DETERMINING CUSTOMER SATISFACTION:

AN EVALUATION OF SELECTED SERVICES

PROVIDED BY THE OKLAHOMA FOOD

AND AGRICULTURAL PRODUCTS

RESEARCH AND TECHNOLOGY

CENTER

By

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CHAPTER I

INTRODUCTION

Background and Setting

The Oklahoma Food and Agricultural Products Research and Technology Center, commonly referred to as the Center, was built in the mid-1990's, dedicated in late 1996, and staffed in 1997-98. The development of the Center was a result of the perceived future direction of agriculture in Oklahoma. It was apparent that a large share of Oklahoma's future growth in agriculture would come from processing or otherwise adding value to agricultural commodities. The state's agricultural leaders, policy makers, and Oklahoma State University faculty decided to build a Center for excellence in food processing (Hunt, 1998).

The mission of the Center is to generate and disseminate, through educational programs and technical and business assistance, information that will stimulate and support value-added food and agricultural products processing in Oklahoma (Hunt, 1998). The Center's over-arching goal is to assist producers, processors, and entrepreneurs in adding value to food and agricultural products processing industries in Oklahoma in order to help develop successful value-added enterprises. Therefore, the Center was developed to help bring products, jobs and dollars back to Oklahoma. The Center offers business and marketing assistance, microbiological testing services and consulting, sensory testing, access to state-of-the-art pilot plant facilities, and continuing education for industry.

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At the time this study was conducted the Center had been in operation for three years. During that period, Center staff and faculty had completed 61 projects with Oklahoma food processors and over 112 projects were continuing (Annual Report, 1999). The first Strategic Plan for the Center had been completed. Therefore, the Center began to focus on the implementation of its goals. One short-term goal was to develop a feedback system to monitor performance and achievements through evaluation activities. Specifically stated under this goal was to acquire survey instruments that provided evaluative feedback. A long-term goal was to establish a culture that embraced the philosophy of continuous improvement in all areas of conduct, performance, and achievement throughout the Center (Annual Report, 1999).

Continual improvement and developing a feedback assessment system were indicators of the Center's interest in and responsiveness to their customers. These goals make an important statement about the desire of the Center to deliver services in a manner that is satisfying to customers. They imply that the Center is concerned with the services that it provides and wants to insure that it is accomplishing the original mission. With these issues in mind, the need for assessing customer satisfaction is important in helping the Center to reach its goals.

Goals of the Center were as follows (Annual Report, 1999):

Short Term Goals and Action Plans

1. Provide technical assistance to Oklahoma value-added agriculture processing and production.

2. Establish partnerships with industry to determine their short-term research needs.

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3. To develop a seamless communication network with processors in identifying future needs with existing resource providers in order to prioritize projects on the basis of fund and resource allocation that will lead to the greatest benefits.

4. Develop outreach educational programs that address and meet customer needs.

5. Develop long range research and outreach programs.

6. Develop a feedback assessment system to monitor the Center's performance and achievements.

7. Continue to improve the facility, support staff, equipment toward meeting Center needs.

Long Term Goals

1. Establish a culture that embraces the philosophy of continuous improvement in all areas of conduct, performance, and achievement throughout the Center.

2. Catalyze the development of a value-added, consumer focused production and processing industry for Oklahoma that reduces the state's exposure to commodity instability and pricing.

3. Achieve and maintain a level of Center Excellence that results in the national and international recognition for research and outreach programs.

Statement of the Problem

Currently the Center does not have a method for evaluating the research and technical assistance it provides. No formal measure of the Center's services has been

conducted. In order for the Center to meet its long-term objective of continual improvement, the organization must look to the customer to determine its strengths and weaknesses in providing high quality services in order to allow for better business decisions.

This study was based upon grounded theory of customer satisfaction and quality as every customer was asked to define each. The customers' responses were compiled to form a definition that reflected how customer satisfaction was defined with the Center's services. The Center will be able to use this in making decisions about the services that it provides.

As a result of this study the Center will have a model from which they can continue to measure customer satisfaction. An interview schedule has been developed and was made available for immediate application. By having this customer satisfaction measurement tool it will allow the Center to make better business decisions and provide its customers with improved services.

Statement of Purpose

The purpose of this study was to evaluate selected customers' satisfaction and the overall impact and effectiveness of technical assistance provided to the Oklahoma food and agricultural products industry.

Objectives

The objectives of this study were to:

1. Describe customer satisfaction with Center services.

2. Describe the effectiveness of service delivered through the Center as perceived by customers.

3. Describe the overall outcome on customers' businesses as a result of the services provided by the Center.

Scope of the Study

The findings of this study are only generalizable to the selected population of Center customers that met the same criteria as those selected by Center personnel.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The literature review is a synthesis and analysis of empirical and theoretical research that directly relates to the objectives of this study, which were to (a) evaluate customer satisfaction with Center services, (b) evaluate the effectiveness of service delivered through the Center, and (c) evaluate the overall impact of services provided by the Center.

Theoretical Framework

There has been a significant quality improvement movement over the past several decades. This movement began in response to the Japanese industrial quality movement. The movement became apparent in the United States during the 1980's. At this time Americans realized that the Japanese were beginning to economically out do the United States. The movement was initially focused on the product industry, and in the last ten years it has gained significant importance in service industries (Dobyns, 1994).

William Edwards Deming was a world-recognized leader in the quality movement. He was generally credited with the post-war introduction of quality concepts to Japan. In 1980 his methods were introduced to Americans on a NBC telecast titled, "If Japan Can.....Why Can't We?" Deming's message in this telecast was a wake up call for American industry (Bowles, 1994).

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Deming's theory took a holistic approach to quality and management. He believed that improvements in quality and management led to improvements in productivity, which in turn lead to lower prices, greater market share, and future growth potential (Broedling, 1997).

Deming's theory was based on management principles identified as the "fourteen points", "seven deadly diseases", and "obstacles" with a major focus on relating to the "customer" (Walton, 1986). The most crucial of the three are the fourteen points. Deming wrote, "the fourteen points are the basis for transformation of American industry. It will not suffice merely to solve problems, big or little. Adoption and action on the 14 points are a signal that the management intend to stay in business and aim to protect investors and jobs" (Deming, 1986, p. 23). The fourteen points can be applied to any organization regardless of its size or type. The following list details the fourteen points:

1. Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business and provide jobs.

2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.

3. Cease dependence on inspection to achieve quality. Eliminating the need for inspection on a mass basis by building quality into the new product in the first place.

4. End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.

5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.

6. Institute training on the job.

7. Institute leadership. The aim of supervision should be to help people, machines, and gadgets to do a better job. Supervision of management is in need of an overhaul, as well as supervision of production workers.

8. Drive out fear, so that everyone may work effectively for the company.

9. Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and consumer use that may be encountered with the product or service.

10. Eliminate slogans, exhortations, and targets for the work force asking zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.

11 a. Eliminate work standards (quotas) on the factory floor. Substitute leadership.

b. Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.

12 a. Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.

b. Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, *inter alia*, abolishment of the annual or merit rating and of management by objective.

13. Institute a vigorous program of education and self-improvement.

14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job.

Only people, not hardware, can accomplish transformation of these points. Furthermore, Deming implicitly stated that it is management's responsibility to put the 14 points into action. A company cannot buy its way into quality (Deming, 1986).

Deming's theory is about a process, the whole system and absolutely knowing your business (Taurman, 1999). Yilmaz (1997) coined it is a management philosophy that is to be accepted as a way of life, as well as a way of doing business. The Deming method takes years to implement because it is a philosophy, not a technique. It is a system of thinking about systems (Dobyns, 1994). Each system within the system must be focused on for the entire system to improve. Deming identified the outcomes of these systems as being so important that he focused his attention on the process, the means by which the end results will be improved. Simply put, every outcome is the result of one or more processes within the system (Wright, 1997).

The main idea of Deming's theory is that one can't consider each process complete in itself, but one should look at the system as a whole, and the system must include not only the process but also suppliers and customers. Customer's likes and dislikes, wishes and desires, have to be monitored and fed back into a system so that the system can continually improve, always delighting customers with results that exceed their expectations. People using the Deming management system not only look outward toward the customer; they bring the customer into the system (Dobyns, 1994). The

customer is brought into the system by finding out their wants and needs. These wants and needs are then put into the system for improvement.

Deming's theory focuses on the customer. It provides a vision that focuses each member of the firm on improving customer service (Fredendall, 1995). Deming said that the consumer is the most important part of the production process. Without someone to purchase the product or service, the company may as well not exist. Therefore, the ability to please the customer should be top priority for hiring and training of employees (Deming, 1986).

Quality should be aimed at customer needs, present and future. This is important in retaining the customer. It will not suffice to have customers that are merely satisfied. Customers that are unhappy as well as those who are merely satisfied will switch products or services. It is essential to keep all customers satisfied in order to keep them returning for repeat business.

Deming (1986) further explained that improvement in quality is the responsibility of the management. He taught that management-and-management alone – is responsible for quality; employees can only be responsible for the part of the overall job that they are given (Anonymous, 1997). In order for management to accomplish overall improvement in quality they must accept Deming's philosophy as a new way of doing business.

Deming's theory implied that it is essential to measure customer satisfaction, as he stated that the customer's likes and dislikes must be monitored and feed them back into the system to create a high quality environment. Therefore, it is important for the Center to incorporate Deming's theory and his fourteen points to achieve excellence in quality. which will in turn create an environment of customer satisfaction.

Customer satisfaction has been defined by many people in various ways. The following are some examples:

Juran (1991): Customer satisfaction is the result achieved when service or product features respond to customer needs.

Brown & Swartz (1989): Customer satisfaction occurs when the outcome of a product or service delivery meets or exceeds customer expectations.

Vavra (1997): Customer satisfaction can be defined in two ways: either as an outcome or as a process. The outcome definition is characterized by satisfaction as the end-state resulting from the consumption experience. When satisfaction is viewed as a process its interpretation emphasizes the perceptual, evaluative, and psychological processes that contribute to satisfaction.

Anton (1997): Customer satisfaction is a state of mind that a customer has about a company when their expectations have been met or exceeded over the lifetime of a product or service.

NPC Benchmarking (1999): Customer satisfaction is the comparison of the customer's perceptions of goods and services offered by a specific business unit against competing products and services in the same market.

These definitions seem to be fairly consistent. From these definitions it can be said that customer satisfaction is the customer's perception of the extent to which his/her expectations have been met or exceeded by the actual services or products received from a consumption experience. Accordingly, if a customer of the Center perceives that their expectations have been met or exceeded as a result of their interactions with the Center then the person is a satisfied customer.

Because satisfaction is defined in terms of the customers, all satisfaction improvement projects must start by defining what customers want. This can begin once the customers have been identified. The process that determines satisfaction and

dissatisfaction begins with the expectations that customers have when making a purchasing decision. When the customer uses the product or receives the services and experiences how well it performs, either the expectations are exceeded, leading to a high level of satisfaction; or the expectations are not met and result in dissatisfaction (Oliver, 1981).

Definitions regarding customer satisfaction have several levels of specificity. Various levels of specificity in the case of this study include: satisfaction with an institution, satisfaction with a performance attribute, satisfaction with the end product, satisfaction with a pre-purchase experience, and satisfaction with a purchase decision experience (Vavra, 1997).

Marketing wisdom suggests that customer satisfaction is crucial to repeat business (Marcure, 1999). The achievement of customer satisfaction leads to company loyalty and product repurchase. Customer satisfaction measurement must include understanding the gap between customer expectations and attribute performance perceptions. Brown (1998) stated that there should be some connection between customer satisfaction measurement and bottom line results.

