REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	19 Jun 1998	

4. TITLE AND SUBTITLE
Benchmarking in Foodservice Operations

5. FUNDING NUMBERS

6. AUTHOR(S)
Bonnie C. Johnson

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Oregon State University

8. PERFORMING ORGANIZATION REPORT NUMBER
98-006D

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
THE DEPARTMENT OF THE AIR FORCE
AFIT/CIA, BLDG 125
2950 P STREET
WPAFB OH 45433

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION AVAILABILITY STATEMENT
Unlimited distribution
In Accordance With AFI 35-205/AFIT Sup 1

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

14. SUBJECT TERMS	15. NUMBER OF PAGES
	244
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT

AN ABSTRACT OF THE THESIS OF

Bonnie C. Johnson for the degree of Doctor of Philosophy in Nutrition and Food Management presented on April 9, 1998. Title: Benchmarking in Foodservice Operations.

Abstract approved:

M. Jean Chambers

The objective of this study was to identify usage of foodservice performance measures, important activities in foodservice benchmarking, and benchmarking attitudes, beliefs, and practices by foodservice directors. The design of this study included two parts: (1) eleven expert panelists involved in a Delphi technique to identify and rate importance of foodservice performance measures and rate the importance of benchmarking activities, and (2) a national mail survey of 247 randomly selected foodservice directors from college/university, correctional, health care, and school foodservice operations to identify attitudes, beliefs, and practices about benchmarking and usage of performance measures.

Statistical analyses of the expert panel data included frequencies of importance rating of performance measures and benchmarking activities. The expert panel identified 89 performance measures, which were subsequently consolidated into 19 generic performance measures. Regarding the national survey, a χ^2 analysis was conducted on: usage of types of benchmarking compared with knowledge and importance of benchmarking, and experience with benchmarking outcomes; foodservice directors'

category of foodservice operation compared with usage of performance measures, type of benchmarking and benchmarking partner(s); and foodservice directors' knowledge of benchmarking compared to importance of benchmarking. According to the national survey, the most commonly used performance measures were: food cost percentage, cost per unit or area of service, and meals per labor hour. Usage of internal, external, and functional/generic benchmarking was associated with foodservice directors' knowledge about benchmarking, importance of benchmarking, and general experience with benchmarking outcomes. Foodservice directors' category of foodservice operation was associated with usage of types of benchmarking partners, and with some performance measures and types of benchmarking, while not others. Foodservice directors' knowledge about benchmarking was related to perceived importance of benchmarking. Sixty-one percent of respondents reported needing knowledge and skills about benchmarking.

This research provides insight into performance measures that are or could be used in foodservice benchmarking. It also suggests that benchmarking has at least some importance, particularly to those with knowledge about benchmarking. It could be a useful management tool to foodservice directors, regardless of category of foodservice operation. Research results were used to develop a benchmarking guide for foodservice directors.

Benchmarking in Foodservice Operations

by

Bonnie C. Johnson

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Doctor of Philosophy

Presented April 9, 1998
Commencement June 1998

Doctor of Philosophy thesis of Bonnie C. Johnson presented on April 9, 1998

APPROVED:

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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Bonnie C. Johnson, Author

ACKNOWLEDGMENTS

First, with boundless gratitude, I would like to acknowledge and express my appreciation to my major professor, Dr. Jean Chambers, for her continual dedication, professional expertise, and exceptional guidance. My sincere thanks go to her for her patience, timely feedback, and mentoring. I am deeply grateful for her making this a wonderful, challenging, and stimulating learning experience. I feel privileged to have been her student and advisee.

I would also like to thank Dr. Ann Messersmith, Dr. Leonard Friedman, Dr. Sam Stern, and Dr. Loren Koeller for their willingness to serve on my graduate committee and for their wise counsel and valuable input to this thesis. In addition, I am deeply appreciative to Thom Maan for his expertise in the statistical portion of this thesis.

I wish to thank Marilyn Walker for planting the seed and encouraging me to apply for this program, under the sponsorship of the United States Air Force. She, along with Dr. Chambers and Colonel Esther Myers, provided support from the beginning and throughout my educational journey.

I am forever indebted to my mother, Mary Fraley, for her undying love, compassion, understanding, and support throughout my life, particularly during the past three years and countless telephone calls. Her everlasting trust, faith, and optimism certainly gave me the hope and encouragement to keep going, night and day. She is my pillar of strength.

A special prayer and thank you go to my brother, Dr. Mahlon Johnson, who inspired me to take on this endeavor through his tremendous strength, valor, and courage to face his own immense personal and professional challenges. He unknowingly was my silent guiding light.

To my father, Dr. Campbell Johnson, and all my other family members, I wish to express my deep gratitude for their steadfast belief in my abilities, as well as their support and love.

Additional thanks go to my friends for sharing their experiences, listening, providing sound advice, and helping keep my stress level under control. Their kindness will never be forgotten.

To the United States Air Force, I express my deep gratitude for the opportunity to obtain my doctoral degree. Without their financial backing and recognition of my professional and academic aptitude, I would not be here.

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Benchmarking in Foodservice Operations

1. INTRODUCTION

1.1 Statement of Problem

Benchmarking is a continuous, systematic, management process for measuring work processes, products, and services. It is for the purpose of organizational comparison and improvement (1-3). The purpose of this research was to explore the subject and use of benchmarking in foodservice operations.

In this rapidly changing environment, an organization must constantly strive to improve its products, services and practices in order to be competitive and meet the needs of its customers. The spirit of benchmarking is "to gain information that will help the organization take action and improve its performance" (1).

The first rationale for this research was to understand benchmarking in foodservice because it could be a useful management tool for foodservice directors to use in leading their operations to achieve performance improvement. There was little in the literature on benchmarking in foodservice operations. Since the inception of benchmarking in the 1980s, the literature in business and industry cited numerous articles and books on the subject of what is benchmarking and how to conduct benchmarking (1-13). Many articles were published on benchmarking in health care (14-29). Thus far, a few research articles have been published on benchmarking in the hospitality industry (30, 31). Hill, Mann, and Wearing (32) conducted a study on the

application of the theory of planned behavior to intention to benchmark in a variety of industries, such as food manufacturing, plastics, chemicals, finance, and mining. Several articles and books discussed benchmarking in foodservice (33-39). However, literature in the foodservice industry was lacking in the area of benchmarking research. Foodservice professional association newsletters and publications (36, 40, 41) included articles on the subject of benchmarking in foodservice, but actual research had not been reported in professional journals.

The second basis for this research was from personal observation in the workplace. Questions posed by colleagues indicated they wanted to know how to conduct a benchmarking project starting at the beginning. For example, what was benchmarking, what were the activities, and what were the performance measures? This research explored current benchmarking practices, activities, attitudes, and beliefs of foodservice directors. Foodservice directors can learn from this research about current benchmarking practices in foodservice and will be given information important to the application of benchmarking in their own workplace.

There were two expected outcomes of the research. One of the expected outcomes was the identification of foodservice directors' needs for knowledge and skills about benchmarking, as well as their desired source(s) to gain information about benchmarking. The results of this research could help focus future education and training efforts in benchmarking in the field of foodservice management. Another expected outcome was to generate a practical foodservice benchmarking guide (such as a checklist or table) that would identify activities important to the benchmarking

process in order to assist foodservice directors in conducting benchmarking in the workplace.

This research consisted of two parts: an expert opinion process and a foodservice directors survey. The expert opinion process was utilized to identify important activities and factors in foodservice benchmarking. This information will be valuable to foodservice directors who plan to initiate the benchmarking process. Included in this part of the research was the identification of criteria for selecting the benchmarking project topic and benchmarking partner(s), important foodservice benchmarking performance measures, and the different activities needed to conduct the benchmarking process in foodservice operations.

In the foodservice directors survey part of this research, baseline data was generated on current benchmarking beliefs, practices and activities of foodservice directors. Factors of interest included the foodservice director's knowledge and perceived importance of benchmarking, usage of performance measures, usage of benchmarking partners, the types of benchmarking used, experience with benchmarking outcomes, reasons that delayed or prevented benchmarking, perceived needs for knowledge and skills about benchmarking, and desired sources to gain information about benchmarking. This research quantified demographic characteristics (category of foodservice, job title, and years of work experience in foodservice management) of a defined population: foodservice directors in selected categories of foodservice operations (health care, school, college/university, and correctional). This research was

used to identify associations and differences among some of the above mentioned factors and provided clues for further study.

1.2 Glossary of Terms

1. *Benchmarking:* "A continuous, systematic process for evaluating the products, services, and work processes of organizations that are recognized as representing best practices for the purpose of organizational improvement" (2).
2. *Benchmarking gap:* "A difference in performance, identified through a comparison, between the benchmark for a particular activity and other companies; the measured leadership advantage of the benchmark organization over other organizations" (12).
3. *Benchmarking partners:* "A relationship between two parties who associate in a collegial relationship involving close cooperation to conduct benchmarking studies" (12).
4. *Benchmarks:* "Performance measurement standards derived from definition or quantification of best practices" (3).
5. *Best practice:* "Superior performance within an activity, regardless of industry, leadership, management or operational approaches, or methods, that lead to exceptional performance" (12).
6. *Competitive benchmarking:* "A measure of organizational performance compared against competing organizations; studies that target specific product designs,

process capabilities, or administrative methods used by a company's direct competitors" (12).

7. *Core competencies:* "Strategic business capabilities that provide an organization with a marketplace advantage; the collective learning of an organization, which is perceived by customers to be a benefit and is difficult for competitors to duplicate" (12).
8. *Delphi technique:* Qualitative research method; "a method of soliciting and consolidating expert opinion regarding phenomena for which few data are available and history seems irrelevant" (42).
9. *Functional/generic benchmarking:* Compares a work function to that of the functional leader in the same industry or cross-industry (16).
10. *Internal benchmarking:* Compares similar internal functions within an organization (16).
11. *Performance benchmarking:* "Any research that helps you assess your relationship with competitors and industry leaders in terms of price, product quality, product features (including service factors), or other performance measures. This is the kind of research that uses trend analysis from database searches or surveys" (8).
12. *Process benchmarking:* "Requires face-to-face studies and observations of a business's key processes, including customer billing, technology transfer, product delivery, and strategic planning. Because process benchmarking requires the participation of subject matter experts, the owner of a process and the process team

(the people who actually do the work) should be directly involved in the study. This kind of research requires the greatest investment of labor and time" (8).

13. *Principle measures of performance:* Also known as key indicators, critical success factors, leading operational indicators, or key result areas; issues that have the greatest impact on the performance of the organization (15).
14. *Reengineering:* "The radical redesign of business processes, organizational structures, management systems, and values of an organization, to achieve breakthroughs in business performance" (12).
15. *Strategic benchmarking:* "The application of process benchmarking to the level of business strategy; a systematic process for evaluating alternatives, implementing strategies, and improving performance by understanding and adapting successful strategies from external partners who participate in an ongoing business alliance" (12).
16. *TQM:* Total Quality Management; "A customer-focused management philosophy and strategy that seeks continuous improvement in business processes by applying analytical tools and teamwork, including the participation of all employees" (12).

