree that the statement describing quality is *now occurring* in the Extension Service you are affiliated with. Your response choices are Strongly Agree, Mildly Agree, Neither Agree nor Disagree, Mildly Disagree, and Strongly Disagree.

Answer each item from your own perspective of the the Extension organization. Work quickly--there's no need to ponder each item. You should finish the entire questionnaire in about 15 minutes.

The following definition of quality may be useful as you begin:

"Quality is meeting and if possible, exceeding the agreed upon needs and expectations of clientele.

Please begin. . .circle your response.

1   Our clientele groups frequently give us feedback on the
quality of the educational service we provide............................SA MA N MD SD

2   Clientele are routinely asked for feedback on the quality
of the educational service received ....SA MA N MD SD

3   We have a standardized approach for handling complaints
received from our clientele...SA MA N MD SD

4   Our processes ("how we do things") for responding to clientele
needs is confusing to clientele...SA MA N MD SD

5   We make it a high priority to get back to our clientele about
the changes made to improve our processes..........................SA MA N MD SD

6   Our processes for determining clientele needs is systematic......SA MA N MD SD

7   Current needs of clientele are synthesized
from a variety of data sources ....SA MA N MD SD

8   We routinely evaluate future needs of clientele against
our existing programs..SA MA N MD SD

Please turn the page. . .

Please continue. . .

9 Some of our programs are not as important when you consider
some of the programs we should be offering ....SA MA N MD SD

10 I frequently have direct contact with clientele............................SA MA N MD SD

11 In our organization, people often have trouble
getting through the "red tape" to get the job done....................SA MA N MD SD

12 When designing an Extension program, we get input from
clientele groups that are not currently being reached.................SA MA N MD SD

13 Clientele groups have little involvement in the early
design of our educational programs...SA MA N MD SD

14 Our processes ("how we do things") and systems keep us from
meeting needs of our clientele..SA MA N MD SD

15 Volunteers and other clientele groups are involved (on teams
or consulted) before launching a new Extension program...........SA MA N MD SD

16 Clientele feedback is analyzed when
evaluating an existing Extension program ....SA MA N MD SD

17 Adapting to clientele needs is viewed as an important
competitive advantage in our organization................................SA MA N MD SD

18 People in our organization understand that quality improvement
is a long term, incremental improvement strategy......................SA MA N MD SD

19 People in our organization spend a lot of time
"putting out fires"...SA MA N MD SD

20 Administrators and staff use continuous improvement
terminology and system language. ....SA MA N MD SD

21 We value the opinions of some client groups
over others ....SA MA N MD SD

22 Decisions are driven by tradition, not data................................SA MA N MD SD

23 We collect data that would help us improve our
processes ("how we do things"), but we don't always use it. ....SA MA N MD SD

24 Planning and advisory groups are representative
of both urban and rural clientele...SA MA N MD SD

25 All levels of income, race and gender are represented
on planning and advisory groups...SA MA N MD SD

Please continue. . .remember don't worry or puzzle over individual items. Your first impression is most important.

26 Staff at all levels are trained in the quality philosophy
and the use of quality management processes. ....SA MA N MD SD

27 Our organization forms teams of staff who are directly involved with
the process regardless of their position. ....SA MA N MD SD

28 The organization releases individuals from regular work
responsibilities to work on teams. ....SA MA N MD SD

29 We work in teams with staff from a variety of
departments when developing a new Extension program. ....SA MA N MD SD

30 Individual accomplishment is rewarded over group goals. ....SA MA N MD SD

31 Our organization hires people who work well in groups. ....SA MA N MD SD

32 Collaboration with other departments and other
agencies with similar missions is not rewarded. ....SA MA N MD SD

33 Individuals that exhibit a strong desire to serve clientele are hired
at all levels. ....SA MA N MD SD

34 The quality philosophy is are integrated into training to clientele who
assist in the delivery of the program. ....SA MA N MD SD

35 Top administrators use quality management systems and processes
in organizational decision-making. ....SA MA N MD SD

36 Resources are not necessarily allocated according
to stated (quality) goals. ....SA MA N MD SD

37 Everyone in our organization has a clear vision
of the Extension mission and know how their work
"fits" within the mission. ....SA MA N MD SD

38 Clientele groups are surveyed routinely when making
organizational decisions. ....SA MA N MD SD

39 Comparisons with similar organizations and their processes
are sought out to improve our education and service quality........SA MA N MD SD

40 "Benchmarks" or comparisons are used to support quality
planning, evaluation and improvement...................................SA MA N MD SD

Please turn the page. . .

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Almost finished. . .remember do not worry or puzzle over individual items. Your first impression is what is important.