Satisfied customers are not necessarily loyal customers – only completely satisfied customers repurchase. Satisfaction is composed of 30% product and 70% service mix according to the American Customer Satisfaction Index. Satisfaction is made up of three equally essential elements: importance, expectation, and performance. However, according to experts, performance may be the least significant factor in satisfying customers (Loomis, 1999).

The "satisfaction" part of customer satisfaction can refer to different areas of the relationship with the customer. Some of the different areas include satisfaction with the quality of a product or service, satisfaction with an ongoing business relationship, satisfaction with the price/performance ratio of a product or service, and satisfaction because a product/service met a customer's expectations (Brown, 1998). In this particular study the researcher focused on satisfaction with the quality of a service, an ongoing business relationship, and a customer's expectations being met.

Importance of Customer Satisfaction Measurement

Customer satisfaction assessment is now widely recognized as a vital input to any strategy for customer focused business improvement (Jones, 1996). A good definition and understanding of customer satisfaction can help any company or organization identify opportunities for product and service innovation. It can also serve as a basis for performance appraisal and reward systems (Brown, 1998). In the context of the Center this would refer to rewarding faculty for customer satisfaction rather than for the number of publications they achieve in a given time period.

Why assess customer satisfaction? For all businesses, success derives from satisfying the needs of all stakeholders in the organization: customers, shareholders, employees, suppliers, and the community at large. Customer satisfaction that translates to "all the stakeholders are satisfied," is customer satisfaction that you can bank on (Edelstein, 1997). The most pressing demands come from customers. Customer satisfaction is a major driver for survival, competitiveness and growth, not only for the organization as a whole, but also for internal business functions (Jones, 1996).

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Customer satisfaction assessment is a part of understanding customers and their needs; understanding that is essential to the long-term satisfaction of their needs and the business relationship with them. "Satisfaction assessment must lead to action" (Jones, 1996, p. 46). If you don't satisfy the customer, the customer sooner or later will find someone who does. If the customer is not satisfied, he or she may come back or may give someone else a try. For the customer to return, they must be delighted with the product or services received (Dobyns, 1994).

Customer satisfaction results should form part of a balanced set of performance measures, which the management team uses to manage the organization (Jones, 1996). It can also be the basis for a customer satisfaction survey program that can ensure quality improvement efforts are properly focused on issues that are important to customers (Brown, 1998). Customer satisfaction is the leading criterion for determining the quality actually delivered to customers through the service accompanying servicing (Vavra, 1997).

Customer satisfaction is a *threshold requirement* for achieving customer retention though additional considerations help to improve retention. Focusing on satisfaction helps eliminate the negative word-of-mouth potential of dissatisfied customers. Losing one dissatisfied customer may be more severe than it sounds; one dissatisfied customer may speak to as many as nine others, multiplying his or her dissatisfaction ninefold.

Customer satisfaction measurement is a win-win situation: Customer satisfaction has long-reaching impacts in the viability of an organization. Schlesinger and Heskitt study (as cited in Vavra, 1997) demonstrate the relationship between satisfied customers and satisfied employees with their Cycle of Good Service. The cycle suggests that

satisfied customers tolerate higher margins that can be used to pay better employees. This boosts employee morale, reducing employee turnover, which in turn helps produce more satisfied customers, and so on. Many businesses rely on the principle that if something goes wrong that they'll hear about it from their customers. Countless investigations document the fallacy of relying on customer complaints as a measure of customer satisfaction. Some of the statistics include 50% of customers who experience a problem, never complain to anyone, of the remaining half, most (45%) complain only to frontline personnel who either fail to escalate the problem up to management, mishandle solving the problem or both, and 5% of all customers who have a problem actually voice it to management (Vavra, 1997).

The primary reason for measuring customer satisfaction is to collect information on either what customers report needs to be changed (in a product, service, or delivery system) or to assess how well an organization is currently delivering on its understanding of these needs. By measuring customer satisfaction it makes certain implied, and perhaps explicit, promises about the organization's interest in and responsiveness to its customers (Vavra, 1997). In this study the Center's commitment to measuring customer satisfaction communicates to its customers that it has a special interest in their needs and wants.

Assessing customer satisfaction is a vital element in any strategy for service-led business performance improvement (Jones, 1996). This assessment can give an indication of the *well being* of a company's business processes and determine the quality of the products and services resulting from these processes. Measures allow a business to: (a) know how well the business process is working, (b) know where to make changes to

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create improvements, if changes are needed, and (c) determine if the changes led to improvements (Hayes, 1998).

Summary of Review of Literature

To better understand customers it is important to conduct research to find out the customers' needs and wishes, and thus to design products and services that will provide improved consumer life in the future (Deming, 1986). The use of customer surveys is a valuable starting point for continual change. It helps to ensure that change is directed towards satisfying the customer. As one improvement is made, another need is identified and the search to develop a method of meeting this need or removing the cause of dissatisfaction begins (Fredendall, 1995). Since customer satisfaction measures a customer's state of mind, measurement will not be exact and will require profitability sampling and some simple statistical tools (Brown, 1998).

Knowing what a customer perceives about the Center's services is crucial to its operation. When the Center knows what a customers expectations and wants are it will have the opportunity to provide services accordingly. If all staff members make the needs and wants of customers an integral part of their job the Center will be successful and prosper.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this chapter is to describe the methodology involved in conducting this study. This chapter is divided into six main areas: population and sample, instruments, design, variables, procedures, and analysis. The population and sample section describe the participants of the study. The instrument section describes the composition and creation of the research instrument. The variables section describes the objectives of the study. In the procedure section the methods used to gather data are described chronologically. The design segment discusses the type of research design used in the study. The analysis section describes the analytical procedures used by the researcher.

Context

The objectives of the study were to 1) describe customer satisfaction with services provided by the Center, 2) describe effectiveness of service delivered through the Center as perceived by customers, and 3) describe the overall outcome on customers' businesses as a result of the services provided by the Center. These objectives were accomplished by evaluating various aspects of the customer-staff relationship from customer entry through completion of a project.

Impact assessments are undertaken to determine program effectiveness in reaching stated goals (Rossi, Freeman & Lipsey, 1999). The basic aim in this study was to document the net effects of Center activities regarding customer satisfaction from opening day to the end of this study. Data collected as a result of this study will also serve as baseline data for further impact assessment studies. As the Center serves customers who volunteer for assistance in several facets of the food processing industry, no comparable groups could be reasonably identified as control groups for experimental research design. The Center provides full-coverage programs (where the program serves all members of a target population), which lend themselves best to reflexive control procedures, or before-and-after comparisons commonly known as the pre-post-test model.

As no two customers are served in exactly the same manner (uniform program offering), quantitative pre-post-test group comparisons are inappropriate measures for effectively assessing Center impact. Judgmental approaches were utilized through interviews with Center staff and customers (Rossi, Freeman & Lipsey, 1999).

Design

The research design utilized in this study was a qualitative case study approach. A case study design is employed to gain an in-depth understanding of the situation and meaning for those involved (Merriam, 1998). A case study is "an empirical inquiry that: Investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (Yin, 1984, p. 23). One of the most important uses

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of the case study is to "*explain* the casual links in real-life interventions that are too complex for the survey or experimental strategies" (Yin, 1984, p. 25, emphasis in original). In the context of this study, the intent was to gain an in-depth understanding of the services provided by the Center to ensure customer satisfaction and to optimize Center effectiveness.

Qualitative research methodology is research that describes phenomena in words instead of numbers or measures. It is conducted for the purpose of understanding social phenomena. The research design is not as prescriptive and structured as quantitative research design. Considerable flexibility is needed in decision making while the research is being conducted, and decisions on specifically how to proceed may be deferred to later stages of the research (Wiersma, 1995).

Qualitative research is more than a series of techniques; it is an approach to research, which has somewhat different underpinnings than quantitative research. The underlying epistemology of qualitative research can be summarized as follows (Wiersma, 1995):

1. Phenomena should be viewed holistically, and complex phenomena cannot be reduced to a few factors or partitioned into independent parts.

2. The researcher operates in a natural setting and, to the extent possible, should maintain an openness about what will be observed, collected, etc., in order to avoid missing something important.

3. It is the perceptions of those being studied that are important and, to the extent possible, these perceptions are to be captured in order to obtain an accurate *measure* of reality.

4. A priori assumptions, and certainly a priori conclusions, are to be avoided in favor of post hoc conclusions.

5. That the *world*, actually phenomena in the world, are perceived as cloudlike. This implies a somewhat loosely constructed model, one in which there is flexibility in prediction, which is not run in a mechanistic manner according to a set of laws.

Population and Sampling

From its inception in 1996 to August 1999 the Center had a total of 180 companies that had solicited services. Customer profiles ranged from small family owned businesses that were just entering the value-added food product market to large corporations employing hundreds of personnel. These customers were divided into four categories: active, inactive, completed, and pending. For this study participants or customers were selected from all four categories; however, Center personnel helped to determine which customers were appropriate for the study according to levels of interaction as deemed appropriate for the study.

In phase one of the study purposeful sampling methodology was used. Purposeful sampling is when the researcher selects a sample to meet the purpose of the research. The logic is based on a sample of information-rich cases that are studied in depth. There was no assumption that all members of the population were equivalent data sources, but those selected were believed to be information rich cases. Generalizability to the population is not a consideration in case studies (Wiersma, 1995). For the intentions of this study five customers were purposefully selected from the 180-customer population. The Center's

Quality Management Specialist was asked to recommend five customers that were considered extreme cases. This particular method is called extreme case purposeful sampling (Wiersma, 1995). This procedure allowed the researcher to define the boundaries of satisfaction and dissatisfaction with Center's services.

In phase two of the study, random and purposive sampling techniques were used. Random sampling is a technique in which all individuals in the population have an equal chance of being selected in the sample. The logic behind this method was based on the sample being statistically representative of the population, thus allowing generalization to the entire population (Wiersma, 1995). However, for the purposes of this study the findings are only generalizable to the selected populations that met the same criteria as determined by the administrative assistant and researcher.

The population during phase two consisted of 175 customers. These customers came from the original population of 180, but did not include the customers that were purposefully chosen for the extreme case interviews. From this population of 175 customers, 45 customers were randomly selected. This was accomplished by using a simple random sampling technique. Normally distributed random numbers between one and 100 were generated using Mini-Tab, a statistical package for students. The intent of selecting forty-five customers was to obtain 30 participants.

Due to the fact that no two customers were served in the exact same manner (uniform product offering) and belonged in different categories as to the stages of their project, the administrative assistant in charge of these records was asked to provide advice as to which customers would be appropriate for the study after the random selection was completed. To reduce selection bias, this particular person was selected as

she did not interact or complete tasks on any of the projects. Customers deemed

appropriate for the study were classified as those who had an actual project with the

Center. A project was defined as a significant interaction with Center staff that resulted in

tangible products or services. The projects that were then deemed as inappropriate were

generally cases in which the customer requested basic information that did not require

having an actual project. For example, a person who called the Center to ask for the

appropriate temperature at which a product must be stored would not be considered a

project. As the instrument developed for the study was used to gain an in-depth

understanding of customer satisfaction, non-project customers were deemed

inappropriate for the sample. An actual project is one in which more detailed information

along with additional services were required. See figure 1 for a summary of the sampling

methodology.

| Contact Database (N=180) | → | Randomly selected customers (n=45) | → | Screened customers by Center Staff (n=30) | → | Agreed to participate and were interviewed (n=17) |
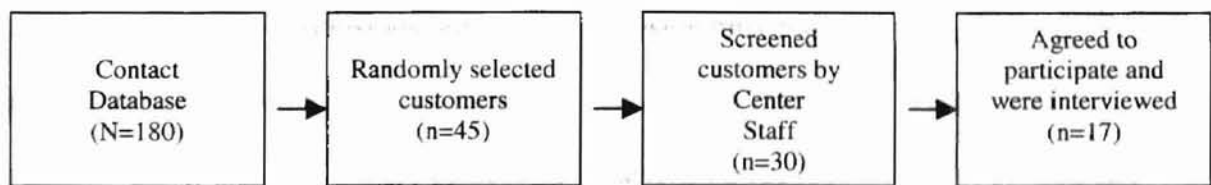
Figure 1. Conceptual display of sampling methodology.