2. REVIEW OF LITERATURE

Robert Camp (3), a well-known pioneer of modern day benchmarking, cited two ancient truths that show the need for benchmarking. Camp quoted Sun Tzu, a Chinese general, who wrote in 500 B.C., "If you know your enemy and know yourself, you need not fear the result of a hundred battles." The other truth is a Japanese word *dantotsu*. It means striving to be the best of the best. The English language does not have a comparable word. Both of these "truths" are applicable today to businesses that desire to be successful. Camp's basic philosophy of benchmarking included: (1) know your operation and assess your strengths and weaknesses, (2) know the industry leaders or competitors and assess their strengths and weaknesses, (3) incorporate the best by learning from the strengths and best practices of industry leaders, and (4) gain superiority by capitalizing on strengths and incorporating the best of the best (3).

Benchmarking is an essential business concept, as defined by Bogan and English (9).

> No individual, team, or operating unit – no matter how creative or prolific – can possibly parent all innovation. No single department or company can corner the market on all good ideas. In view of this reality recognizing human limitations, it makes eminently *good sense* to consider the experience of others. Those who always go it alone are doomed to perennially reinvent the wheel, for they do not learn and benefit from others' progress. By systematically studying the best business practices, operating tactics and winning strategies of others, an individual, team, or organization can accelerate its own progress and improvement. (9)

2.1 Definition of Benchmarking

One formal definition of benchmarking from David T. Kearns, chief executive officer, Xerox Corporation, was: "Benchmarking is the continuous process of measuring products, services, and practices against the toughest competitors or those companies recognized as industry leaders" (3). In order for benchmarking to be effective, it must be continuous because industry practices constantly change. It is considered a self-improvement and management process. Practices and performance indicators are compared and measured (3).

Webster's definitions of benchmark were: "A mark on a permanent object indicating elevation and serving as a reference in topographical surveys and tidal observations...A point of reference from which measurements may be made...Something that serves as a standard by which others may be measured or judged" (43). The later definition was close to being applicable to the foodservice industry. The computer industry used it to mean a standard process for measuring performance capabilities of vendor's systems (3).

The origin of the word *benchmarking* was described by Patterson.

> The word benchmarking originally was a land surveyor's term. In that context, a benchmark was a distinctive mark made on a rock, building or wall, and it was used as a reference point in determining the position or altitude in topographical surveys and tidal observation. Today a benchmark is a sighting point to make measurements; a standard against which others could be measured. (7)

Camp's working definition of benchmarking was, "Benchmarking is the search for industry best practices that lead to superior performance" (3). Practices must have

been understood before deriving a benchmarking metric. Benchmarking was a mechanism for improving performance by proactively seeking best practices (3).

Spendolini (2) researched forty-nine definitions of benchmarking. He developed this definition: "A continuous, systematic process for evaluating the products, services, and work processes of organizations that are recognized as representing best practices for the purpose of organizational improvement" (2). Spendolini's definition was universal. It was applicable to organizations and functions, public and private. His definition utilized a number of key words, such as: evaluation, continuous, best practices, systematic and improvement (2).

Benchmarking in health care was defined by Czarnecki as "the sharing of performance information to identify the operational and clinical practices that lead to the best outcomes" (14). In the words of Gift and Mosel, "Health care benchmarking is the continual and collaborative discipline of measuring and comparing the results of key work processes with those of the best performers. It is learning how to adapt these best practices to achieve breakthrough process improvements and build healthier communities" (15). It was a project in that it was a one-time event, but it was also a process in that it was continual and fully integrated into the culture of the organization.

This research used the following definition: Benchmarking is a continuous, systematic, management process for measuring work processes, products, and services for the purpose of organizational comparison and improvement. This definition was

adopted for this research after studying the previously mentioned definitions of benchmarking experts: Spendolini (2), Czarnecki (14), Camp (3), and Gift and Mosel (15).

2.2 History of Benchmarking

In the very earliest forms, benchmarking was a method linked to human survival needs with Neanderthals borrowing methods of weapon manufacture from their enemies. It basically involved studying one's own performance and practices, examining those of superior performers, and then adopting practices to improve their own performance. The American colonists adopted battle techniques from the Native Americans to win the war with the British military forces. They compared military tactics and borrowed what exhibited the greatest potential for success (hiding and ambushing). In modern benchmarking, the battle is to find and close performance gaps to improve an organization's competitive position (19).

Benchmarking is not new to business life because organizations have for years tried to determine their competitive standing. Historically, this comparison was done secretively; some knew it as spying. However, in today's benchmarking, comparison activities are performed openly with all parties directly involved. For example, the Malcolm Baldridge National Quality Award helped promote acceptance of sharing demonstrated performance (14). The Malcolm Baldridge National Quality Award was known as a benchmarking assessment and improvement device. The Baldridge criteria were designed to benchmark an organization's continuous quality improvement

processes in the categories of: leadership, information and analysis, strategic quality planning, human resource development and management, management of process quality, quality and operational results, and customer focus and satisfaction (9, 26).

According to the Juran Institute, one of the ten trends that emerged as a result of Total Quality Management (TQM) efforts was benchmarking and self-assessment (44). Benchmarking was frequently associated with TQM; it was considered one of the more advanced quality management tools (45). It was a tool that gave employees a continuous improvement effort to focus on and provided the means to identify processes that showed an advantage over competitors (8).

Camp (3) described the Xerox Corporation's experience with competitive benchmarking. Xerox initiated competitive benchmarking in 1979 in its manufacturing operations to examine costs. Mechanical components of competing copy machines of competitors, including Japanese manufactured machines, were torn down for analysis or comparison. Product quality and features were compared. They found U.S. manufacturing costs were substantially higher. Competitors were selling copy machines for what it cost Xerox to make them. U.S. manufacturing quickly adopted the benchmark target of manufacturing costs to increase their competitiveness. By 1981, all Xerox business units and cost centers performed benchmarking in a corporate-wide effort. Benchmarking became viewed as essential to achieving quality in all products and processes (3, 5).

The history of benchmarking was described by Watson (12) as an evolutionary process and developing science. The first generation of benchmarking was reverse

engineering, which was an engineering-based approach to product comparisons that included tear-down and analysis of technical product characteristics. The second generation was competitive benchmarking which Xerox refined starting in 1976. This type of benchmarking went beyond product-orientation comparisons to comparing processes with competitors. In the 1980's, the third generation of benchmarking was process benchmarking, which included searching for best practices across industry boundaries. The fourth generation of benchmarking was strategic benchmarking. Watson defined strategic benchmarking as:

> A systematic process for evaluating alternatives, implementing strategies, and improving performance by understanding and adapting successful strategies from external partners who participate in an ongoing business alliance. Strategic benchmarking differs from process benchmarking in terms of the scope and depth of commitment among the sharing companies. (12)

Strategic benchmarking differed from process benchmarking in that strategic benchmarking was used to fundamentally change the business, not just alter the processes. It helped feed process reengineering. Reengineering was defined as "the radical redesign of business processes, organizational structures, management systems, and values of an organization, to achieve breakthroughs in business performance" (12). Lastly, the fifth generation was global benchmarking, which was "a global application where international trade, cultural, and business process distinctions among companies are bridged and their implications for business process improvement are understood" (12).

2.3 Rationale for Benchmarking

Business and industry literature cited the rationale for benchmarking, such as: accelerated rate of improvement (8, 14, 24), identified breakthroughs (3, 24), improved decision making (15), identified performance measures (15), stimulated innovation (2, 8, 14, 15), gave goals and targets credibility (3, 8, 15), and facilitated cooperation among organizations (15). The literature review for this research revealed various rationale for benchmarking. The rationale included the following:

1. *Accelerated the rate of improvement.* It took more time to "reinvent the wheel" than it did to build on the wisdom of others or adopt innovations from other organizations (8, 24).

2. *Helped organizations identify best practices that led to breakthroughs.* By studying internal processes and finding out how other organizations did it better, one was able to adopt their breakthroughs (24). Benchmarking identified technological breakthroughs that would otherwise not be recognized because they were not in the same industry (3, 8).

3. *Improved decision making.* The benchmarking process generated objective outside data for comparison. By basing decisions on fact and not speculation, the organization gained confidence in its decision-making abilities (15).

4. *Identified performance measures.* Measures based on real practices at other organizations frequently added more credibility than using just internal historical practice. "Determined by participants and witnessed in action in benchmarking partners' operations, these performance measures become more readily adoptable.

Benchmarking then helps convince planners and administrators of the operational accuracy of these measures" (15).

5. *Stimulated innovation, creativity, and new ideas.* When a benchmarking team identified a performance gap and understood the reason for the gap, the team pushed to close the gap. This stirred creativity and reinforced a culture that valued continuous improvement. A sense of urgency was created when the team saw the gap between their organization and the "best practice" organization(s). This motivated them to adopt innovative practices or processes, or create their own (8, 15). Benchmarking encouraged employees to think "out of the box." This meant they considered alternative paradigms and engaged in "what if" thinking. Benchmarking was a good source of new business ideas; it exposed team members to new products, new work processes, and different ways to manage resources and services. Naturally, not all new ideas uncovered in the benchmarking process were used but they led to other ideas (2). Benchmarking helped to identify and develop new ideas, sell and support ideas, and improve decision-making from a larger base of facts (9, 14).

6. *Gave goals and targets credibility.* Benchmarking involved a planning process and was an alternate way to set goals and targets (3, 8, 9). The reason it gave credibility was that benchmarking resulted in goals and targets based in the reality of superior performance of best practices (15). Best practice was defined by Watson as:

> Superior performance within an activity, regardless of industry, leadership, management, or operational approaches, or methods that lead to exceptional performance; a relative term that usually indicates innovative or interesting business practices that have been identified during a benchmarking study as contributing to improved performance at the leading organization. (12)

Goals and targets were legitimized by basing them on the external benchmarking orientation. It provided a means to discover and understand practices needed to reach new goals. Goals based on the industry best were credible and could end internal target debates. Benchmarking validated what needed to be changed and helped an organization identify and correct goals, objectives and measurements for judging performance (3, 39). Although many organizations may not aim to be *best practice* themselves, they still may use the benchmarking information to establish product or process objectives and strive for continual improvement in performance (2).

7. *Facilitated cooperation among organizations.* Collaborative relationships emerged as associates from different organizations participated in benchmarking projects. This expanded the resource network of participants by building bridges between organizations and could have been useful in future problem solving and improvement efforts (15).

Other benefits included: meeting customer requirements; adapting industry-best practices; becoming more competitive; setting relevant, realistic and achievable goals; developing accurate measures of productivity; creating support and momentum for internal cultural change; setting and refining strategies; warning of failure; testing the effectiveness of the organization's quality program; reengineering the organization; promoting better problem solving; and providing an education and creativity boost (7).