41 Top administrators have clarified a vision of where
   the organization wants to go in the next five or ten years ....SA MA N MD SD

42 Critical processes and systems that move the organization
   towards its vision have been identified.....................................SA MA N MD SD

43 The vision is passed back and forth between administrators
   and employees to gain clarity and ownership of the vision. ....SA MA N MD SD

44 A structure is provided for monitoring progress
   toward the vision. ....SA MA N MD SD

45 Our administrators are knowledgeable about
   quality and quality management practices...............................SA MA N MD SD

46 Our Extension administrators accept their
   responsibility for quality...SA MA N MD SD

47 All of our top administrators have participated
   in quality management training. ....SA MA N MD SD

48 Extension administrators provide resources for staff to participate
   in quality management training. ....SA MA N MD SD

49 Quality goals are integrated into day to day leadership...............SA MA N MD SD

50 Administrators are committed to the adoption of
   quality values throughout the organization..............................SA MA N MD SD

51 Quality values are projected in an inconsistent
   or uneven manner throughout the organization........................SA MA N MD SD

52 Administrators consider quality improvement as a way to increase
   accountability with local, state and federal funding bases...........SA MA N MD SD

53 Administrators consider quality improvement efforts as a way
   to improve delivery of Extension programs...............................SA MA N MD SD

54 Administrators acknowledge management's responsibility
   for quality as a means of exceeding clientele expectations. ....SA MA N MD SD

55 Clientele groups invested in Extension are aware of our
   quality values and quality improvement processes....................SA MA N MD SD

Please go on to the next page

56 Our staff are recognized as skilled in their interactions
with clientele...SA MA N MD SD

57 "Responsiveness to clientele" is a characteristic that is
valued in Extension..SA MA N MD SD

58 Extension faculty and staff are consistently courteous when
answering the telephone or meeting with the public. ....SA MA N MD SD

59 When a client calls, the person answering the telephone
is able to answer their question or can refer them
to someone who can help them...SA MA N MD SD

60 Our Extension organization has access to research
to accurately recommend a course of action. ....SA MA N MD SD

61 Training needs assessment are conducted before
designing training programs for clientele.................................SA MA N MD SD

62 The information presented during educational programs
is reliable, scientific based knowledge....................................SA MA N MD SD

63 Extension professionals tend to overuse of scientific language
and technical jargon when presenting to clientele groups. ....SA MA N MD SD

64 Extension professionals exhibit knowledge of learning
styles and adult learning theory. ....SA MA N MD SD

65 The quality of our Extension programs have a good reputation
with clientele groups..SA MA N MD SD

66 The client's safety is considered a high priority relative
to information, facilities, and staffing.......................................SA MA N MD SD

67 Information presented to clientele is non-biased and consistent
with the mission of the land grant institution.............................SA MA N MD SD

68 Programs are held in a convenient location relative to the
targeted clientele group..SA MA N MD SD

69 The time commitment and out-of-pocket-expenses volunteers
is consistent with what they can afford to give..........................SA MA N MD SD

Listed below are 4 additional questions to give us some information about our sample. Please circle your response.

70 Indicate if you are male or female   MALE   FEMALE

71 What position most closely describes your job responsibilities? (Circle only one response.)

     1   EXTENSION ADMINISTRATOR

     2   DEPARTMENT HEAD

     3   EXTENSION SPECIALIST

     4   EXTENSION AGENT WITH ADMINISTRATIVE RESPONSIBILITIES

     5   EXTENSION AGENT WITH NO ADMINISTRATIVE RESPONSIBILITIES

     6   STAFF AND ORGANIZATIONAL DEVELOPMENT SPECIALIST

72 What is the total number of years you have been employed or (associated through your job) with the Cooperative Extension System. (Write your answer in the space provided.)

       _____ YEARS

73 What is the nature of your assignment?(Circle number of your answer.)

     1   STATEWIDE ASSIGNMENT

     2   DEPARTMENTAL ASSIGNMENT

     3   PROGRAM UNIT SERVING A POPULATION OVER 100,000

     4   PROGRAM UNIT SERVING A POPULATION BETWEEN 50,000 to 100,000

     5   PROGRAM UNIT SERVING A POPULATION BETWEEN 10,000 to 49,000

     6   PROGRAM UNIT SERVING A POPULATION UNDER 10,000

You are finished! Thank you !

In the spirit of continuous improvement, are there any comments you wish to tell us about this questionnaire? If so, please use the space below. Also, your comments regarding quality management in the Cooperative Extension System would be greatly appreciated.

Remember. . .

If you would like a summary of the study, please print "executive summary" on your business card and include the business card in the return envelope. We will see that you get one. (Please do not put your name on this questionnaire.)

Thanks, again.