Development of the Instruments/ Interview Schedule

The instrument developed for this study was an interview schedule. This

instrument was developed for use in conducting face-to-face interviews as well as for

engaging participants in probing questions, which evolved during the interview process

(Merriam, 1998). Questions were determined from a review of literature,

recommendations from Center staff, and feedback throughout the interviewing process.

The initial interview schedule was established from a review of literature and recommendations from Center staff. It was then used in interviewing the purposefully selected customers (n=4). A final version of the interview schedule was refined after receiving feedback from the four purposefully selected customer interviews. This final instrument was used to interview all 21 customers and was not changed.

A triangulation technique was used to enhance the internal validity of the instrument. Triangulation is the use of multiple investigators, Bond and Kelsey, and multiple sources of data (Center documents, observation, and interviews) (Merriam, 1998). This was a process in which ideas and themes were negotiated to form conclusions.

Reliability in qualitative studies answers the question of whether or not the results are consistent with the data collected (Merriam, 1998). To increase overall trustworthiness of the conclusions drawn, findings were presented to the Center staff members for confirmation and validation of interpretations (Merriam, 1998). These reports and presentations occurred on several occasions throughout the study: preliminary findings were presented to Center staff on February 14, 2000; on-going findings May 18, 2000 and final report August 1, 2000. The Industry Advisory Council was also given an oral presentation of the findings for validation on September 26, 2000.

Repeatability is not a concern of qualitative research. The essence of qualitative research and case studies in particular, are about providing enough rich, thick descriptions for readers to have the same interpretations.

Data Collection

Qualitative research techniques were used for data collection. Information was

collected from the following sources:

1. Administrative records held by the Center for each customer who had requested
   service. Specifically, data was collected on:

   a. Post-program experience of customers

2. Researcher observations of Center operations.

3. In-dept interviews with customers. Interviews collected data on:

   a. Customer satisfaction with Center activities
   b. Customer progress toward attaining goals
   c. Changes in customer's business practices as a result of intervention with the
      Center

Collection of customer satisfaction information data took place in two main

phases. Qualitative data was collected throughout both phases through face-to-face

interviews. Phase one consisted of extreme case interviews, while phase two was

comprised of interviews with representatives from the general population of the Center's

customers.

Phase 1

Phase one was conducted through the use of the five purposefully selected

customers. Four of the five purposefully selected customers chose to participate in the

face to face interview. These four interviews were used to refine the interview schedule

developed from the literature review and Center staff recommendations. A letter

introducing the study, signed by the Center's Quality Management Specialist, was sent to

each of these customers. The customers were then contacted by phone to arrange an interview time and location. Interviewees were given the option of the researcher traveling to their business or making arrangements to conduct the interview when they were visiting Stillwater. All of the participants chose to have the researcher travel to their business for the interview. During each interview the interview schedule was used for engaging participants in probing questions. The interview, which lasted no longer than one hour, was audiotaped to gather the maximum amount of information possible. The recording from the interview was then transcribed. The final stage of this process was sending a copy of the transcript to each interviewee for validation of content. None of the interviewees requested changes to their transcripts.

The next step was for the researcher to code the interview. A list of codes was developed in conjunction with the research questions. Codes are units of meaning in which similar thoughts or ideas are grouped together to be used throughout the entire data analysis process. After all interviews were conducted and coded emerging ideas and themes were analyzed to form preliminary interpretations. After the four interviews were coded, revisions were made to the interview schedule to reflect customers' needs.

The purpose of phase one was to define the boundaries of customer satisfaction and dissatisfaction with the Center's services to produce a more accurate draft of the interview schedule. The second draft of the interview schedule contained questions that were more accurately aligned with the research questions.

Phase two of the data collection process took place using the forty-five randomly selected customers. The purpose of this phase was to gain an information rich understanding of the objectives examined in the study. The customers were divided into groups of five by geographical location for organization of the data collection process. The groups were systematically (in two-week increments) sent a letter that introduced the study. Approximately one week after the letter was sent, the researcher contacted the customer by phone to arrange an interview time and location. As with phase one the interviewee was given the choice of the researcher traveling to their business or making arrangements to conduct the interview when they were in Stillwater. One interviewee chose to have the interview conducted at Stillwater while the researcher traveled to the remaining interviewee's businesses. The interviews were conducted using the refined version of the interview schedule. Once again, the interview lasted no longer than one hour and was audiotaped for accuracy. The audiotape was then transcribed and a printed transcript was sent to the interviewee for verification of accuracy. One transcript was returned for grammatical corrections.

A total of twenty-one interviews were collected, purposefully selected (n=4) and randomly selected (n=17). Customers chose not to participate in the study for various reasons with the main reason being that they were not far enough along in their project to be able to fully answer the interview questions. After collecting 17 interviews, the researcher reached a point of data saturation, where the same themes were being repeated in all interviews. This point in time in qualitative data collection is called data saturation. Miles & Huberman (1994) explain that at this point the researcher has completed the task

of collecting data and it is no longer necessary to continue interviewing additional customers.

Data Analysis

Qualitative data was analyzed with the help of ATLAS.ti, a visual qualitative data analysis software package. ATLAS.ti is used to help uncover the complex phenomena hidden in qualitative data. This program permits the researcher to build unique networks to visually *connect* selected codes, thus enabling the researcher to construct concepts and theories based on visible relations. After each interview was transcribed, cleaned and the researcher received validation from the interviewee, the document was then loaded into the ATLAS.ti program. The initial stage of the process was accomplished by developing a primary list of codes from the interview schedule questions. The coding process then began. During this process the document was attentively read and as topics were reached that matched a code the matching code was then attached to the text. Codes are formed within the program to allow the researcher to *organize* all related topics derived from the interviews; therefore, codes are generally referred to as units of meaning. When topics were reached that indicated an emerging theme a new code was assigned the title of the emerging theme and was then connected to the corresponding text. By attaching the code to the specified text the program then compiles all related comments in an individual file for further analysis. After all interviews were coded, each group of coded data was then individually analyzed to draw conclusions.

To compensate for the interview schedule being modified throughout the interviewing process and new codes that were developed as themes emerged; early coded

interviews were subjected to an additional coding session. Hence, they were re-examined after coding the final interviews. The purpose of this was to determine if information from the interview was appropriate for the codes that had been added since the initial coding of the particular interview. In general many of the codes that emerged were things that could be found in previous interviews, but these subjects were not discussed in as much depth as they were in the latter interviews, where the questions was directly asked to the customers. The list of codes developed for the study can be found in Appendix E.

After all interviews were coded, the data from individual codes were isolated to draw interpretations from the data. Each code was then synthesized to form a claim that was deeply rooted in the participant's comments. A claim is a statement that reflects the customers' comments regarding a specific topic. These claims evolved from customer comments pertaining to previously developed codes and emerging themes. As a final step in the data analysis process, a few selected customer comments related to the claim were attached to provide support for the claim within Chapter Four.

The following is a list of the steps taken to analyze the data. This procedural description allowed the researcher to draw conclusions found in Chapter Five.

1. Interview was tape recorded live.

2. Interview was transcribed verbatim.

3. Interview was cleaned by checking for transcription errors.

4. Interviewees were sent a copy of transcription for validation.

5. Interviewees validated transcripts by non-response.

6. Transcript was converted to a text file and loaded into the ATLAS.ti data analysis software program.

7. Interview was coded by highlighting meaningful phrases of text and electronically tagging to a unit of meaning.

8. Data was reduced by grouping coded text into like categories, called themes.

9. Themes were translated into claims.

10. Claims were supported by presenting the raw data in the form of direct quotes within the thesis text.

FINDINGS

Introduction

The findings are reported in conjunction with the research questions that guided this study. All data reported are based on the interviews collected from December 1999 to June 2000. The format of this section will report an interpretation made by the researcher and will be followed by supporting statements drawn from the interview transcripts.

The findings are addressed in relation to the objectives of the study. The following objectives were taken from 21 interviews. To protect the identity of participants, an alias was assigned to each customer and the pronoun *he* is used to reflect gender in all responses even though several women were interviewed for this study. Responses in parentheses were added by the researcher to clarify meaning and were not the words of the interviewee. All quotes represent statements from the interview transcripts that are representative of the claim. Quotes are used to support the claims; are indicated by italics, indented 0.5 inch and are single-spaced within the text.

Customer Satisfaction with Center Services

The first research question focused on customer satisfaction with Center services. Each participant in the study was asked if they were satisfied with the services provided by the Center. The majority of customers interviewed were overwhelmingly satisfied with the services they had received from the Center. Seventeen interviewees indicated

that they were satisfied with the Center's services, while four replied that they were not

satisfied with the services they received from the Center. The following quotes typify

expressions of satisfaction.

> *Bill*: I'm very satisfied, their services are great and they're always willing to work
> with us in just about in any capacity as they can. What we ask will always be easy
> to provide.

> *Tim*: We have been very satisfied and it has led to (more) business (for our
> company).

> *Dick*: Satisfaction has been exceeded by their (the Center's) service. In other
> words, what we expected we got a hundred fold more. Are we satisfied, we
> couldn't be more satisfied.

<div align="center">

Reasons for Satisfaction

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A variety of reasons were stated as to why the majority of customers were

overwhelmingly satisfied with Center services and ranged from customers feeling that

they had a positive relationship with Center faculty and staff to Center faculty and staff

showing a high level of commitment to the customer's project. The following themes

surrounding satisfaction emerged during the customer interviews.

- *Customers experienced positive relationships with Center faculty and staff.*

The bulk of interviewees explained that they had a very positive professional

relationship with Center faculty and staff. Center faculty and staff were described as

helpful, professional, friendly, personable, and considerate.

> *Sam*: A real workable relationship, you know everyone was really helpful and
> everybody was really interested in the product.

> *Bob*: I feel like I have a very professional relationship. I feel like I could call any
> of the folks there and they would help at any time or I could ask them for help at
> any time. I feel confident that they would come forward and help as much as they
> can on any project.

Although the majority of customers indicated positive relationships with Center faculty and staff, all customers did not attest to this. Matt indicated that he would not recommend Center faculty and staff as being professional due to the way his project was managed.

> *Matt*: I wouldn't say that I would recommend them as being professional people. In the beginning it started out like yes this was going to be good (the project). They got everybody fired up and ready to go and okay we were going to get some help and get these products out on the market and thought we will start out small and do it but it never took place. So we had to go somewhere else to get it completed.