It is only fair to mention that some people had reasons why they did not conduct benchmarking. The literature frequently discussed this issue. Campbell (22) reported one barrier to benchmarking activities was data definition. A consensus about

data sets was needed; "apples to oranges" comparisons were not acceptable. To avoid this pitfall, careful attention to detail was given and staff or consultants familiar with database design were used.

Many managers avoided measurement because they feared weaknesses would be uncovered. On the contrary, measures had the potential to spot problems in time to correct them. Information was the foundation for understanding and problem solving (46).

Various barriers were reasons why some people did not conduct benchmarking. Gift, Stoddart, and Wilson (23) reported a lengthy list of barriers to benchmarking:

- Lack of acceptance or "buy-in"
- Limited involvement in the benchmarking process
- Not involving the appropriate people (process owners)
- Not understanding you can learn by not inventing it yourself
- Lack of understanding the internal processes
- Weak leadership
- Inability to see opportunity to improve
- Organization not promoting entrepreneurial behavior, innovation, or risk-taking
- Failure to see need for change (23).

For some, there was a lack of enthusiasm, implementation, and commitment to benchmarking. Morgan (47) reported this underwhelming reaction to benchmarking

was driven by five factors: lack of resources, lack of commitment at the top, lack of suitable partners, worries about confidentiality, and lack of understanding (47).

There were also barriers related to the content area of the benchmarking. These were: lack of fit with the strategic plan, little or no relationship to core processes, or too broad a topic (9, 11, 45). The project needed to be focused on an appropriate level of detail. For example, if the area was *customer support services*, a project too broad was *best customer satisfaction process*. A project too narrow was *best phone greeting*. An appropriate project was *best call center management practices* (9).

Barriers to the attributes of benchmarking itself as a tool were: misconceptions about benchmarking, lack of internal expertise, lack of understanding of benchmarking, and the time and expense of benchmarking. It was important to note that the barriers were not independent of each other, or mutually exclusive (11).

Senior management commitment was needed early in the benchmarking process to prevent organizational barriers that hindered communications, prevented resource constraints from delaying the process, and prevented mistrust and blockage of the process (14). Projects frequently ended up with no impact because senior-level management failed to support the project during its early phases. Typical employee complaints about benchmarking were "I do not have time for more committee meetings," "This must be a new way to cut jobs," or "I won't gain anything from this" (14). One solution was to visit a similar operation with the same process but different product or industry (functional or generic benchmarking). This led to employee creativity rather than defensiveness (16).

Lack of action was a barrier. If an organization conducted a well-planned benchmarking study, learned valuable information, but did nothing with it, the lack of follow-up was frequently seen as benchmarking failing to deliver effectiveness. Organizations needed to build a case for action, such as identifying motives for undertaking the benchmarking effort, its importance, expected outcomes, and ownership of implementation after completion of the study (11).

One of the greatest barriers to health care benchmarking was the lack of recognition of the need to learn from others, according to Gift and Kinney (11). Some people said their organization was unique because it was a health care organization. One way to overcome this barrier was to build a culture to support learning. An organization needed to stress team learning and experimentation, along with incorporating innovative approaches to problem solving. This reinforced the need for and use of benchmarking.

2.4 Misconceptions about Benchmarking

As benchmarking emerged, any organization that conducted any type of comparisons, such as comparing data with national norms, competitive analysis, or unstructured discussions with counterparts in other organizations, claimed it was *benchmarking*. Comparative data analysis alone was not benchmarking (11, 45, 48). A quantitative comparison of performance was only a small part of the benchmarking process. Because comparative analysis frequently had negative "baggage" associated with it, it was important for it not to be called benchmarking. An organization needed

to define the true meaning, role, and use of benchmarking in its own environment, including how it used comparative data (11).

Benchmarking was not a fad. It was a successful business strategy that helped managers identify practices "that can [be] adapted to build winning, credible, defensible plans and strategies, and complement new initiatives to achieve the highest performance goals - namely superior performance" (3). Benchmarking was a means of doing business.

Benchmarking was not a means for reducing resources. Benchmarking activities could result in a redeployment of resources to most effectively meet customer requirements and satisfaction (3).

Benchmarking was not a quick-fix program (3, 48). It was a continuous management process with a structured, yet adaptable methodology. It involved observing best practices, gathering information and projecting future performance and realistic goals by ensuring best, proven practices were incorporated into the business (3). Benchmarking required discipline and patience and was not simple, quick and easy (8). Many studies lasted from nine to twelve months, and could extend beyond that time for numerous reasons (49).

Benchmarking was not industrial tourism, a series of ad hoc visits to companies that received awards or favorable publicity (8, 45, 50). It was a disciplined process.

In summary, benchmarking was not simply data comparison, a fad, a means for reducing resources, a quick-fix program, or industrial tourism. Benchmarking was a complete process that included data comparison and much more. It was a means of

doing business; it was a continuous and disciplined management process with a structured methodology.

2.5 Benchmarking Models

The literature frequently cited benchmarking models. Those noted in this literature review were: the "meta-model" developed by the International Benchmarking Clearinghouse (6), Benchmarking Network, Inc. model (Appendix Table A) (14), Gift and Mosel's Collaborative Benchmarking Model (15), Baxter Benchmarking Model (Appendix Table B) (17), Spendolini's 5-Stage Benchmarking Process (Appendix Figure A) (2), and the Xerox 10-Step Benchmarking Process (Appendix Table C) (16). Each of these models exhibited benchmarking as a continuous process with successive phases being critical to the successful execution of the process. The creators of these models divided the benchmarking process activities into phases; different terminology was used for each phase. In order to create a single, simplified model for the purpose of understanding this research, the various phases of these different models were synthesized into a three phase generic model. These three phases were called: planning, data collection and analysis, and action.

Upon closer examination of many benchmarking models, a common thread appeared to be Walter A. Shewhart's PDCA (Plan-Do-Check-Act) cycle. Shewhart's cycle was generally recognized by total quality management (TQM) professionals. TQM was defined as: "A customer-focused management philosophy and strategy that seeks continuous improvement in business processes by applying analytical tools and

teamwork, including the participation of all employees" (12). The Shewhart cycle was reported as the benchmarking process of Watson (12). Gift and Mosel (15) used the Shewhart cycle twice (once for the internal benchmarking process and once for the external benchmarking process) in their collaborative benchmarking model. Patterson (7) noted that all the models had one thing in common - they followed the PDCA cycle.

The simplest generic "meta-model" was developed by the Houston based International Benchmarking Clearinghouse (IBC). The 4 steps of IBC's meta-model were plan, collect, analyze, and improve. The planning step identified key data and information needed to measure it, along with locating the best benchmarking partners. The collection step included gathering internal and external information. The analysis step revealed performance gaps and identified best-practice enablers, which were a set of activities that enhanced implementation of a best practice. The improvement step included implementation and monitoring activities. The meta-model was patterned after Walter A. Shewhart's PDCA (Plan-Do-Check-Act) cycle (6).

Czarnecki's Benchmarking Network, Inc. methodology (14) presented 25 steps in 4 areas (Appendix Table A). The four basic areas were project planning, project research, best practice identification, and buy-in processes. This model of the benchmarking process was linked to the customer and presented a highly structured step-by-step process. Two examples of some of the steps within the process were (1) customers were identified and (2) their needs assessed. Some steps were not used in every study, especially if the organization was already participating in benchmarking databases (i.e. the data gathering steps were eliminated).

Gift, Stoddart, and Wilson (23) reported a four phase model for collaborative benchmarking in health care. The first was to select the topic or process to benchmark. The second was to establish the group that was to perform the benchmarking study collaboratively. The third was to actually conduct the study within the collaborative. The group would work together to identify best practices within the group, following a "plan, do, study, act" cycle. The group determined if best practices could be applied to other partners. In the fourth phase, the group would then choose to conduct a similar study outside the collaborative, following the same "plan, do, study, act" cycle.

The Baxter benchmarking model (Appendix Table B) was developed by Baxter Corporate Consulting (17). It had only two phases and a total of fifteen essential steps. It consisted of the preparation phase and analysis phase. The Baxter model was based on the premise that the best ideas came from within an organization and its people who were the closest to the processes. This model did not promote adoption of a process in its entirety from one organization to another, but it did acknowledge that identification of performance gaps was useful (17).

Xerox's 10-step benchmarking model (Appendix Table C) consisted of four phases and ten steps. The four consecutive phases were planning, analysis, integration, and action. Camp and Tweet (16) stated that the sequence of activities within each phase was not critical, but the completion of all activities within each phase was essential before progressing to the next phase. The planning phase included selection of a subject to benchmark, identification of best practitioner(s), and determination of the data collection method and actual data collection. The analysis phase consisted of

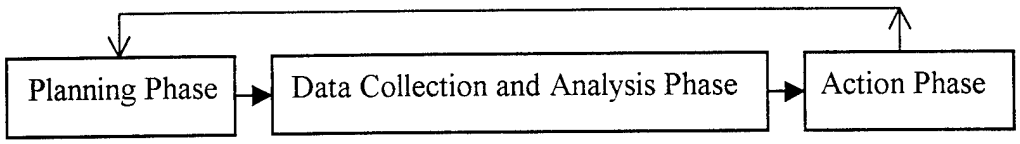
determining the current performance gap and projecting future performance. The integration phase was when results of analysis were communicated and functional goals established. Finally, in the action phase, action plans were developed, plans implemented, results monitored, and benchmarks recalibrated.

Finally, Spendolini's benchmarking process model (2) was a circular model (Appendix Figure A). It consisted of five stages: determine what to benchmark, form a benchmarking team, identify benchmarking partners, collect and analyze benchmarking information, and take action. Most benchmarking process models were drawn as flow charts; this was logical because it illustrated a sequence of events. However, Spendolini felt benchmarking was a way of doing business and the company should continuously strive to improve. Products and processes were dynamic and changed over time. So, Spendolini made his benchmarking process model circular because it best portrayed the concept of recycling the benchmarking process (2).

Various models have just been described. There was not a battle of the models, or as Spendolini noted, "model wars" (2). Models merely contributed structure and a common language for a process. These models in the literature review showed benchmarking to be a planned, formal, and structured process. There should always be some flexibility built into any process or model to accommodate situational variation. Although there may be unplanned, informal benchmarking occurring in the workplace, this research looked at the process in a formal structure. The research reported in this thesis used a three phase generic model (Figure 2.1), consisting of planning, data collection and analysis, and action phases. The model was developed by the researcher.

Activities in each of the three phases of the model were studied. The remainder of this literature review manuscript is organized according to this model.

Figure 2.1 A generic benchmarking model.



2.6 Planning Phase of Benchmarking Process

The first phase of benchmarking as seen in the model used in this research was the planning phase. This research studied benchmarking project topic selection criteria and benchmarking partner selection criteria.

Planning provided the essential framework for benchmarking process success. The planning phase of the benchmarking process prepared the operation for the benchmarking investigation by: identifying what was to be benchmarked, such as a product, service, or practice, and identifying benchmarking partners (3). Included in the planning phase was the selection of a project topic to benchmark, recruiting the benchmarking team members from the organization, determining the performance measurements, determining the scope and constraints of the project, and obtaining support of all major stakeholders (16). A review of a benchmarking code of conduct should be conducted to ensure compliance with its principles. A benchmarking code of conduct included principles of use, legality, confidentiality, and exchange, that

governed the legal and ethical requirements of conducting benchmarking. The American Productivity and Quality Center of the International Benchmarking Clearinghouse established a benchmarking code of conduct (8, 15). An organization could also develop their own code of ethics (2).

Several authors reported processes to select a benchmarking project topic, such as identifying topic selection criteria (11, 15, 23) and steps on applying the selection criteria (4, 15). The literature cited methods of selecting (2, 14, 15, 23) and characteristics (2, 14) of benchmarking partners. A benchmarking partner was another party who associated "in a collegial relationship involving close cooperation to conduct benchmarking studies" (12). Partners were internal, external, or cross-industry, depending on the type of benchmarking conducted.

Three general types of benchmarking were internal, competitive, and functional/generic. Internal benchmarking compared similar internal functions within an organization. Competitive benchmarking compared a work process with that of the best competitor in the same market and revealed the performance measure levels to be surpassed. Functional/generic benchmarking compared a work function to that of the functional leader in the same industry or cross-industry (16).

Some benchmarking experts (2, 8, 16) advocated the establishment of a benchmarking team because most studies required more than one person to complete all the tasks involved. Benchmarking teams were common, and frequently created during the planning phase. Finnigan stated:

> A team provides the benefits of multiple points of view and experience. It also facilitates organizational learning both by internalizing the

> information acquired and by demonstrating through its members' efforts the importance of benchmarking to the rest of the organization. Because most work processes are not completed by one individual, it makes sense for all the people involved in a work process - or at least one representative of each group - to participate in determining how to change it. (8)

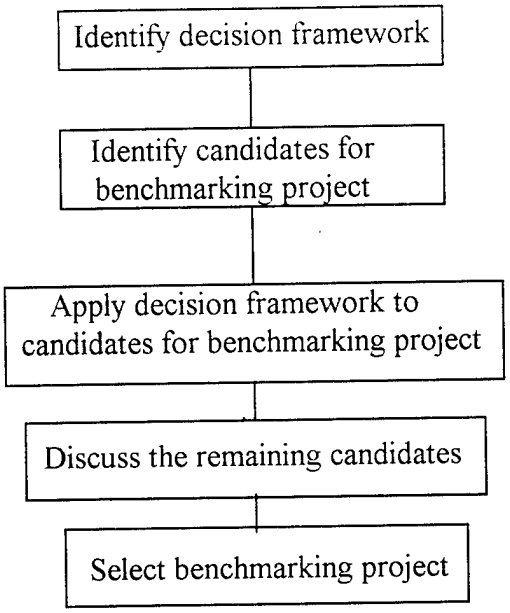
2.6.1 Benchmarking Project Topic Selection

Benchmarking project topic selection was a critical element of the process in the planning phase. There were three key reasons to select the right project: time limitations to conduct benchmarking efforts, direct costs incurred when conducting benchmarking studies, and the multitude of issues that competed for a manager's attention (15).

2.6.1.1 Decision Criteria for Benchmarking Topics

One approach was developed by Gift and Mosel (15) to help ensure the right project was selected (Figure 2.2). Decision criteria were applied to the candidates. Some methods used a weighting system for the decision criteria because different criteria had varying levels of importance (15, 23). Gift and Mosel recommended the use of a decision matrix to narrow down the number of candidates and assist the team in focusing its discussions to a more manageable number (four or less). The final project discussion was less structured and entailed looking at the advantages and disadvantages and/or revisiting the decision matrix (15).

Figure 2.2 Selecting a benchmarking project.



SOURCE: Gift RG, Mosel D. *Benchmarking in Health Care: A Collaborative Approach*. Chicago, IL: American Hospital Association; 1994. (15)

A decision matrix was used as a framework to prioritize critical processes to be benchmarked and ultimately improve the chances of conducting successful benchmarking. The two basic criteria used in Hutton and Zairi's matrix (4) were: strategic importance and ease of benchmarking.

Four categories of selection criteria to choose the benchmarking project topic were: key processes, organizational competencies, issues of strategic importance, and principle measures of performance (11, 15). Key processes were essential activities performed to best meet customers' needs. Benchmarking efforts were focused on key processes that mattered the most to customers (15). It was important that the project topic fit with the organization's core processes. Some organizations selected a

benchmarking project based on the power of an important leader or the occurrence of a special event, and expected benchmarking to fix it. When extensive time, energy and resources were expended but the project did not contribute to the core processes of the organization, people blamed wasted time and effort on benchmarking instead of poor project selection (11).

Organizational competencies, or core competencies, were another category of selection criteria. Watson defined core competencies: "Strategic business capabilities that provide an organization with a marketplace advantage; the collective learning of an organization, which is perceived by customers to be a benefit and is difficult for competitors to duplicate" (12). It was basically what a company was good at or the special skills of a company offering products and services to customers (15).

The selection criteria were related to issues of strategic importance. A benchmarking study was not commissioned in an area of interest to a particular leader, but was tied to the strategic intent of the organization. It was not a sideline project, but a concerted effort to achieve breakthrough in an area important to the organization. Criteria to guide benchmarking project selection fit with the organization's strategic plan and impacted on core groups of customers and measures of performance (11). Campbell (22) reported benchmarking initiatives needed to focus on the organization's most important processes as defined within the context of the overall strategic plan. Failure to properly target benchmarking initiatives resulted in financial loss because the benchmarking project costs outweighed savings gained from improving a trivial

process. Organizations also abandoned benchmarking efforts if they failed to observe significant improvements in organizational performance.

Another category of selection criteria was: principle measures of performance. They were also known by other terminology: key indicators, critical success factors (CSFs), leading operational indicators, or key result areas (15). In other words, what issues had the greatest impact on the performance of the organization? Gift and Mosel (15) classified them into three major categories: quality, time and cost. Specific examples were: customer satisfaction ratings, days in accounts receivable, or cost per adjusted patient day. It was best if the principle measures of performance were related to the key processes that resulted in desired outcomes. In other words, the benchmarking project needed to be linked with important business outcomes. A more detailed look at performance measures is found in Section 2.6.1.2 of this manuscript.

These four criteria categories (key processes, organizational competencies, issues of strategic importance, and principle measures of performance) did not encompass all conditions for an organization's benchmarking efforts to be met. Other conditions included: estimated time to complete the project, scope of the topic, geographic locations or project applicability (15). Berkey (18) cited similar criteria for selecting a process to benchmark: definable and common to many organizations, cross-functional, repetitive, perceived to contribute to success of the organization, measurable, and related to the strategic plan of the organization (18). Keehley et al. (45) cited the following criteria for public sector benchmarking: readiness, strategic, customer, competitive, environmental, and process characteristic issues (45). Finnigan

(8) suggested three criteria in deciding on a subject to benchmark. The decision was based on these factors: an organization's CSFs, customer satisfaction, and cost of quality. Some companies felt customer satisfaction was the most important CSF.

Xerox used a list of 10 questions (Table 2.1) to help benchmarking team members prioritize potential benchmarking project ideas (2). Most of the questions related to cost reduction, customer satisfaction, problem reduction, continuous improvement, and marketplace superiority (2).

Table 2.1 What to benchmark: Xerox's ten questions.

What to Benchmark
1. What is the most critical factor to my function's / organization's success (e.g., customer satisfaction, expense to revenue ratio, return on asset performance)?
2. What factors are causing the most trouble (e.g., not performing to expectations)?
3. What products or services are provided to customers?
4. What factors account for customer satisfaction?
5. What specific problems (operational) have been identified in the organization?
6. Where are the competitive pressures being felt in the organization?
7. What are the major costs (or cost "drivers") in the organization?
8. Which functions represent the highest percentage of cost?
9. Which functions have the greatest room for improvement?
10. Which functions have the greatest effect (or potential) for differentiating the organization from competitors in the marketplace?

SOURCE: Spendolini MJ. *The Benchmarking Book*. NY: AMACOM; 1992 (2).

Patterson (7) had seven guidelines for selecting best functions, processes or products to benchmark: (1) highest percentage of fixed or variable costs, (2) affect on quality, cost, or cycle time, (3) strategic importance, (4) need for improvement, (5)

ability to improve, (6) support for success of the organization, and (7) affect on competitive edge. These guidelines were similar to Xerox's Ten Questions (2).

There were several pitfalls when selecting a subject to benchmark. These pitfalls included: selecting a subject that was unimportant, choosing too many subjects, focusing on too many metrics, picking metrics that didn't provide meaningful data, failing to define the purpose of the study, and failing to obtain management buy-in for the study (8).

2.6.1.2 Performance Measures

As noted previously, the planning phase included determination of performance measures. Performance measures were the vital indicators of how a process was operating. "Performance measures are the numbers used to compare the operation of the process being benchmarked with the performance of the benchmarking partners' processes" (45). Finnigan stated, "Choosing a measure will not only provide the metrics for performance comparison with your partners but will also help to define the benchmarking subject itself" (8).

One study was conducted on the criticality of measurement as a management tool. Lingle and Schiemann (51) studied whether the measures were reviewed regularly, linked to compensation, and used to drive organizational change. The six strategic performance areas studied were: financial performance, operating efficiency, customer satisfaction, employee performance, innovation/change, and community/environment. They found measurement-managed companies outperformed

non-measurement managed organizations. Customer satisfaction measures were valued highly by the largest percentage of executives.

Measurement had its benefits. If a company tried to achieve excellence, it needed to measure for excellence. According to a national survey of senior executives in major U.S. companies, measurement-managed companies were more likely to be in the top third of their industry financially, reach clear agreement on strategy among senior management, and enjoy favorable levels of cooperation and teamwork among management (52).

In another article, Struebing (53) reported on an American Productivity & Quality Center's International Benchmarking Clearinghouse consortium benchmarking study with 32 major organizations. The study found that financial measures accounted for 27% of best-practice companies' measurement criteria. The other measures related to the following areas: quality, customer satisfaction, productivity, work force, and market indicators. The study also found that best-practice organizations were more likely to gain input for their measures from sources such as internal work teams and external consultants, than relying on the executive to determine which measures to use (53).

Bogan and English (9) developed a list of ten generic benchmarking performance categories: customer-service, product/service, core business process, support processes and services, employee, supplier, technology, new product/service development and innovation, cost, and financial. The authors cited multiple examples of each category.