- *Center faculty and staff recommended alternative processes for customers.*

Twelve of the customers interviewed responded that their project coordinator gave them more than one means by which to solve their project problems (Ed, Dan, Wade, Doug, Kyle, Todd, Dale, Dick, Tim, Bob, Glenn, and Gene). They indicated that this was important as in many instances it helped to save the customer money. Jack, Matt and Will indicated they were not given alternative solutions to their problems. They felt alternatives were not given in these instances because the Center did not have adequate knowledge related to their specific projects. Also, Jim and Sam said that alternatives were not appropriate in their particular situation.

> *Wade*: Then when I told him that I would need to limit the amount of money that I had originally thought we would have to fund something like that, then he worked with me in finding a less expensive way to get the same basic end result. (The alternative was) at least, almost as good as the end result with spending considerably less money.

- *Giving the customer alternative sources of information to help solve their problem.*

Eight of the customers interviewed stated that they were given additional references to contact if further assistance was needed that the Center could not provide

(Jack, Wade, Jay, Bob, Glenn, Dick, Kyle and Gene). This was helpful to customers as it saved them from having to seek out these contacts themselves and facilitated the network among value-added producers.

> *Bob:* They have given us other leads and other networking opportunities out there with other folks. If they couldn't help us they would say well maybe you need to contact so and so.

> *Jay:* After doing all that he could do he did get me an appointment to go to another University for a seminar and that helped me. Then after I finished that he gave me another invite to a seminar in another state and I profited by all of these things.

- *Customer being able to use Center facilities.*

Four customers indicated that it was very beneficial to have access to Center facilities (Bill, Kyle, Gene and Tim). It was mentioned in three main contexts; use for a process related to their project, the placement of equipment, or for holding meetings.

> *Kyle:* We pack it ourselves and when their facilities are open sometimes they will let us use their facilities. Because of lack of sales we still cannot afford our own place yet to package our product.

> *Gene:* We were able to tap into some equipment to use that we could not have afforded to do otherwise and we did that on a pretty small shoestring budget. We were able to do this because the service was available at the Center.

- *Customers being able to successfully start a business.*

Five customers indicated that a major factor in their satisfaction was being able to successfully get their businesses started as a result of the assistance provided by the Center (Ed, Dick, Kyle, Sam and Bob).

> *Kyle:* The result is that we are now in the market in a lot of different states and with their help it has become possible.

> *Dick:* So the whole thing culminated into a successful business getting off the ground.

- *Center faculty and staff availability to answer customer questions.*

Twelve customers reported that Center faculty and staff made themselves readily available to answer questions (Sam, Wade, Dale, Gene, Dick, Bill, Bob, Glenn, Ed, Doug, Kyle and Todd).

> *Ed*: If I needed further assistance all I had to do was pick up the phone and call him (Center faculty and staff member) and say gee I've run into this hurdle, this challenge, I'm not sure how to resolve it.

- *The Center's overall effectiveness of communication skills.*

Seventeen customers reported that communication skills are a strong aspect of Center services (Bill, Bob, Tim, Jim, Ed, Dan, Sam, Tom, Dick, Wade, Doug, Will, Kyle, Todd, Dale, Glenn and Gene). Many indicated that this was a crucial aspect in helping to successfully complete a project.

> *Doug*: Communication was very good and it was a big key (to the success of my project).

> *Dick*: The line of communication was nothing short of absolutely perfect in every way, shape or form.

- *Ease of communicating with Center director.*

Eight customers mentioned contacts with the Center director throughout their projects (Gene, Louise, Bob, Tim, Bill, Dick, Wade and Ed). In general they reported that it was very important to be able to have positive contacts and interactions with the Center director. He was described as very approachable. These eight customers were very satisfied with Center services and attributed contacts with the Center director as a factor to the success of their projects.

> *Wade*: The Center director has been a very, very positive influence as well. He came to my open house when we first opened and was there for me to answer any questions I might have. He was very friendly and easy to get along with. I was real impressed – I didn't expect that.

Dick: The Center director is in a position of great importance, but he's always got time for you. There has never been a time that I have called his office where if he weren't in a meeting or something, he would call back. He always returned my calls.

One interviewee mentioned that he hesitated from stating complaints to the Center director because he felt intimidated by his position as Center director and feared repercussions from Oklahoma State University for stating complaints.

Matt: I did not state my complaints to the Center director because the advice that I've had is to not make OSU an enemy, they are just too large in the state of Oklahoma to have as someone that is not on your side.

This customer was not satisfied with the services he received from the Center. He felt somewhat threatened by Center faculty and staff, as he was concerned with possible consequences of making himself an "enemy" of the University.

- *Ease of stating complaints to Center staff.*

Fifteen customers did not feel hesitant to state complaints to Center faculty and staff (Ed, Dan, Wade, Doug, Will, Kyle, Todd, Dale, Dick, Bill, Jim, Tim, Bob, Glenn and Gene). These customers indicated that Center faculty and staff were extremely approachable in regard to stating complaints.

Bob: No I don't feel hesitant at all, in fact I tell you that if I had a problem I think that I would go to (Center personnel) and just lay it on the line. I'd had no problem with getting on the telephone and saying we have a problem with this.

- *Center faculty and staff showed a high level of commitment to customers' projects.*

In general customers that indicated they were satisfied felt the Center showed a significant level of commitment to their project. Commitment to the project was not a question that was asked directly during every interview; however, it emerged in 15 interviews indicating its importance to customer satisfaction. Thirteen of these customers

reported that this was a very important aspect of the Center's services (Bob, Tim, Jim, Ed, Dan, Sam, Dick, Wade, Doug, Kyle, Todd, Glenn and Gene).

> *Dan*: It's not just like well here's your little brochure and this is what you could do if you wanted to do this. These guys were willing to sit down and spend some time. We had a number of meetings involving the guys who had to do with processing and packaging and how we go about promoting or getting the product out to do research on it, market research, and so forth.

> *Wade*: It just seems like they are more than willing to do anything I have ever asked. They even go beyond to point out other things that they might be able to help me on that I never even thought of.

> *Kyle:* They seemed to bend over backwards to help us. If we needed anything they were there. They've always been willing to set up an appointment.

Reasons for Dissatisfaction

There were a variety of reasons for customer dissatisfaction, which ranged from lack of responses to questions asked to failure to complete the project as promised. The following themes surrounding dissatisfaction emerged during the customer interviews.

- *Trivial answers given to questions asked by a customer.*

Jack stated that he did not receive effective answers to questions posed for his food processing technique.

> *Jack*: It (the answer) was obviously low quality because the questions weren't answered on two occasions. I got air. Empty stuff.

- *Lack of communication among Center staff members.*

Matt indicated a communication problem among Center faculty and staff members. He felt that faculty and staff members needed to keep each other informed of the progress of each project to prevent confusion.

This particular customer was dissatisfied overall with Center services and would hesitate to return for additional assistance due to poor quality responses given when seeking help and the lack of follow-up from Center personnel.

- *Customer did not receive requested information from the Center.*

Jack also noted that he did not receive the requested information needed to complete his project.

> *Jack*: All the squares were filled as far as the appearance of providing service or providing help. But I didn't get the information. It was the traditional high side pass, all gloss, and no substance.

He was not satisfied and would be skeptical when considering returning for additional advice because his initial project was not completed as a result of the Center's failure to provide requested information.

- *Customer was falsely led to believe that the Center would assist him in developing a value-added product.*

Matt indicated that he was misled by the Center. He was told that the Center would assist him in developing a value-added product and was initially given directions from the Center on the procedures to initiate the project. After investing time and money into the project, upon advice from the Center, he was told the project would not be possible.

> *Matt*: Well, mainly we felt that the people we talked with at the new Center led us down the totally wrong road. In the beginning it started out like yes this was going to be good. They got everybody fired up and ready to go and okay we were going to get some help and get these products out on the market and thought we will start out small and do it but it never took place.

Matt indicated that he was extremely dissatisfied with the Center's services. He did receive assistance from another university to successfully complete his project, and stated that he would not return for additional assistance.

- *Center failed to provide accurate information to the customer.*

Matt also reported that he was provided inaccurate information pertaining to his project.

- *Center did not provide the customer with up-to-date information for the project.*

Dale indicated that the information he was given out of date information. He felt that the Center should be able to supply more recent information on the topic.

> *Dale*: Well the only information you could find was from approximately half a century ago. I am ready for some updated information.

Dale did suggest that he was satisfied with the Center's services and will be returning to complete his project. He is simply hoping to receive more recent research on the particular project.

- *Unprofessional and inappropriate communication with customer.*

Matt stated that he was told through a phone conversation that the Center would no longer continue with his project. He felt that the conversation was inappropriate and unprofessional and did not appreciate the means by which he was told that his project would be terminated.

> *Matt*: Then to top it all off, the last time they called me and told me they were not going to do the project it wasn't face to face. He (Center faculty) called me on the phone and said don't even bring it back (materials for the project), we're not going to do it (the project) and that really bothered me.

- *Shortage of adequate parking facilities at the Center.*

Bill mentioned that inadequate parking for customers while visiting the Center was an inconvenience.

> *Bill*: I don't understand why something was not designed to where if you are going to the Center you should be able to pull up to the Center and park as a visitor or a customer. I think parking needs to be addressed. That is poor planning in my opinion, very, very poor.

He was extremely satisfied overall with Center services and indicated he would return for additional services. However, he felt that access to visiting the facility would be eased if there were designated parking spaced for customers or even large groups of customers for meetings.

- *Customers reported that the Center viewed their project as unimportant because of its small scope.*

Jack and Matt indicated that Center faculty and staff gave them the impression that their project was not important due to the fact that they were not large corporations or did not have an extensive project that the Center could get a significant amount of publicity for.

> *Jack*: You're small potatoes and we don't want to mess with you. That is sort of the feeling. We want big guys to come to us. We want Advanced Food to come to us and ask us how to make a better veal cutlet. These small time guys shouldn't even mess with us.

> *Matt*: We kind of felt that they do a whole lot for IBP or somebody, the real big players in the cattle business. But since we aren't a big corporation we didn't get the attention we thought we should have.

- *Center faculty and staff neglecting to return customers' phone calls.*

Matt and Will indicated that they tried to contact Center faculty and staff regarding their projects and did not receive a proper return contact.

Matt: He (A person connected to the project) had tried to contact a member of the Center faculty and staff and see what it was that they really wanted and the faculty and staff member wouldn't even return his phone calls.

Matt along with a person connected with his project were very dissatisfied with the services that they received. Both indicated that they would not return to the Center for additional services partially as a result of the failure to communicate properly.

Will: The bad thing is I tried to call about a week ago and left a message, a voice mail, and he has never returned my phone call.

Will indicated that this was not typical of this particular faculty member. However he did express that this made him feel anxious as to the actual progress on his project.

- *Lack of knowledge and expertise by the Center faculty and staff.*

Will and Jay reported that the Center faculty and staff did not have ample knowledge and expertise to facilitate their projects.

Will: Well here it is it's supposed to be a technology center. They have millions of dollars of equipment up there and they have not shown me any progress on my research, on my project. I don't think the technology is there. I really think the Center just doesn't have the technology and expertise

Jay: I profited by all of these things that he (Center faculty and staff member) got started but he is about the only one that has really done me any good. The rest of the men that I have talked to, the Professors up there, it seemed to be out of their league. The whole deal is that they can't help you.

Both of these customers were displeased with the services they received from the Center. They indicated that at the time of the interview that they would not seek assistance from the Center in the future. They felt that if they could not receive adequate assistance on the project that they had worked on with the Center, then the Center would not be able to provide the information on additional projects in similar areas.

- *Failure to complete the customer's project by the Center.*

Four customers were dissatisfied with the Center's services because their projects were not completed or are still incomplete (Jack, Matt, Will and Jay). In all four instances the Center failed to provide the information and assistance required to complete the project.

> *Jack*: Well, it (my project) was incomplete. There wasn't much skilled information that I got. Well what about that little drawing? Well that's a nice little piece of information, but the whole project, I need whole, "How do you do this?" What are the steps, the manufacturing stuff, which is what I thought they were supposed to be able to tell me. And I got just one little piece of the puzzle and I already had that figured out myself anyway.

> *Matt*: They didn't fulfill what they told us what they were going to do. We just had a lot of expense for nothing.

> *Will*: It's going on three years and they still haven't done anything. I am just really disappointed in that regard, sorry to say. I'm sorry to say they are still working on it. It's really disappointing when you know it can be done and you really, I feel that we are really we not too much closer than we were when we started.

Effectiveness of Center Activities

Effectiveness is a subcategory of customer satisfaction; therefore, much of the data reported in this section was reported under customer satisfaction. Reiteration of this data will serve to illustrate the point that customer perceptions of the Center's effectiveness are intertwined with satisfaction in that it is impossible to have one without the other.

This study identified several categories of effectiveness. The most important attribute to the effectiveness of the Center is whether or not customers' questions were answered and/or their projects were completed. Other attributes include whether or not

customers' expectations were met, if they would return for additional services, effectiveness of communication, timeliness of services, and what the customer perceived as the most helpful aspect of their services.

- *The Center was effective in answering customers' questions and completing projects.*

Twelve customers stated that the Center was effective in answering their questions and/or completing their project (Bob, Tim, Jim, Ed, Dan, Sam, Dick, Wade, Doug, Kyle, Todd and Dale). Glen and Gene explained that they are still in the middle of their project but indicated that the Center had been effective in meeting goals up to the time at which they were interviewed. Jack, Matt, Will and Jay voiced that the Center was not effective on their project.

> Interviewer: Was the advice that was given by the Center effective in helping to solve your problems?
>
> Sam: Yes. We developed products through the Center. We went down there and we put together some things and made a product. I mean they really took us from what we needed to do through the things to get and put it together. We tried different ingredients and came up with the product you know.

The principal reason for the Center's lack of effectiveness was that customers did not receive the necessary information and assistance required for completing their projects. It was stated on more than one occasion that time delays had a role in the project not being completed.

> *Jack*: I didn't get the information that I really needed, but I saw that the Center was furnishing me something so that they could say, "I answered the question."

- *Customers' expectations were met by the Center.*

Customer expectations are broadly defined, as what they perceive will be the result of an interaction. A direct link exists between a customer being satisfied and their expectations being met according to this study. Seventeen of the customers interviewed

for this study were satisfied with the Center's services. Accordingly, of the 21 interviewees, 15 of the respondents indicated that the Center had met or exceeded their expectations (Bill, Bob, Tim, Jim, Ed, Dan, Sam, Dick, Wade, Doug, Kyle, Todd, Dale, Glenn and Gene). The reason for the lack of response from the remaining interviewees was in general due to the context of the respondent's project or relationship with the Center.

Customers indicated the following categories as main expectations of Center services: new product development; marketing expertise; general advice for a new business; state of the art technology; information regarding policies for start up businesses; product evaluation; technical assistance; and research assistance.

> *Gene*: We just expected that we might be able to get some research and technical advice on the testing of some items for research into our project that we did with the Center.

> *Ed:* I approached the Center for marketing expertise and just some advice as a young company.

> *Richard:* I really feel like that everything that they have done has all been a plus, it's been more than I've expected and they've done quite a bit

Jack stated that he did not know what to expect due to a lack of basic knowledge of the Center and the services that it has to offer.

> *Jack*: You don't know what kind of expectations you have until you know what they do.

- *Most customers would consider returning for additional services from the Center.*

When a customer indicates that they would return to the Center for additional services it is implied that they were satisfied with their overall experience; thus, indicating that the Center was effective in successfully giving the customer what they expected. Of the 21 customers interviewed 18 responded regarding this topic. Fourteen

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specified they would eagerly return to the Center again if they needed additional

assistance (Sam, Ed, Dan, Wade, Doug, Kyle, Todd, Dale, Dick, Bill, Jim, Bob, Glenn

and Tom). However, Matt and Will indicated that they would not return for Center

services again and Jack said he would only return reluctantly. Jay said that at the time of

the interview, he simply did not know if he would return or not. The main reason for

dissatisfaction was not obtaining requested information.

> *Dan*: Absolutely. It's the first place I'd go.

> *Jack*: Well, I'd go back, but I would do it reluctantly because I'd go, "Oh, what
> for, I'm not going to get the information I need."

- *The Center was effective in communicating with customers.*

Interviewees indicated that communications between the customer and the Center

were effective and added to the positive impression of Center services. Eighteen

customers felt that the Center was extremely effective in communication (Bill, Bob, Tim,

Jim, Jack, Ed, Dan, Sam, Tom, Dick, Wade, Doug, Will, Kyle, Todd, Dale, Glenn and

Gene). Of the remaining customers Matt indicated that he felt communication was only

satisfactory while the other two did not respond to the question.

> *Sam*: We had good correspondence back and forth, it was very effective.

> *Todd*: The professor I worked with was good about staying in contact with me.
> We communicated before hand on how things would be done and it was effective.

- *Center services were presented in a timely manner.*

Thirteen customers felt that the Center dealt with projects in a very timely manner

(Sam, Ed, Dan, Wade, Doug, Dick, Kyle, Todd, Dale, Bill, Tim, Bob, Glenn and Jim).

Tim stated that during a project there was a time delay that caused a hardship because the

customer needed to know the status of a particular piece of equipment that was located at the Center.

Matt, Will and Gene indicated that Center services were untimely as the Center did not meet deadlines and had failed to complete projects in a reasonable time period. Dick stated that timeliness does not exist on a research project. An additional customer, Jack, stated that too much time had lapsed between his project and the interview to make an accurate assessment. Three customers did not respond to the question.

Dick: Timelines doesn't exist in a research project.

Dick was satisfied with Center services. This was not meant as a negative comment. He simply implied that it was something that has to be understood when dealing with academics.

- *The Center was most helpful in delivering services in 10 categories.*

Customers cited that the variety of assistance provided by the Center was helpful in making their project a success. Helpful aspects of assistance that were mentioned during interviews ranged from product evaluation to helping the customer complete a process that resulted in new product development. The most helpful aspects of Center services are:

1. Constant education.

2. Product evaluation.

3. A particular faculty and staff member.

4. Facility use for training.

5. Guidance through the entire process.

6. Information regarding the legalities of marketing a product.

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7. The entire process included in the Center's services.

8. Communication.

9. Positive information regarding the Health Department.

10. Linking the project to other aspects of the industry.

Overall Impact of Services Delivered Through the Center

- *The Center is making a positive impact on the community.*

The actual outcome of each project is difficult to measure quantitatively; however, this study sought to understand from the customer's perspective what outcomes resulted from receiving assistance from the Center. Not all customers responded to this question as some projects were still in progress with the Center, while some were information only projects, and another customer's project was not completed at the time of the interview. Table 1 summarizes customers' perceptions of the impact of their project on their business and community.

Table 1

Impact of Center Services on Customer's Business

Customer Pseudonym	Impact of Service	Number of New Products Developed as a Result of the Center's Assistance
Sam		4 new value-added products developed
Ed	Products are now sold in 23 states and distributed in England.	
Wade	Increase in business due to Center sending him new customers.	

Doug	Consumer awareness of Oklahoma products and increased sales.	
Kyle	Marketing products throughout many different states.	2 new value-added products developed
Todd	Knowledge of how to evaluate a process involved with his industry.	
Dick	The ability to package, process, and successfully market products worldwide. Now employ four people full-time and will ultimately employ a total of 15 people. A new business was successfully started.	9 new value-added products developed
Jim	Fresher, more sellable product.	
Tim	Have had approximately one million dollars of business as a direct result of input from OSU.	
Bob	A new business was successfully started and the creation of 130 new jobs within a three-year projected timeline, and eventually a multi-million dollar payroll.	

- *The Center has contributed to professional networks for its customers.*

Nine customers indicated that Center faculty and staff helped to provide them with professional networks that were very important to their company's success or were helpful in the success of their project (Wade, Jay, Bob, Glenn, Dick, Gene, Tim, Ed and Kyle). Some of the helpful networks included an increased sphere of resource acquisition and connections among industry.

> *Dick*: A friend of his (Center faculty and staff) from another University had this client that was paying a large amount of money on a weekly basis to have a by-product from his business gotten rid of. I needed this by-product for my product because it is an important input for my products.

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Dick indicated that as a result of the contact provided by the Center he was able to decrease his input costs. He also reported that it was very helpful for the Center to connect customers to each other.

- *The gap between academia and industry has been successfully bridged by the Center.*

The majority of customers interviewed indicated that the Center had successfully bridged the gap between academia and industry. Customers reported that Center faculty and staff explained methods and materials in terminology that was appropriate and easily understood by the customer. Many customers indicated that appropriate communication was a very important factor in determining the effectiveness of the Center.

Tim, Jack and Gene indicated that they had some difficulty with receiving information that went beyond their comprehension. Customers suggested that academia (the Center) had some difficulty in recognizing timelines, understanding that the most important end product in industry is generating a profit, understanding that a business relationship is about opportunities to generate revenue, and that Center faculty and staff lacked an understanding of commercial ventures.

> *Tim*: Commercial understanding would help; it is an important part of it. The commercial side is always the outside. Therefore, it is very important perhaps for them to understand it.

> *Tim*: I would say that they have bridged out. There is a bridge there, I think that it has been successful. The link is there for sure. (The Center just needs to be) a bit more aggressive or better understanding of it (the link between academia and industry). If we can come to this conclusion in this time frame it leads to hard business. They need to understand that that is the goal.

> *Bob*: I deal a lot with bureaucracies and been down that road many times and I will tell you that turned out much better with the Food Processing Center, I know

that it is an academic institution, but it turned out better than what I even had in my mindset.

Dick: However, it was my experience that we were kind of excited and wanting to go and academia takes time. They are more thorough, they want to be more thorough, they need to be more thorough and we (the company) are just slide by the seat of the pants, get it done, make it, and go.

Ed: They don't overwhelm you with technical jargon, you know, and go over your head where you can't understand what's going on. That can intimidate a neophyte pretty quickly, forcing them to withdraw back to their comfort zone. I don't have any fear about going to the Center.

Dick: They realize that we're not overly well educated so the technology and language was dealt with accordingly. They didn't look down upon us. We are not college people, we don't intend to be, and we never put on the airs that we were. We are just plain old ordinary mom and pop farmers down here in southern Oklahoma and they accepted us at face value and we accepted them at face value – that works. Nobody pretends and role-plays or nothing with anybody else.

Marketing the Center

An important theme that emerged spontaneously during the interviews was the lack of public knowledge of the services provided by the Center. This broad topic has been broken down into subcategories in order to better examine this uncertainty. The following are the subcategories: does the Center market itself well; general knowledge of the Center and its services; lack of utilization of the Center; how interviewees learned about the Center and its services; and who does know about the Center and its services.

- *The Center is not marketing its services effectively to the general public.*

The majority of customers that responded to this topic stated that the Center did not advertise its services well to the general public. Many indicated that enhanced promotion would help to increase public awareness of the facility and the services offered.

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Kyle: I think it could use a little more advertising to let people know it is there. I had no clue it was there prior to that. I did not even know that the service was even open to the public.