Benchmarking experts reported different kinds of measures. Three kinds of metrics used by organizations, as cited by Finnigan (8), were: cost-related, quality, and services. Some cost-related metrics were: share of cost of function revenue (percent), cost per order, and material overhead rate (percent). Some quality metrics were: percentage of parts meeting requirements, number of problem-free products, billing error rate, and internal and external customer satisfaction measures. Examples of service metrics were service response time and percentage of supplies delivered on time. Czarnecki (14) used three areas of measures of performance: quality/outcomes, productivity, and cycle time. The quality/outcomes were measured in several areas: functional measures (e.g. return to work), customer satisfaction ratings (subjective perceptions), and service levels (e.g. special features or levels of responsiveness). Sources of these quality measures were operational statistics, outcomes, perceptions, and service levels. Operational statistics were figures such as "rate per." Productivity measures were typically expressed as "cost per." Cycle time measured how long it took for product/service to be delivered, from start of a process to delivery of final outputs. Using multiple measures was the best way to predict overall performance. For example, an organization did not use productivity measures alone as the indicator of "best" organization, but used productivity, quality, and cycle time measures (14).

Principle measures of performance were sometimes called critical success factors (CSFs). These CSFs were derived from what was critical to a company's survival (49). The term was used to "encourage employees to use the benchmarking process selectively on issues of critical import to the organization" (2). Watson's

definition of critical success factors was: "Quantitative measures for effectiveness, economy, and efficiency; those few activities where satisfactory performance is essential in order for a business to succeed; characteristics, conditions, or variables that have a direct influence on a customer's satisfaction with a specific business process; the set of things that must be done right if a vision is to be achieved" (12). To Spendolini, one of the most important questions to ask when identifying what to benchmark was, "What factors will have the greatest impact on the performance of the organization?" (2) He stated it was important to be as specific as possible in the definition and metrics of the CSF. Specificity of the CSF was important in planning the benchmarking project because it: forced the benchmarking partners to consider the various options on what to measure, helped in planning the measurement strategy and developing the specific measurements, and helped in understanding the information requirements. In other words, could the benchmarking partners compare the same measures? Was translation needed to understand what was being measured? (2).

It was important to integrate CSFs into the benchmarking process, according to Lincoln and Price (49). CSFs should be used when choosing the benchmarking scope, selecting key measures, identifying benchmarking partners, developing benchmarking questions, and preparing the final analysis and recommendations.

There were three levels of CSF specificity, according to Spendolini (2). A level-one CSF was defined as a broad subject area, usually a department or function, and too broad to identify any measure. An example of a level-one CSF was billing. A level-two CSF defined a more specific area and was an activity or process as defined by

a type of aggregate measure. Examples of level-two CSFs were the number of billing errors or the number of complaints. A level-three CSF was the most specific level and was defined as a measure of specific activities or processes on which benchmarking partners could produce information. Examples of level-three CSFs were process for reducing billing errors or incorrect invoices. CSFs need to be defined as specifically as possible.

Typical foodservice performance measures noted in the literature were: food cost per customer, meals per labor hour, average customer check (38), and dietitian-to-patient ratio (35). Foodservice productivity performance measures cited by Jackson (37) included: meal equivalents per labor hour, labor cost per meal equivalent, food cost per meal equivalent, supply cost per meal equivalent, and total cost per meal equivalent. Richards (33) cited some of the following productivity and financial measures: meals per paid hour, meals per worked hour, total paid hours per meal, food cost per meal, labor cost per meal, and cafeteria sales per customer. Regulatory agencies, such as the Joint Commission on Accreditation of Healthcare Organizations, often emphasized and/or required measurement of outcomes, and quality assessment and improvement (37). As a result, this drove some of the activity with performance measures, such as the clinical productivity measures in health care.

2.6.2 Identification of Benchmarking Partners

Choosing benchmarking partners was just as important as choosing the subject because the data gained from partners could have a long-term effect on the operation

(8). First, the types of benchmarking will be examined. This will be followed with a discussion of benchmarking partner selection criteria.

2.6.2.1 Types of Benchmarking

The identification of benchmarking partners was partially defined by the type of benchmarking being conducted. Camp and Tweet (16) gave an overall view of the three types of benchmarking: internal, competitive, functional/generic. Types of benchmarking were usually distinguished by the nature of the referent other (internal, competitive, and functional). However, some types were distinguished by the basis of the process or practice being benchmarked; examples were process, performance, or strategic benchmarking (54). Two benchmarking experts (8, 9) stated the classification of these types to be in terms of their goals. Process benchmarking was face-to-face studies and observations of key processes, regardless of who was best practice. If the purpose of the benchmarking project was to identify best performance using established measures of productivity, this was performance benchmarking. It did not require contact with the organization being benchmarked. It relied on analysis of data from database searches and surveys. Strategic benchmarking usually was done by creating a benchmarking alliance with a limited number of noncompeting businesses. Its purpose was to identify significant trends that led to potential improvement opportunities (8).

Internal benchmarking compared similar internal functions within an organization, and it often served as a pilot project for conducting external benchmarking (16). Internal benchmarking was a comparison of internal operations,

such as between different divisions or similar functions in different operating units within an organization. Benefits included data being readily available, lack of problems with confidentiality, and lack of data gaps. Internal benchmarking was also used to focus on critical issues of interest for understanding practices and defined the scope of external benchmarking, when conducted (3). Keehley et al. (45) suggested that organizations with little or no benchmarking experience start with internal benchmarking or benchmarking own best practices first.

Competitive benchmarking was benchmarking that compared a work process with that of the best competitor in the same market and revealed the performance measure levels to be surpassed. When conducting competitive benchmarking, it was important to note where competitor operations were not comparable, such as size differences. Competitive benchmarking was basically benchmarking against external direct product competitors (3).

Competitive benchmarking posed problems. Confidentiality of data was a major concern to foodservice directors (39). One disadvantage of competitive benchmarking was the difficulty of obtaining information about the competitors' operations because proprietary information may have been the basis of the organization's competitive advantage. Willingness to share information depended first on whether the information was proprietary or confidential. Secondly, it was based on a mutual desire to identify and understand industry best practices. The key was to stress the exchange of information, experiences, and judgment of best practices between professionals. The reason why competitors were often willing to participate in

benchmarking projects was because it could help identify their competitive position (8). Another reason was to receive something useful in return (reciprocal exchange of data) (2, 55). Ratio-type data and productivity rates were usually shared because they did not disclose absolute values. An example of a ratio in foodservice was the efficiency ratio of inventory turnover (cost of food consumed divided by inventory value) (56, 57) or operating ratio, such as food cost percentage (i.e., the cost of food divided by total sales) or labor cost percentage (i.e., the cost of labor divided by total sales) (38). Meals per labor hour (i.e., total meal equivalents / total labor hours) and cost per meal equivalent (i.e., total direct expenses / total meal equivalents) were examples of foodservice measures noted by Jackson (37). Data could also be expressed as a range, if particularly sensitive information. One solution was for information exchange to go through a third party that guaranteed confidentiality and anonymity (3). Patterson (7) identified an alternative type of benchmarking: shadow benchmarking, which was making competitor-to-competitor comparisons without the partner knowing it.

Comparisons with competitors could have uncovered practices not worthy of emulation; in this instance, they were unlikely to reveal practices to beat the competitors. As a result, some organizations chose functional benchmarking, rather than competitive benchmarking. Functional benchmarking frequently was the method of choice because people seemed to be more receptive to new ideas coming from outside their own industry (5).

Functional/generic benchmarking compared a work function to that of the functional leader in the same industry or cross-industry (16). Functional benchmarking

was done with functional competitors or industry leader firms, even if the industries themselves were dissimilar. The industry leaders needed to be driven by the same customer requirements for this type of benchmarking to be productive. Operations needed to have similar characteristics and be comparable. This way, it was easier to obtain interest for the benchmarking investigation because there was a natural inquisitiveness and interest in understanding practices elsewhere. Data were easier to obtain because there were fewer problems with confidentiality of information (3).

Juran (58) used an interesting anecdote to describe functional benchmarking. Early in the century, some German generals decided to follow an American circus to learn about deployment. In those days, the circus performed under tents, moved from city to city in a short period of time transporting all kinds of people, animals, and gear, and were very efficient at it. The military had the same problem, moving large numbers of horses, tents, ammunition, and food. The generals conducted functional benchmarking with the circus, an operation not related to the army.

Xerox used noncompetitive functional benchmarking with various companies to uncover several practices: electronic ordering between store and distribution center from a drug wholesaler; automatic, in-line weighing, bar-code labeling and package scanning from an electrical components manufacturer; and self-directed warehouse work teams from a photographic film manufacturer. Xerox's initial and quite valuable functional benchmarking experience was with L.L. Bean, Inc. for their warehouse and distribution system design (2, 5).

Generic benchmarking was another term used to describe functional benchmarking (2). Generic benchmarking involved benchmarking generic processes in dissimilar industries. Generic benchmarking was the most difficult type of benchmarking to gain acceptance but had the highest long-term pay off. It could uncover technology already proven and in use elsewhere. For example, foodservice operations could learn how to improve their billing systems by learning from retail companies or catalog companies (35).

The functional/generic processes needed to be clearly understood. This type of benchmarking required broad conceptualization (3). It typically showed breakthrough results (16). Camp (3) stated, when possible, benchmarking studies should be in the same industry. However, if the industry was defined too narrowly, technical breakthroughs, innovative practices, or proven technology were overlooked. Therefore, looking outside the industry had some advantages. For example, bar coding was first used in the grocery industry. It was later used in bar coding blood bank inventories in hospitals (3).

Using professional experience and knowledge of types of benchmarking, the researcher outlined examples related to foodservice. Table 2.2 illustrates examples of different types of benchmarking related to foodservice.

Table 2.2 Examples of types of benchmarking related to foodservice.

Type of Benchmarking	Example
Internal	Customer satisfaction with food temperatures compared with last year's rating; number of work injuries per hours worked compared with last month's record
Competitive	Hospital nutrition clinic appointment scheduling compared with other hospitals; school meals per labor hour compared with other schools
Functional/generic	Meal delivery to dormitory rooms by university foodservice compared with hotel room service; food storage handling operations in corrections compared with grocery industry

2.6.2.2 Criteria for Benchmarking Partner Identification

The decision-making process of partner selection included partner profiling. This process entailed three steps: pre-contact, first contact, and team review. Czarnecki (14) recommended a standardized format be used to collect information. He suggested some of the benchmarking partner screening criteria include: "size, organization type, best practices, geography, industry, number of employees, types of processes, regulatory factors, and awards" (14). Camp (3) stressed that there needed to be some level of comparability of primary business performance drivers. For example, measures of customer satisfaction or product characteristics should be comparable. Finnigan's (8) example of comparability was having organizational values the same. He stated additional considerations were: where the breakthroughs were, who was up-and-coming, who was willing to provide data, and comparing apples to apples. Keehley et al. (45) agreed that organizations should match themselves fairly

closely with partners in terms of similar mission, processes, size, and culture to improve the probability of successful importation of best practice. Benchmarking partners must also have had knowledge of their own processes and problems; otherwise comparisons would be meaningless (8).