Tim: The Center's market awareness is not there.

- *The majority of Oklahomans do not know about the Center or the services offered.*

Awareness that the Center exists along with knowledge of the services that it offers is minimal. The majority of responding customers indicated that the average person does not know about the Center. Of the fifteen interviewees that commented on this issue, thirteen indicated that they did not know that the Center existed before having a project there. See Sources of Information for Discovering the Center (Table 2) to determine how customers were made aware of the Center's services.

Table 2

Sources of Information for Discovering the Center

Source of Information	Number of replies
Word of mouth	4
Center contacted customer	3
Newspaper article	3
Extension	2
Associations with OSU	2
Career Technology Centers	1
Oklahoma Department of Agriculture	1
Oklahoma State Health Department	1

Many also indicated that they were not clear of the different services that the Center provided to customers.

Dick: I don't think that there are a lot of people out there that number one know that the Center even exists and number two, how to get a hold of the Center and number three what it takes to get started (on a project).

Louis: I don't know whether those businesses realize the services that there are available or other programs of the Center. I think if you called most of them and asked if there is a Food Tech Center at OSU they probably wouldn't know.

Interviewees cited a lack of visible promotion activities as the reason for not

knowing about the Center or the services that it offers. Customers indicated that

additional promotion should be implemented by the Center. Customers also suggested

that the relative newness of the Center was also a limiting factor in public awareness of

the Center.

> *Dan:* I think some additional promotion is needed – especially if they don't have a sufficient workload or if their goal is to increase the number of projects.

> *Doug:* I don't think you (the Center) probably tout yourself as much as you probably should. That's my personal opinion. I don't think you tout yourself as much as you should to get the support or more people involved that you could.

- *The Center is not fully utilized by potential customers.*

Many people do not utilize the Center's services because they do not know that

the Center exists. Customers stated the main reason for lack of use was because of a lack

of knowledge of it.

> *Sam:* I think that if people knew more about what the Center did that they would probably use them more.

> *Dan:* I do think if the public knew more about it there might be more people. As I said. I think the more you present it and how one presented it would have something to do with people knowing about it.

- *Customers learned about the Center through word of mouth.*

Word of mouth was the most common method of learning about the Center,

followed by the Center contacting customers, newspaper articles, extension personnel,

associations with OSU, Career Technology Centers, Oklahoma Department of

Agriculture. and Oklahoma State Health Department (Table 2).

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- *Only small facets of the value-added products industry are knowledgeable of the Center.*

Customers reported that the following sectors of the economy were knowledgeable of the Center and its services: the grocery community, the food science community, participants involved in research and development in the food processing domain, and OSU Agriculture alumni.

Barriers to Customer Interaction with the Center

Customers indicated several barriers that would potentially prevent them from requesting additional services from the Center. They were:

1. Customer was made to feel that he was a nuisance to faculty and staff by asking questions.

2. Customers were reluctant to approach the Center because they were not aware of what services were offered.

3. Customers felt that the Center was too big and bureaucratic; therefore, they could not get information in an efficient manner. There was a perception that it took too many steps to get the information requested.

4. Center faculty and staff members displayed arrogance toward potential customers.

5. Center is too concerned with making money on a project.

6. Center faculty and staff have too many other responsibilities, not leaving enough time to work on a customer's project.

7. Center faculty and staff failed to recognize the importance of deadlines to industry customers.

Alternative Services to the Center

Customers were asked about other entities they would consider as alternative services to the Center. Several different sources were identified and are listed below.

1. Internet

2. Centers of Excellence in other states

3. Independent laboratories

4. Oklahoma Department of Agriculture

5. Independent chemists

6. State associations

7. Private architects

8. Customer would do the project themselves

9. The Kerr Center

10. Private marketing team

11. Industry gurus

12. Other Universities– within and outside the state

Indicators of a Successful Company

As the Center is a relatively young entity it is important to faculty and staff to be aware of aspects that help to make a company successful. By collecting data on it's own customers' views of success Center decision makers will be better able to promote success from their customers' prospective, thus helping to increase customer satisfaction.

Customer indications of a successful company have very important implications for the Center, as they are a valuable indication of methods and techniques that can facilitate the Center in becoming more successful. The following is a list of successful business aspects reported by customers.

1. A good marketing strategy is in place.

2. The people involved.

3. Owner or president of the company is able to wear several hats.

4. Owner or president can foresee possible growth areas and expand in those areas.

5. Management can communicate with employees.

6. Management has established a good working relationship with employees.

7. Honesty is a top priority between management and employees.

8. Customers are satisfied.

9. Customers return for additional services.

10. The company is providing the highest quality services or highest quality products possible.

11. Employees are dedicated.

12. The company is making an economic impact on the community.

13. The company's products or services are leading to profits.

14. The company employs good business practices.

15. The company has vision.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this chapter was to provide a summary of the research questions, methodology, and the major findings. Conclusions of the study are also presented. Recommendations include suggestions for sustaining current practices that are conducive to customer satisfaction, recommendations for improvement, other areas for consideration, and customer recommendations. Implications of this study are presented in relation to analysis of data collected and upon observations of the researcher. Lastly, recommendations and implications for further research are offered.

Purpose of the Study

The purpose of this study was to describe customer satisfaction within customer projects, to determine the effectiveness of services received, and determine the overall outcome on customer's enterprises as a result of assistance provided by the Oklahoma Food and Agricultural Products Research and Technology Center.

Objectives

To accomplish the purpose of this study, the investigation was directed toward achieving the following specific objectives:

1. Describe customer satisfaction with Center services.

2. Describe the effectiveness of service delivered through the Center as perceived by customers.

3. Describe the overall outcome on customers' businesses as a result of the services provided by the Center.

Methodology

Qualitative data were collected and analyzed based on participant observations of Center activities and in-depth semi-structured interviews with customers (N=21). A structured interview schedule that was developed in conjunction with the research questions was adhered to for all interviews as well as for engaging participants in probing questions, which evolved during the interview process. The researcher attempted to understand whether or not customers were satisfied with Center services and what factors contributed to or detracted from satisfaction. Customers were also queried regarding customer progress toward attaining their goals as a result of Center assistance and changes in the customer's business practices as a result of intervention from the Center.

Summary of Findings

Seventeen (80%) interviewees indicated that they were satisfied with the Centers services while four (20%) replied that they were not satisfied with the services they received from the Center. Customers indicated that reasons for satisfaction included the following:

1. Customers experienced positive relationships with Center faculty and staff.

2. Center faculty and staff recommended alternative processes for customers.

3. Giving the customer alternative sources of information to help solve their problem.

4. Customer being able to use Center facilities.

5. Customers being able to successfully start a business.

6. Center faculty and staff availability to answer customer questions.

7. The Center's overall effectiveness of communication skills.

8. Ease of communicating with Center director.

9. Ease of stating complaints to Center staff.

10. Center faculty and staff showed a high level of commitment to customers' projects.

Customers indicated several reasons for dissatisfaction with Center services, which included the following:

1. Trivial answers given to questions asked by customers.

2. Lack of communication among Center staff members.

3. Customer did not receive requested information from the Center.

4. Customer was falsely led to believe that the Center would assist him in developing a value-added product.

5. Center failed to provide accurate information to the customer.

6. Center did not provide the customer with up-to-date information for the project.

7. Unprofessional and inappropriate communication with customer.

8. Shortage of adequate parking facilities at the Center.

9. Customers reported that the Center viewed their project as unimportant because of its small scope.

10. Center faculty and staff neglecting to return customers' phone calls.

11. Lack of knowledge and expertise by the Center faculty and staff.

12. Failure to complete the customer's project by the Center.

The majority of customers stated that the Center was effective in answering their questions and/or completing their project. The following list details the themes related to effectiveness:

1. The Center was effective in answering customers' questions and completing

    projects.

2. Customers' expectations were met by the Center.

3. Most customers would consider returning for additional services from the Center.

4. The Center was effective in communicating with customers.

5. Center services were presented in a timely manner.

6. The Center was most helpful in delivering services in 10 categories.

Customers indicated several aspects of the Center's services that were related to the overall impact it is having on the value-added products industry. These impacts were:

1. The Center is making a positive impact on the community.

2. The Center has contributed to professional networks for its customers.

3. The gap between academia and industry has been successfully bridged by the

    Center.

Marketing the Center was discussed as an area for improvement by interviewees. The following is a list of major themes related to this area:

1. The Center is not marketing its services effectively to the general public.

2. The majority of Oklahomans do not know about the Center or the services offered.

3. The Center is not fully utilized by potential customers.

4. Customers learned about the Center through word of mouth.

5. Only small facets of the value-added products industry are knowledgeable of the Center.

Customers indicated several barriers that would potentially prevent them from requesting additional services from the Center, which ranged from faculty members' lack of time to work on projects because of other responsibilities to being intimidated by the bureaucratic nature of the Center.

Customers indicated several different sources they would consider as alternatives to the Center's services. Some of these sources included: The Oklahoma Department of Agriculture, independent laboratories or other Universities.

Customers reported several factors they felt help to make a successful company. Several of the indicators were the vision of the company; satisfied customers; good management personnel; and good employees.

Summary of Major Findings

The following is a summary of the findings of the study organized according to the research questions presented in Chapter One.

1. Describe customer satisfaction with Center services.

Seventeen (80%) interviewees indicated that they were satisfied with the Centers services while four (20%) replied that they were not satisfied with the services they

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received from the Center. The main attribute that contributed to customer satisfaction or dissatisfaction was that the Center performed the necessary tasks to meet or exceed customer expectations during the project period.

2. Determine the effectiveness of service delivered through the Center as perceived by customers.

The majority of customers stated that the Center was effective in answering their questions completing their project or both. This study identified several categories of effectiveness. The most important attribute to effectiveness was whether or not the customers' questions were answered or their projects were completed or both. Other attributes included whether the customers' expectations were met, if they would return for additional services, effectiveness of communication, timeliness of services, and what the customer perceived as the most helpful aspect of their services.

3. Determine the overall outcome on customers' businesses as a result of the services provided by the Center.

The Center is making an overall impact on the value-added products industry in Oklahoma. One of the stated goals of the Center was to help develop successful value added enterprises in Oklahoma; to bring the products; jobs and dollars back to Oklahoma. Through the findings of this evaluation study, it is evident that the Center is successfully accomplishing its mission. New businesses are being started and jobs are being created; therefore, improving the economy of Oklahoma. However, quantitatively determining the impact of the Center was beyond the scope of this study and should be determined by further cost-benefit analysis studies.

Conclusions

Examination and analysis of the major findings for each objective led to the following conclusions:

1. The Center is satisfying the majority of its customers; however, improvement is needed in certain areas of its services before a higher percentage of its customers will be satisfied.

2. Dissatisfaction was a result of the quality of interaction customers' received; therefore, procedural changes would help to increase satisfaction.

3. The Center is effective in completing customer projects.

4. The Center is meeting its goal in making an impact on the value-added products industry in Oklahoma.

5. There is a direct relationship between the overall effectiveness of the Center and its customers being satisfied.

6. The Center's services have not been clearly communicated; therefore, Center faculty and Center customers have divergent expectations.

The 21 customers interviewed were randomly selected from the population; therefore, it is appropriate to generalize the results of this study back to the population of Center customers that meet the same criteria as the customers that were interviewed.

Recommendations

The recommendations for this study were divided into the following categories to illustrate a more lucid representation of their usefulness: recommendations for

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sustainment, recommendations for improvement, other areas for consideration, and customer recommendations.

Recommendations for Sustainment

Based on the findings from this evaluation study it is recommended that the Center continue the following practices, which contribute to and foster excellent customer satisfaction:

1. Develop positive interpersonal relationships with customers.

2. Provide customers with a variety of means to solve their project problems that incorporate both high and low cost alternatives.

3. Provide customers with alternative information sources for answering questions when the Center is unable to satisfy customer requests.

4. Allow customers to have access to Center facilities for solving project problems.

5. Provide the necessary assistance for customers to successfully begin a new business.

6. Effectively communicate with customers orally and in writing.

7. Form positive, helpful relationships between the customer and the Center director.

8. Maintain high levels of commitment to customers' projects.

9. Exceed customers' expectations.

10. Provide services that satisfy customers so they will return for additional services.

11. Aid customers in the development of new products and creation of new business to improve the economy of Oklahoma.

12. Provide customers with access to professional networks to ameliorate their business practices.

13. Bridge the gap between academia and business as indicated as a part of the Center's purpose statement.

Recommendations for Improvement

Based on the findings from this study it is recommended that the Center adopt the following practices in order to better serve customers, increase overall satisfaction, efficiency, and impact of services. Categories for improvement fall under timelines, professional communication, and quality of assistance provided.

1. Although only one customer indicated that trivial answers were given to his questions, all answers to questions should be provided with the utmost accuracy and substance.

2. The Center should provide complete information requested by customers.

3. The Center should practice honest and direct communication with customers to avoid misleading customers to believe that the development of a product is possible, when in fact it is not.

4. The Center should avoid giving inaccurate information.

5. The Center should provide customers with the highest quality and most recent information and technology available.

6. The Center should use appropriate and professional communication skills with all customers, especially when dealing with sensitive information such as the termination of a project.

7. The Center should provide adequate parking for customers and visitors.

8. The Center should treat all customers equally regardless of size or scope of the project. All customers are an important aspect in making the Center successful; therefore, all should be given the same dedication and quality of assistance with their projects.

9. Center faculty/staff should return customer's phone calls within three business days.

10. Center faculty/staff should seek out knowledge and expertise to assist customers with requested service. If the faculty/staff does not possess the knowledge required to complete the project then they should refer the customer to an appropriate source.

11. The Center should strive to provide customers with the all information needed to complete their project.

13. The Center should eliminate all barriers to interaction.

Other Areas for Consideration

1. The Center should target the following sources that were indicated by customers as alternatives to Center services in recruiting new customers:

   a) Internet

   b) Other Centers of Excellence

c) Independent laboratories

d) Oklahoma Department of Agriculture

e) Independent chemists

f) State associations

g) Private architects

h) The Kerr Center

i) Private marketing team

j) Industry opinion leaders

2. The Center should focus on marketing its services to the facets of value-added products industry that are unaware of its existence. Customers indicated that the grocery community, the food science community, participants involved in research and development the food processing domain, and OSU Agriculture alumni were knowledgeable of the Center's services; therefore, the Center should focus on the facets that were not indicated by customers as knowledgeable sources.

3. The Center should consider emulating customer's perceptions of success factors to help increase satisfaction.

   a) A good marketing strategy is in place.
   b) The people involved in the company.
   c) Owner or president of the company is able to wear several hats.
   d) Owner or president can foresee possible growth areas and expand in those areas.
   e) Management can communicate with employees.
   f) Management has established a good working relationship with employees.
   g) Honesty is a top priority between management and employees.
   h) Customers are satisfied.
   i) Customers return for additional services.

j) The company is providing the highest quality services or highest quality products possible.
k) Employees are dedicated.
l) The company is making an economic impact on the community.
m) The company's products or services are leading to profits.
n) The company employs good business practices.
o) The company has vision.

Customer Recommendations

The following is a list of recommendations suggested by customers during interviews.

1. Center faculty/staff should become more self-initiating in seeking new customers.

2. All people involved in making decisions regarding a project should to be involved with the project throughout the entire process.

3. The Center should provide more assistance with the process of marketing a product.

4. The Center should provide more direction with financial planning of a new business.

5. Given the academic confines of the Center more should be done to expose the faculty/staff to a conceptual understanding of business procedures.

6. A systematic flow of information should be developed between academia and industry to increase opportunities for communication.

7. The Center should strengthen its public relations profile in terms of educating the public regarding services provided by implementing customer recommendations.

    a) Disseminate a flyer
    b) Develop a working relationship with Career Technology Centers to distribute information
    c) Display a booth at trade shows
    d) Buy advertising space in trade publications
    e) When a successful project is publicized ask the customer to recognize the Center's assistance in making the project possible

f) Publicize Center activities through mass media channels as news stories
g) Form relationships with extension educators
h) Distribute information regarding the Center and its services at cooperatives throughout the state
i) Implement a public education program at state and county fairs
j) Create and disseminate a newsletter designed specifically for customers
k) Attend international trade shows for the purpose of encouraging new companies to locate in Oklahoma

Implications

The Center is a public institution that is paid for by taxpayers, run by academics, serving the food and agricultural product industry in Oklahoma. This mixed culture poses a major problem when focusing on serving people and striving for customer satisfaction. The majority of faculty within the Center have a 70% research appointment. A requirement of this type of appointment is to generate at least one to three publications per year. This creates an environment with extreme pressure to publish, which in turn plays a detrimental role in allowing these people to be focused on service and customer satisfaction. It is almost as if they are playing a tug of war between serving the academic profession or their customers in industry.

With the pressure to publish in mind faculty are more likely to concentrate heavily on projects that have a greater potential for getting published. Although it was not reported in the findings because it was not one of the major research questions, it should be noted that many of the customers that were overwhelmingly satisfied with Center services were high profile projects that created publishing opportunities. The customers that were dissatisfied had what would be categorized as mundane projects and these customers reported they were discounted for this reason.

This environment of publish or perish is an inappropriate fit with what the Center was commissioned to do. The highest level of customer satisfaction is unachievable under these conditions because all customers are not being treated equally do to the desirability of their projects to people that are concerned with getting published. So the question remains whether or not the Center can accomplish what it was commissioned to carry out due to its academic ties. Should these academic ties be severed or simply intertwined in a more effective manner?

In order for the Center to become more service and customer satisfaction oriented drastic changes will need to take place. The whole atmosphere will need to change. The researcher suggests that the academic ties not be severed but redistributed. The Director of the Division of Agriculture Sciences and Natural Resources should reconsider these appointment splits and reallocate funding to create a more appropriate fit for the Center's mission and goals.

Most of the Center faculty appointments are made up of 70% research, 30% extension, and zero percent teaching. This match of appointments is an inappropriate fit with what the Center was commissioned to do. Maybe it should be taken into consideration to reallocate these appointments. The reallocation that would make the most sense would be to redistribute it to another part of the system that more specifically deals with service and people. From the three entities that make up the Division of Agriculture Sciences and Natural Resources it would seem more appropriate for the Center staff to be comprised of more extension appointments than research appointments. This would allow the faculty to concentrate less on the worry of getting published and more on what the Center was designed to do – help the people.

The Oklahoma Food and Agricultural Products Research and Technology Center was built in the mid-1990's, dedicated in late 1996, and staffed in 1997-98 (Hunt, 1998). As of May 1999, Center staff and faculty had completed 61 projects with Oklahoma food processors since 1997 and had over 112 continuing projects (Annual Report, 1999). Taking into consideration the relative infancy of the Center it is recommended that a follow-up investigation mimicking this study be conducted in the near future to determine the progress made in implementing the recommendations from this study.

According to Dobyns (1994) the Deming management system is about bringing the customer into the system. He stated that the customer is brought into the system by determining their wants and needs are and then putting these into business operations for improvement. From the results of this study Center customers' wants and needs have been determined and it is recommended that these be filtered into the Center's system for improvement of activities. After the implementation of this recommendation further research will be necessary to determine how effectively these were implemented. Additional research could also be conducted to determine the impact that this implementation of wants and needs has had on the overall effectiveness of the Center.

One of the stated expectations of the Center is that assessment and evaluation become a cultural practice, where every interaction with customers is reflected upon and examined for improvement. With this in mind, another opportunity for further research on this topic is the development of a methodological template for further evaluation studies. The ideal situation would be to develop a customer satisfaction survey from the

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results of this study to be administered to all customers at the end of their experience with

the Center.

REFERENCES

Anton, J., & Perkins, D. (1997). Listening to the voice of the customer: 16 steps to a successful customer satisfaction measurement program. New York, NY: The Customer Service Group.

Annual Report (May, 1999). Oklahoma Food and Agricultural Products Research and Technology Center.

Anonymous (1999). Customer satisfaction measurement. NPC Benchmarking [On-line]. Available at: http://ace101.com/npcbenchmarking/csm.html

Anonymous (1997, May 12). Deming saw flaw in the system. Electronic Engineering Times 953, 133.

Bowles, J. (1994, January). W. Edwards Deming: The man and the legend. The Quality Executive.

Broedling, L. A. (1997). Dr. Deming and the people factor. Executive Excellence, 14(11), 7-8.

Brown, C. (1998). Customer satisfaction, what is it. Quality times [On-line]. Available at: http://csn.uneb.edu/quality/qualitytimes/Apr98CustomerSatisfaction.html

Brown, S. W. & Swartz, T. A. (1989). A gap analysis of professional service quality. Journal of Marketing, 53, 92-98.

Deming, W. E. (1986). Out of the crisis. Cambridge, MA: Massachusetts Institute of Technology.

Dobyns, L., & Crawford-Mason, C. (1994). Thinking about quality: Progress, wisdom, and the Deming philosophy. New York: Times Books.

Edelstein, S. (1997). For customer satisfaction, identify 'stakeholders'. Boulder County Business [On-line]. Available at: http://www.bcbr.com/mar97/guestco3.html

Fredendall, L. D. (1995). Applying total quality management in Cooperative Extension. Journal of Extension, 33, 1-5.

Hayes, B. E. (1998). Measuring customer satisfaction: Survey design, use, and statistical analysis methods (2nd ed.). Milwaukee, WI: American Society for Quality.

Hunt, M. (Editor). (1998). Oklahoma food and agricultural products research and technology center. Bringing the dollars home.. [Brochure]. Stillwater, OK.

71

Jones, C. R. (1996). Customer satisfaction assessment for "internal" suppliers. Managing Service Quality. 6(1), 45-48.

Juran, J. M. (1991). World War II and the quality movement. Quality Progress, 24,(12), 19-24.

Loomis, W. R. (1999). QS-9000 customer satisfaction monitoring isn't working. Quality Progress, 32(7), 54-59.

Merriam, S. B., (1998). Qualitative research and case study applications in education (2 ed.). San Francisco: Jossey-Bass Inc.

Miles, M. B., & Humberman, A. M. (1994). Qualitative data analysis: An expanded sourcebook. (2 ed.). London: Sage Publications, Inc.

Oliver, R. (1981). Measurement and evaluation of satisfaction processes in retail settings. Journal of Retailing, 57,(3), 25-48.

Rossi, P. H., Freeman, H. E., & Lipsey, M. W. (1999). Evaluation: A systematic approach. (6th ed.). Thousand Oaks, CA: Sage Publications, Inc.

Taurman, E. (1999). The Deming philosophy. DEN Discussion List Archive [On-line]. Available: http://deming.ces.clemson.edu/pub/den/archive/99.07/msg00285.html

Vavra, T. G. (1997). Improving your measure of customer satisfaction: A guide to creating, conducting, analyzing, and reporting customer satisfaction measurement programs. Milwaukee, WI: American Society for Quality.