Numerous organizational and operational characteristics affected data reported in foodservice benchmarking. These characteristics included: type of food production system (e.g. cook-chill, conventional, convenience foods, etc.); type and number of services (e.g. meal tray delivery, congregate feeding, hostess program, vending, hours of operation, coffee shop, etc.); facility (e.g. size, layout and design, satellite feeding, centralized vs. decentralized kitchen, ingredient room, bake shop, etc.); menu (e.g. restaurant style, select versus nonselect, modified diets, etc.); staffing and scheduling; equipment; use of disposables; housekeeping duties; and contract services (33).

A benchmarking partner decision matrix with potential companies given points for each criteria assisted in the decision process. Patterson (7) suggested the following criteria be used: quality orientation, service orientation, reputation, excellent cycle time, reliability, company size, and improvement in year-to-year sales growth and profitability. Keehley et al. (45) used eleven criteria for selecting partners for public sector benchmarking: demonstrated performance, work processes, mission, professional field, number of functions to be benchmarked, performance measures, type of government, demographics, geographic location, size of partner organization, and technology.

2.6.2.3 Sources of Benchmarking Partners

People conducting benchmarking realized it was possible to learn from all partners. A *best* partner was not essential. What was essential was finding an organization that was doing something significantly better. How were these partners found? Possible sources of partners were speakers at professional association conferences or organizations noted in published articles, customers, people in the department or other departments with similar functions, members of professional associations, trade journals, and business directories (8, 14). Those who faced similar challenges and problems were potential benchmarking partners. Partners were easy to find if not competitors, such as facilities located outside a geographic market or service area so as not to threaten the market share (19).

The collaborative group consisted of those organizations that conducted the project, volunteered their efforts, made a commitment of resources, and cooperatively completed the project. Gift and Mosel (15) recommended the collaborative approach for health care benchmarking. Patterson (7) classified this type of benchmarking as collaborative benchmarking: a limited exchange of information from a consortium of companies.

Another term for a collaborative group of benchmarking partners was benchmarking network or consortia. An example was a group of eighteen corporations in the telecommunications industry (e.g., AT&T, Bell Atlantic, MCI, GTE) that formed the Telecommunications Benchmarking Consortium. They conducted benchmarking activities in various generic areas, such as maintenance, service, and customer

satisfaction. Another type of network was a functional network consisting of functional specialists from different industries. An example of a functional network was the Financial Quality Network, consisting of financial specialists in companies such as DuPont, Xerox, Federal Express, Westinghouse, and Caterpillar (2).

Initial search for the best competitor or functional industry leader began with industry periodicals that gave annual reviews and identification of top firms. From there, additional information was gained from specific company annual reports, periodicals and other information sources, such as databases in the public domain and professional and trade associations, or functional experts in the field. Other sources were: consultants, vendors, referrals, client contacts, annual conferences, seminars, and training programs (3).

2.7 Data Collection and Analysis Phase of Benchmarking Process

The data collection and analysis phase of benchmarking (the second phase) included collection of data on the topic selected following established process guidelines (2, 15, 16). The analysis portion of this phase included understanding internal performance and current process practices, both strengths and weaknesses, and comparing with those of the partners. A determination was made about the current performance "gaps," such as what the gap was and why it existed (2, 3, 12, 14, 17). A benchmarking gap was "the difference in performance, identified through a comparison, between the benchmark of a particular activity and other companies; the leadership advantage of the benchmark organization over other organizations" (12). This phase of

benchmarking also included identifying best performers, and determining whether best practices could be incorporated or adapted for implementation (3, 12, 14).

2.7.1 Data Collection

In the data collection and analysis phase of the benchmarking process, data collection involved a number of activities. Camp and Tweet (16) described eight activities: prepare a list of questions; answer the questions for your own organization; search for data; select processes and develop guidelines; determine who will gather the data; review legal, ethical and protocol requirements; and collect the data following process guidelines. One approach to data-gathering was to progressively start with a search for internal information first, then external information in the public domain, and finally performing original research (3).

One fundamental rule of benchmarking was to examine and understand processes or products within the organization before collecting data and attempting to understand those processes or products of other organizations. There were three reasons for this. First, this helped to identify the extent of the improvement opportunities. It aided in accurately calculating the gap between the organization and best practice organizations in the area being benchmarked. Second, internal benchmarking opportunities were discovered within the organization. Third, benchmarking partners asked about the organization's activities and the director needed to be prepared to respond (2).

One of the steps in data collection was data translation. Data needed to be translated into a common format so they could be compared internally or externally. Performance measures needed to have detailed definitions to be well-understood. For example, if the principle measure of performance was payroll statistics, the data needed to be consistent about inclusion or exclusion of certain characteristics, such as fringe benefits, and that geographic wage differences were factored in (17). Data could have been distorted for a number of reasons: economic differences (i.e. wage differences in different parts of the country), regulatory differences (i.e. affects amount of work required), holidays (i.e. overtime paid or unpaid), and benefits differences (i.e. nonmonetary compensation, insurance, etc.) (14). Challenges of data collection included obtaining data that were comparable to other organizations and generating valid conclusions from the data results. In foodservice, two terms that frequently had varying definitions among operators and databases were: meal and revenue (33, 39). Examples of variance in definitions of meal data in foodservice were: some included nourishments in plated patient meal costs and some did not include nourishments; some counted charge sales as part of their revenue and some did not; some included double portions in meal counts and some did not (40). One way to overcome inconsistencies in definitions of the data was to define specific process boundaries before data was collected. Also, validity was improved if the team considered results of multiple measures of a process (18). Apples had to be compared to apples (8, 59). As stated by Keehley et al., "The closer you can approximate apples-to-apples, the more secure and valid your findings will be" (45).

Most data collection occurred through one of the following five methods: telephone interviews, personal meetings/site visits, surveys, publications/media, and/or archival research (2, 8). Method selection depended on the type of data needed, proposed uses of the information, amount of detail needed, quality and quantity of data requirements, accuracy of the data, experience with the different methods, comparability of the data, personal and organizational preferences for certain methods, time constraints, and resource constraints (2, 3, 14, 17).

Time and resource constraints were significant factors. When time was limited, the number of sources that could be investigated was limited as well. Some data collection methods were more time consuming than others. For example, interviews in person took more time than telephone interviews. Resource constraints had an affect on the data collection method. For example, if money was limited, the number of distant site visits had to be limited or deleted due to travel costs (2).

Another factor was experience with various data collection methods. Frequently, people used the method most familiar and comfortable to them. For example, if benchmarking team members had positive experiences with telephone interviewing, they would most likely choose that method over in-person interviews (2). Companies with an internal/external data collection philosophy, usually based the philosophy on successful experiences. For example, some companies had a strong preference for mail surveys or telephone interviews (2).

Three types of data sources were: internal, external or public domain, and original research. Internal information came from product analysis of competing

products, company sources, and piggybacking studies. For example, product analysis included activities, such as: disassembling and analyzing for features, function and material; observing the method of shipment to obtain the product; or observing service practices and customer assistance information in the service documents. Company sources included company employees who by their job responsibility gathered external information (e.g. market researchers) or employees who were functional experts that had seen or heard information of interest. Naturally, the information needed to be accurate to be useful. It usually was cost-effective to piggyback on existing or proposed studies, use existing data of studies conducted by others, or use a benchmarking network. A benchmarking network was an organized set of individuals conducting benchmarking investigations (3). Internal information came from an organization's own quality improvement studies, financial management information systems, budget reports, productivity reports, payroll reports, or other reliable records of performance (19). According to a study published by Sawyer and Richards in 1994 (34), the most common type of data used for benchmarking in hospital foodservice operations was internal data or historical data from departmental records.

External information primarily came from comparative databases, and secondarily from studies, publications, research, and reports. Public domain information was a type of external information, such as found in periodicals, annual reports, seminar speeches, conference proceedings, data from professional and trade associations, or through library research (3). If benchmarking partners were selected before information was compared, the best performers could not be selected. If a

clearinghouse approach of comparative information (i.e., external information) was used, it was easier to locate the greatest opportunities and best partners (19). Before gathering external information, it was important to think through why the information was being sought, why select this data as opposed to other data, and the priority and sensitivity of the data desired (3).

Some databases were run by professional and trade associations or consulting firms. Most databases were oriented around data, not best practices, so there were limitations. In evaluating databases, the following information was to be obtained: the focus, number of elements, number of contributors to the database, applicability of the elements in the database to the organization's needs, method to contact a partner for more information, and method of identifying best practice organizations. Databases were limited in several ways: the focus and number of elements that were collected, and resources available to verify and standardize the input (14). Examples in foodservice of professional associations, suppliers or consulting firms actively involved in studying benchmarking or maintaining databases were: Society for Foodservice Management (SFM); American School Food Service Association (ASFSA); National Association for College and University Food Service (NACUFS); Society for Healthcare Foodservice Management (HFM); Dietary Products (a national foodservice distributor); Food and Nutrition Management, Inc. (a consulting firm that markets a benchmarking system called FACTS, Food Accounting Cost and Trend Statistics); Mecon-Peer$_x$ of MECON, Inc.; and Hospital Food and Nutrition Focus (an ASPEN professional newsletter) (33, 39).

Original research was conducted when information could not be obtained through internal or external/public domain sources. It included obtaining benchmarking information through mail administered questionnaires, telephone administered interviews, direct-site visits, networks, and focus groups. The site visit was the most credible, revealing, and interesting but costly of all the benchmarking data collection methods (3).

2.7.2 Data Analysis

The analysis portion of the data collection and analysis phase included understanding internal performance and current process practices, both strengths and weaknesses, and comparing with those of benchmarking partners. A determination was made about current performance "gaps," as well as future performance levels. In gap analysis, the focus was on process. Analysis also included determining whether best practices could be incorporated or adapted for implementation (3). The benchmarking team looked for redundant or unnecessary steps that could be eliminated and inconsistent practices that could cause problems. At the same time, the benchmarking team determined if customers had conflicting or unrealistic expectations. For example, were there redundant steps in the process that could be eliminated? Were inconsistent practices causing confusion or delays? Were there conflicting customer expectations? Factors that drove the differences needed to be identified. These factors could be human (e.g., interdepartmental relationships), logistical (e.g., facility design, location of products), or service (e.g., supplier responsiveness) factors (17).

When evaluating the data, the leader organization (best practice) was identified. The accuracy of this identification was dependent on the accuracy of the data. Some data could have been in error and have resulted in the wrong partner being identified as having the best practice. Some benchmarking partners held review meetings to check the data side-by-side, with organization names masked, to ensure data were collected consistently and accurately. Another way to validate data was to identify outliers in a set of data with a "normal" distribution. If abnormal data were found, it was better to seek additional information from the partner before eliminating the data (14). Data integrity and accuracy impacted on the credibility of the benchmarking effort.

There were several activities when analyzing the data. Spendolini (2) recommended identifying patterns or trends in the data and checking for misinformation, because information could have been incorrect due to misinterpretation, improper recording, purposeful misrepresentation, and/or errors in the data. He recommended identifying omissions in the data and out-of-place information, possibly the result of a misunderstanding or discrepancy of opinion or fact on the part of the benchmarking partner. According to Spendolini,

> The data-evaluation process involves collecting the facts and eliminating unreliable, inaccurate, false, and irrelevant data. You organize and assemble the useful data and look for patterns that reveal trends and business developments. Then you draw inferences about the actions, strategies, plans, and results of other organizations. Finally, you are ready to draw conclusions based on the information you have collected. (2)

Accuracy of the information was an important issue in the data collection and analysis phase. However, Finnigan (8) noted that attacking the accuracy of the

mathematics was to be avoided. It was common for people to look for cracks in a study's armor and challenge anyone else's numbers. According to the author, the purpose of benchmarking was not statistical perfection; it was to identify best practices and why they were best practices. In other words, "Guard against being overly precise" (8).

In analyzing the data, Camp (3) described three types of performance gaps: negative, parity, and positive. Negative gaps were those gaps created when external practices were superior. A negative gap signaled the need for a major effort "to change internal practices and methods to meet or exceed the external findings" (3). Negative gaps usually gained most of the attention. Negative gaps were when products, practices or services were at a level below the benchmarking partners (2, 8). The reason for this negative gap needed to be investigated. Finnigan cited a variety of reasons for one organization to have performance measures better than another organization: "business practices, work processes, performance standards, local environment, local economics, and the organization's culture" (8). Operations at parity were when there were no significant differences. In other words, operations being compared had similar performance measure outcomes. However, practices and comparative methods changed, so parity was generally short-lived. Therefore, benchmarking activities needed to be ongoing and continually directed toward process improvements that led to superiority. A positive gap was identified when internal practices were superior to benchmarking partners (3, 8). Emphasizing superior

performance, when present, helped underwrite the search for ways to close the negative gaps when they existed (3).

2.8 Action Phase of Benchmarking Process

The action phase was when benchmarking was actualized as a change in a management process and improvement occurred (12). According to Keehley and MacBride (48), after conducting the gap analysis, the organization imported practices to close gaps by using a three-part process: borrow - adapt - adopt. In other words, the organization chose the process(es), allowed for mutations to fit its structure, and finally implemented the process (48). Keehley et al. stated, "Importing a best practice discovered through benchmarking is similar to transplanting an organ. Just as an organ can be rejected by the host for a variety of causes, a best practice can fail to import for many reasons" (45). In an organ transplant, there were four types of concerns: (1) transplant donor and recipient were matched; (2) organ recipient was prepared to receive the organ by lowering the defense mechanisms; (3) donor organ was prepared for transplant; and (4) after surgery, the recipient was continuously monitored and supported to ensure continued adaptation (45). In benchmarking, the best practice was identified and adapted or adopted to fit the needs of the receiving organization. The organization was prepared to make the changes. The best practice organization was willing to share the information on their processes or practices. Finally, the receiving organization monitored the implementation process and results.

In the final phase of the benchmarking process, according to Finnigan (8), there were four objectives. These objectives were: communicating the benchmarking findings, integrating the study results into business operations, taking action to close the gaps, and monitoring the implementation of the plan. An action plan was developed for incorporating findings by changing the work processes (2, 3). The benchmarking team communicated the results of the analysis to administrators or other appropriate personnel, such as department employees and supervisors. Ultimately the hope was to gain acceptance of the team's recommendations from stakeholders. Then functional goals were established; these were operational targets for change. This was accomplished by identifying current goals, and then determining changes to be made, gaining commitment for these changes, and revising the goals. Following this, the action plan was implemented and results monitored. Ultimately benchmarking was institutionalized and best industry practices incorporated in all business processes, ensuring the organization's superiority and leadership position (3, 16).

Three elements hindered the implementation process: resistance to change, fear of the unknown, and failure to receive senior level management support. A number of issues considered when deciding what to implement were: what best practices resulted in improvement; expectations of people affected by new practice; current and target measures of the practice; activities, cost and time to implement the new practice; and anticipated results of best practice implementation (18).

The benchmarking findings were periodically recalibrated because practices continually changed. Recalibration was performed by reapplying the benchmarking

process (3). Recalibration included: target studies to fill in known information gaps, complete reassessment of all critical benchmark indicator targets and best practice findings, a new productive direction for investigation, or an annual recalibration of critical benchmarks (2, 3, 12).

In summary, this research studied critical elements in each of the three phases of benchmarking process: the planning phase (beginning phase), data collection and analysis phase, and action phase. Because planning provided the essential framework for benchmarking process success, this research identified important factors related to the planning phase from a foodservice directors' perspective: benchmarking project topic and partner selection, and performance measures. The performance measure areas selected for study were: operational, financial, customer services, and human resources. The research determined usage of performance measures among foodservice directors in health care, school, college/university, and correctional foodservice operations. The types of benchmarking examined were internal, competitive, and functional/generic. For the purpose of data collection in this study, competitive benchmarking was also called external benchmarking for ease of understanding by individuals unfamiliar with this terminology. Data collection methods were studied, along with important activities in the data collection and analysis phase and the action phase.

3. METHODS

The purpose of this research was to explore the subject and use of benchmarking in foodservice operations. The first rationale for this research was to understand benchmarking in foodservice because it could be a useful management tool for foodservice directors to use in leading their operations to achieve performance improvement. Literature in the foodservice industry was lacking in the area of benchmarking research. The second basis for this research was from personal observation in the workplace. Questions posed by colleagues indicated they wanted to know how to conduct a benchmarking project starting at the beginning. This research explored current benchmarking practices, activities, attitudes, and beliefs of foodservice directors.

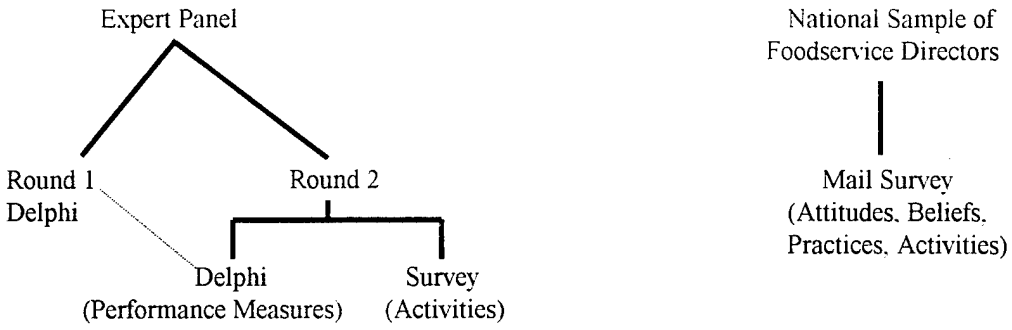
There were two expected outcomes of the research. One of the expected outcomes was the identification of foodservice directors' needs for knowledge and skills about benchmarking, as well as their desired source(s) to gain information about benchmarking. The results of this research could help focus future benchmarking education and training efforts in the field of foodservice management. Another expected outcome was to generate a practical foodservice benchmarking guide (such as a checklist or table) that would identify activities important to the benchmarking process in order to assist foodservice directors in conducting benchmarking in the workplace.

This research, conducted in April - September 1997, involved two parts: (1) the utilization of an expert panel and (2) a national sample of foodservice directors. The expert panelists were individuals with knowledge and/or experience in the different types of benchmarking (internal, external, and functional/generic) and different categories of foodservice operations (health care, school, college/university, and correctional). The expert panel was involved in two activities: the use of the Delphi technique and a mail survey. The Delphi technique (60, 61) was used to identify performance measures used in foodservice benchmarking (round one) and rate the importance (round two). This information was then used to develop a national survey to determine usage of performance measures. The expert panel survey (n = 11) sought information about activities foodservice directors used in three phases of benchmarking: planning, data collection and analysis, and action. This information was used to develop a foodservice benchmarking guide (Appendix A) for foodservice directors on the benchmarking process. A national randomly selected sample of foodservice directors (n = 600) was sent a mail survey instrument intended to identify current benchmarking attitudes, beliefs, practices, and activities. See Figure 3.1 for schematic of research.

3.1 Expert Panel Questionnaires

Expert panel questionnaires consisted of research instruments for two rounds. Round one consisted of a Delphi questionnaire; it was used to identify performance

Figure 3.1 Benchmarking in foodservice operations schematic of research methods.



measures important in foodservice operations. This information about performance measures was used on the national survey. Round two included the final round of the Delphi and a survey. The expert panel survey sought information about activities foodservice directors used in three phases of benchmarking: planning, data collection and analysis, and action. This information included benchmarking project topic and benchmarking partner selection criteria, data collection methods, data collection and analysis phase activities, and action phase activities. Results of this survey were used in the development of a foodservice benchmarking guide (Appendix A) for foodservice directors on the benchmarking process. The expert panel portion of the research was conducted April - June 1997.

3.1.1 Expert Panel Population Description

The expert panelists (n = 11) were individuals with knowledge and/or experience in the different types of benchmarking (internal, external, and

functional/generic) and the different categories of foodservice operations (health care, school, college/university, and correctional). Potential candidates were obtained from personal knowledge of experts in foodservice management and/or foodservice benchmarking and by contacting professional associations for names of benchmarking experts. Initially, 19 potential expert panelists were mailed round one of the Delphi technique. Eleven expert panelists agreed to participate in the research and completed round one and two.

Demographic information was obtained about the 11 expert panelists. The category of foodservice where they currently worked was: one in correctional; five in health care; one in school; one in a professional association; one in both health care and business and industry; one in both health care and college/university; and one was a consultant to correctional, schools, and commercial restaurants. Nine panelists had more than 15 years experience and two had 6-10 years experience in foodservice management. Years of experience with foodservice benchmarking varied widely among the panelists: four with more than 10 years, one with 4-6 years, four with 1-3 years, and two with less than 1 year. Types of foodservice benchmarking activities with which they had knowledge and/or experience were: two in correctional, nine in health care, three in school, two in college/university, one in business and industry, and one in commercial.

3.1.2 Expert Panel Research Instruments

The group consensus Delphi technique (60, 61, 62) utilized a panel of experts who answered questions separately from each other through the mail on their opinion about subjects for which little data was available. Their judgments were collated and circulated to panel members to gain consensus and additional information. The Delphi technique was used in this qualitative research. It produced group consensus without face-to-face disagreements. Linstone (61) cited numerous justifications of the use and application of the conventional Delphi technique.

This conventional Delphi consisted of two distinct rounds. The first round Delphi questionnaire (Appendix B) explored the performance measures used by foodservice directors when benchmarking. This exploration was in the form of open-ended questions. Expert panelists were asked to record the performance measures that were or could be used in the process of benchmarking by the foodservice director. They were encouraged to add comments. If the performance measure was known to have different definitions, the panelists were asked to record the definition or formula used for that performance measure. Panelists were asked to record the performance measures for each of four areas: operational, financial, customer satisfaction, and employee performance. These areas were derived from areas suggested in the literature to be key business areas for measurement (51, 52). Each panelist contributed their opinion on information pertinent to the issue. Upon receipt of the results of round one, two researchers independently collated the results and confirmed the list of performance measures to be used for the Delphi final round. Activities used to

minimize problems of disagreements, misunderstanding, and poor summarization with the Delphi technique were: when synthesizing respondent's suggestions, was alert to ambivalent wording; when editing responses round to round, ensured the meaning stayed the same; made sure each type of expert was represented; and used two professionals when abstracting the comments (60).