Walton, M. (1986). The Deming management method. New York: Putnam Publishing Group.

Wiersma, W. (1995). Research methods in education: An introduction (6th ed.). Needham Heights, MA: Simon and Schuster Company.

Wright, A. (1997). Public service quality: Lessons not learned. Total Quality Management 8(5), 313-320.

Yilmaz, M. R. (1997). Deming and the quality of software development. Business Horizons 40(6), 51-58.

Yin, R. K. (1984). Case study research: Design and methods. (Vol. 5). London: Sage Publications.

APPENDIX A: TIME SCHEDULE

Timetable

Project planning began fall 1999 with the development of interview instruments in conjunction with Center personnel. Data was collected for the evaluation from January to May 2000. Data was analyzed and adjustments made to collection procedures summer 2000. Final evaluation commenced fall 2000 and concluded December 2000. All data was analyzed and a final thesis was submitted to Committee members January 2001.

Time	Activity
Fall 1999	Establish partnerships with Center personnel and customers selected for the evaluation study. Work with Center personnel and customers to develop pilot instruments for data collection.
Spring 2000	Begin pilot data collection and analysis.
Summer 2000	Analyze pilot data and modify instrument based on Center personnel and customer input. Develop final instruments and data collection procedures for evaluation study.
Fall 2000	Final data collection for evaluation study.
Spring 2001	Final data analysis. Submit final report to Committee members.

A study is being conducted by Oklahoma State University and commissioned by the Oklahoma Food and Agriculture Products Research and Technology Center. This study is designed to determine customer satisfaction, efficiency of services, and overall effectiveness of the Center.

I,_____, authorize Julie Bond and/or Kathleen Kelsey, to conduct this oral interview.

I will be asked to participate in a one hour long interview to help the researchers determine customer satisfaction, efficiency of services, and overall effectiveness of the Center.

Individual interviews will not be identified and all individual responses will be strictly confidential.

I understand that participation is voluntary and that I will not be penalized if I choose not to participate. I also understand that I am free to withdraw my consent and end my participation in this project at any time without penalty after I notify the project director.

I have read and fully understand the consent form. I sign it freely and voluntary.

Date:_____   Time:_____(a.m./p.m.)

Signature: _____

Should you have any questions, please contact:
Julie Bond   Dr. Kathleen D. Kelsey
545B Agriculture Hall   466 Agriculture Hall
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Begin the interview with (Merriam, 1998):
1. My motives and intentions for conducting the research and the interview.
2. The protection of respondents through confidentiality.
3. Deciding who had the final say over the study's content.
4. Specifically and operationally define variables that I am trying to measure: Customer Satisfaction, Effectiveness, and Quality.
5. Explain what is in this for the interviewee.
6. Ask for any questions before starting.

Questions

Customer Satisfaction:
A. How would you define customer satisfaction?
A. Were you satisfied with the services provided by the Center? Why or why not? What were some of the positive incidents? What happened that you didn't like?
A. What were your expectations of the Center's services?
A. Were these expectations met?
B. If you described yourself as a satisfied customer would you consider returning for additional services from the Center? If so, what types of services would you request?
B. If you were not satisfied with the Center's services what other alternative source would you use to meet your needs? (K State, Iowa State, Texas A&M)
A. If you were not satisfied with the services that you received would you state your complaints to staff members? Why or why not?
A. What are some possible situations that would increase your satisfaction with the Center?

Effectiveness:
B. Was the advice given by the Center effective in solving your problems?
A. What was the most helpful?
B. Did you receive information that was not helpful? (overkill)
B. Do you think that the Center could help meet your needs in the future?
A. Were your needs met - efficiently, timely, effectively?
A. How can the Center assist you in regards to new product development?

Project management:
A. Do you feel that your project was managed effectively? - in terms of timeliness, professionalism, and organization.
A. Did the Center give you alternative ways to solve your problem if the cost of the first recommendation was too expensive? (were choices given not just one answer)

Communication Skills
A. Do you feel that the Center was effective in communication - in terms of written reports, telephone calls, letters and any other possible means of interaction in this context?
A. Did staff respond to your needs in a timely manner?
A. What type of relationship do you feel that you have/had with the Center's staff? (friendly, helpful, professional, etc.)
B. Were lines of communication left open for any questions that may come about in the future?
A. Has there been any follow up? At what intervals? With any regularity?

Responsiveness to Changing Needs
A. If a change in your problem came about during the project how did the Center react?
B. Was the Center quick to respond to these changing needs?
A. How do you feel that the Center handled problems that arose during the intervention?

Quality:
A. How do you define quality services?
A. How would you describe the quality of the work that the Center provided for you?

What suggestions do you have for the Center to improve customer satisfaction, effectiveness, communication, responsiveness, and quality?

Ask the interviewee to explain five positive incidents with the Center and then asking them to describe five negative incidents with the Center.

Other questions (Opinion, for future use for Center)
A. What makes companies successful?
A. What makes your company successful?
B. Did you have a business plan before starting your company?
A. What are your training needs?
A. How can the Center assist your company in meeting these needs?

*A= questions to be asked in all interviews.
*B= questions to be asked if related to specific interviewee's project.

Begin the interview with (Merriam, 1998):
1. My motives and intentions for conducting the research and the interview.
2. The protection of respondents through confidentiality. (Consent Form)
3. Deciding who had the final say over the study's content.
4. Specifically and operationally define variables that I am trying to measure: Customer Satisfaction, Effectiveness, and Quality.
5. Explain what is in this for the interviewee. (Improved services from Center in future)
6. Ask for any questions before starting.

❖ Some of the questions may not apply to the experiences that your business has had with the Center, if a question does not apply please inform me. I have to ask all questions so that all of the interviews that I conduct will be uniform.

Questions

Customer Satisfaction:
- How would you define customer satisfaction?
- Were you satisfied with the services provided by the Center? Why or why not? What were some of the positive incidents? What happened that you didn't like?
- What were your expectations of the Center's services?
- Were these expectations met?
- Would you consider returning to the Center for additional services? If so, what types of services would you request?
- What are other possible resources you could use in place of the services provided to you by the Center? (K State, Iowa State, Texas A&M)
- If you were not satisfied with the services that you received would you state your complaints to staff members? Would you feel restrained in stating these complaints?
- Are there any possible situations that would increase your satisfaction with the Center?
- Was cost a factor in choosing to use the Center's services or not?
- Do you feel that your interactions with the Center have caused you to become more customer focused in your own business interactions. Why or why not?
- Do you feel that the assistance received from the Center has caused you to look at the way that you conduct your own business operations? Do you think that this has challenged you to continuously improve your products/services?

Effectiveness:
- Was the advice given by the Center effective in solving your problems (completing your project)? If so, could this be equated to a specific result or improvement in your business?
- What was the most helpful?

- Did you receive information that was not helpful? (overkill)
- How can the Center assist you in regards to new product development?

Project management:
- Do you feel that your project was managed effectively? - in terms of timeliness, professionalism, and organization.
- Do you feel that the Center saw your project/problem as significant? (Were they interested/vested in it no matter how small or large it was?)
- Did the Center give you alternative ways to solve your problem if the cost of the first recommendation was too expensive? (were choices given not just one answer)

Communication Skills
- Do you feel that the Center was effective in communication - in terms of written reports, telephone calls, letters and any other possible means of interaction in this context?
- What type of relationship do you feel that you have/had with the Center's staff? (friendly, helpful, professional, etc.)
- Were lines of communication left open for any questions that may come about in the future?
- Has there been any follow up? At what intervals? With any regularity?

Responsiveness to changing needs
- How did the Center react to changes in your project?
- Were they quick to respond to these changing needs?
- How do you feel that they handled these problems?

Quality:
- How do you define quality services?
- How would you describe the quality of the work that was provided to you?

- How did you find out about the Center?
- Do you think that the Center markets itself well? (general awareness that it is available)

Wish list:
- If you had a wish list for your business, what would it include and how could the Center help you in achieving this?

Do you have any other suggestions for the Center to help them improve customer satisfaction, effectiveness, communication, responsiveness, and quality?

Other questions (Opinion, for future use for Center)
- What makes companies successful?
- What makes your company successful?

- Did you have a business plan before starting your company?
- What are your training needs?
- How can the Center assist your company in meeting these needs?

APPENDIX E: CODE LIST DEVELOPED FOR DATA ANALYSIS

1. Accuracy of information provided
2. Additional services would request
3. Additional suggested interviewees
4. Alliances
5. Alternative contacts
6. Alternative processes
7. Alternative services
8. Barriers to Interaction
9. Bridging A&B - terminology
10. Bridging academia & business
11. Business plan?
12. Center's commitment to project
13. Center caused look @ bus operations?
14. Center caused to become cu focused?
15. Center caused to continuously improve products & services.
16. Center mission
17. College issues
18. Communication-effectiveness
19. Communication - lines left open
20. Communication - types
21. Communication with Center
22. Concerns
23. Contacts within Center
24. Cost a factor?
25. Credibility
26. Customer problems
27. Define CS
28. Define quality service
29. Dissatisfaction
30. Effectiveness of Center
31. Efficiency
32. Expectations met?
33. Expectations of Center
34. Facility comments
35. Fears
36. Follow up
37. friendly
38. How learned about Center
39. Increase satisfaction
40. Internal communication
41. Knowledge - lack of use
42. Knowledge of Center
43. Knowledge of Center & services
44. Lack of knowledge
45. Marketing suggestions
46. Marketing the Center
47. Most helpful
48. Negative comments
49. Negative experiences
50. New product development
51. Organization of Center
52. Overkill
53. Payback for Center Services
54. Positive comments
55. Positive incidents
56. Process
57. Professional networks
58. Professionalism
59. Quality of services
60. Reason for choosing Center
61. Reasons for not knowing about Center
62. Reciprocating circle
63. Relationship with Center
64. Response to change in project
65. Return for additional services?
66. Shortcomings
67. Small = unimportant
68. Specific results
69. Staffing problems
70. Stating complaints
71. Suggestions/Recommendations
72. Timeliness
73. Training needs of industry
74. Treat customers different because of Center
75. Were you satisfied?
76. What makes a company successful?
77. What makes your company successful?
78. Who knows about Center
79. Wish list
80. Wish list -Center helped to accomplish?
81. Wrong information/misleading

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

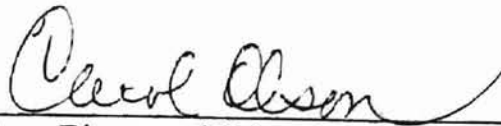**Date:** 11-01-99   **IRB#:** AG-00-046

Proposal Title: "EVALUATION OF SERVICES PROVIDED BY THE FOOD AND AGRICULTURE PRODUCTS RESEARCH AND TECHNOLOGY CENTER"

Principle Investigator(s): Kathleen Kelsey, Julie Bond

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Signature:

Carol Olson, Director of University Research Compliance   Date: November 1, 1999

VITA ∂

Julie A. Bond

Candidate for the Degree of

Master of Science

Thesis: DETERMINING CUSTOMER SATISFACTION: AN EVALUATION OF SELECTED SERVICES PROVIDED BY THE OKLAHOMA FOOD AND AGRICULTURAL PRODUCTS RESEARCH AND TECHNOLOGY CENTER

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Biographical:

Personal Data: Born in Harrisburg, Illinois, on June 5, 1977, the daughter of James and Jeanette Bond.

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