In round two, the names of the four areas of performance measures were: operational, financial, customer services, and human resources. The names of two areas, customer services (named customer satisfaction in round one) and human resources (named employee performance in round one) were changed from the original names used in round one because the new names better represented the performance measures reported by the expert panelists for those areas. Due to the lengthy list of 89 performance measures generated in round one, the list was consolidated by using generic terminology for many of the performance measures. Examples of the generic performance measures noted on the round two questionnaire were derived from the expert panelists' responses in round one. The round two (final round) expert panel questionnaire (Appendix C) was circulated to the panelists for reevaluation and further comment to ultimately gain a consensus on the information and gather additional information on the importance of the performance measures listed. The ordered answer choices were: not important, somewhat important, very important, and extremely important. Respondents were also given the option to select "N/O" for "No Opinion" or "N/A" for "Not Applicable" as they deemed appropriate. Respondents were asked to rate the importance of the measure in performing benchmarking

activities. Final results of the performance measures Delphi portion of the questionnaire were analyzed and used as the performance measures identified on the national survey.

In addition to the Delphi portion of the questionnaire during round two, the expert panelists were asked to answer partially closed-ended questions regarding importance of activities which could be included in the process of benchmarking in foodservice operations (Appendix C). Most of the established responses were obtained from the literature noted. The survey instrument addressed the following quantitative data:

- Benchmarking topic selection criteria (2, 4, 7, 8, 11, 14, 15, 18, 45)
- Benchmarking partner characteristics (3, 7, 8, 14, 15, 45)
- Usage of methods of data collection (2, 3, 8, 17)
- Data collection and analysis phase activities (2, 3, 8, 14, 17)
- Action phase activities (2, 3, 8, 12, 16, 45, 48).

Expert panelists were given the opportunity to add any items not listed. Respondents were asked to rate the degree of importance of benchmarking topic selection criteria, benchmarking partner characteristics, data collection and analysis phase activities, and action phase activities. The ordered answer choices for degree of importance were: not at all important, not too important, moderately important, and very important. In addition, respondents were asked to identify whether or not they would use identified methods of data collection. The ordered answer choices on usage of data collection methods were: not use, may use, and definitely use. Final results of this expert panel

survey were analyzed and used in the development of a foodservice benchmarking guide (Appendix A) for foodservice directors' use when conducting benchmarking.

The last section of the survey instrument dealt with the following expert panelist demographic and other information:

- Estimate of the percentage of foodservice directors in identified categories that have experience or knowledge about any benchmarking
- Types of foodservice benchmarking activities with which they have knowledge and/or experience
- Category of foodservice where currently work
- Job title
- Years of experience in foodservice management
- Years of experience with foodservice benchmarking.

In addition to the expert panelist questionnaires, cover letters (Appendix D and E) were included to describe the purpose of the research, directions for completing the questionnaires and the importance of the research. The questionnaires were coded for follow-up purposes only and participants were assured confidentiality. Survey construction methods of Salant and Dillman (63) were used. Prior to use, expert panel questionnaires were reviewed and approved for exemption under the guidelines of Oregon State University's Committee for the Protection of Human Subjects and the U.S. Department of Health and Human Services.

Both the Delphi technique questionnaires and expert panel survey were pilot tested one week prior to the first mailing to the expert panelists. Pilot testing on both

the round one and round two questionnaires was accomplished by seven current or former foodservice directors. Individuals pilot testing the questionnaires were asked to respond to feedback questions on a pilot testing critique form (Appendix F), and record comments as desired on the questionnaires and cover letters. Revisions made were based on suggestions and comments from those reviewing the questionnaires. Revisions included: reorganizing the two questionnaires, reformatting, adding some definitions, and rewording and simplifying the questionnaires and cover letters. The revised round two questionnaire was pilot tested prior to its mailing; it was reviewed and pretested by four experienced foodservice managers for clarity, ease of use, validity and reliability.

3.1.3 Expert Panel Research Instrument Administration

Two separate mailings were conducted for the expert panel part of the research. The mailings were as follows:

Mailing	Number	Date Mailed
1. Cover letter, agreement to participate, and round one Delphi questionnaire (Appendix D and Appendix B)	19	Apr. 11, 1997
2. Cover letter and final round expert panel questionnaire (Appendix E and Appendix C)	11	May 29, 1997

3.1.4 Identification of Variables Used in the Expert Panel Research

Based on the limited information about benchmarking in foodservice available in the current literature and the researcher's need for additional information on demographics, the following variables were selected to study:

(1) performance measures (2, 8, 12, 14, 15, 34, 37, 38, 40, 45, 51, 52, 56, 59)

(2) benchmarking project topic selection criteria (2, 4, 7, 8, 11, 14, 15, 18, 45)

(3) benchmarking partner characteristics (3, 7, 8, 14, 15, 45)

(4) methods of data collection (2, 3, 8, 17)

(5) data collection and analysis phase activities (2, 3, 8, 14, 17)

(6) action phase activities (2, 3, 8, 12, 16, 45, 48)

(7) estimate of the percentage of foodservice directors in identified categories that have experience or knowledge about any benchmarking

(8) types of foodservice benchmarking activities with which the panelists have knowledge and/or experience

(9) category of foodservice where currently work

(10) job title

(11) years of experience in foodservice management

(12) years of experience with foodservice benchmarking.

3.1.5 Statistical Analysis

The purpose of the expert panel part of this research was to identify performance measures that were or could be used in the process of benchmarking by foodservice directors and to identify importance of activities in the process of conducting foodservice benchmarking. Descriptive analysis included frequency and percentage to describe the data. This data was manually tabulated by the researcher.

3.2 Foodservice Directors Survey

The purpose of the survey was to gather information about foodservice directors' benchmarking activities and needs for additional knowledge. Also information on demographic data was collected. The population, specific research questions, the instrument utilized for data collection, data collection techniques, and the process utilized in the treatment of data were documented.

This part of the research involved descriptive and inferential statistics to provide baseline data about foodservice directors' beliefs, attitudes, practices, and activities about benchmarking. The instrument was a mail survey. Alternatives to a mail survey that were not used were telephone surveys or personal interviews. Time and cost were limiting factors of these alternatives.

3.2.1 Population Description

The survey instrument was mailed to 150 health care, 150 school, 150 college/university, and 150 correctional foodservice directors nationwide. A total of 600 surveys were mailed. The randomly selected sample was obtained from the mailing list of subscribers of a trade journal for foodservice directors. According to the published census of this trade journal, some of the demographic information (64) about foodservice directors who subscribe to this publication was summarized in Table 3.1.

Table 3.1 1997 Demographic information about selected foodservice directors.[a]

Information		Hospitals	Schools	Colleges	Prisons
Education	College Grad	76%	63%	75%	85%
	Advanced Degree	27%	29%	28%	15%
Gender	Male	39%	29%	61%	80%
	Female	61%	71%	39%	20%
Years in foodservice		22.0	22.3	20.5	25.3
Years in position		7.8	9.9	7.0	7.7

[a] Selected foodservice directors = Those that subscribed to the referenced trade journal who responded to a census survey
Extracted from: Anonymous. Special report: 1997 compensation operations study. *FoodService Dir.* 1997; 10(12):91, 94. (64)

Using information from this trade journal *(FoodService Director)* census (64) and personal knowledge of the typical background of foodservice directors, several assumptions were made about the foodservice director population. Foodservice

directors from different types of operations have some similarities and differences. The majority of health care foodservice directors are registered dietitians and members of The American Dietetic Association and have a minimum of a bachelor's degree in dietetics, nutrition, food science, or food systems management. Foodservice directors in the other types of operations may or may not be registered dietitians. The majority of the foodservice directors in schools, universities and colleges, and correctional institutions have a minimum of a bachelor's degree from varying academic programs, such as business, hospitality, hotel or restaurant management, dietetics, nutrition, or food systems management. The majority of individuals holding the position of foodservice director have been in their position a minimum of five years. The trade journal used for the mailing list had published articles on benchmarking as far back as 1993 (65, 66), as well as an article during one of the months of this survey's administration (67). In addition, another foodservice trade journal, *Food Management*, published a major article (39) on foodservice benchmarking during one of the months of the survey's administration. Based on these assumptions and the nature of the journal's past content, the expectation was that foodservice directors with this education and experience when included in the research would have knowledge of or experience with foodservice benchmarking.

3.2.2 National Survey Questionnaire

The survey questionnaire (Appendix G) was developed in collaboration with the Survey Research Center of Oregon State University. The survey consisted of two

areas that identified (1) attitudes, beliefs, and practices of foodservice directors, and (2) demographic data about the respondent. Most of the questions were in a closed-ended form with established responses. Five of the questions were partially closed-ended to allow foodservice directors to contribute additional pertinent information.

The survey questions were developed based on literature review, professional knowledge, and experience of the researcher. Clarity and ease of use of the survey questionnaire was assessed through a pilot test by fourteen foodservice management and other professionals: eight current or former foodservice directors, three survey experts, and three foodservice management graduate students. Individuals pilot testing the questionnaires were asked to respond to feedback questions on a pilot testing critique form (Appendix H), and record comments as desired on the questionnaire and cover letter. Revisions made to the survey were based on suggestions and comments from those pilot testing the questionnaire. Revisions included: reorganizing the questionnaire, reformatting, adding some definitions, adding and deleting some responses, shortening the cover letter and survey, and rewording and simplifying the questionnaire and cover letter. High response rate was maximized by using Salant and Dillman's mail survey method (63).

The survey questionnaire addressed the following quantitative data regarding foodservice benchmarking and other information:

- Usage of three types of benchmarking (internal, external, and functional/generic)
- Importance of benchmarking in performing job

- Usage of benchmarking partners
- Usage of types of benchmarking partners
- Usage of performance measures
- Experience with benchmarking outcomes
- Reasons respondent was delayed or prevented from initiating benchmarking activities
- Perceived knowledge level about benchmarking
- Need to develop knowledge and skills about benchmarking
- Level of need for gaining knowledge and skills about benchmarking
- Desired sources to gain knowledge and skills about benchmarking.

One section of the questionnaire dealt with usage of foodservice performance measures in four areas: operational, financial, customer services, and human resources. These measures were derived from the expert panel Delphi process. During round one of the Delphi technique, the expert panelists identified the performance measures used in foodservice operations. The results were consolidated and performance measures grouped together to categorize like items for round two of the Delphi process and the national survey. This was done by the researcher and another foodservice management expert independently tabulating the results by compiling and recording the complete list of performance measures. Afterwards, they each independently categorized like items. From this, the final list of performance measures was selected by the researchers, using generic terminology which best reflected the primary performance measures, while reducing duplications. When generic terminology was used to identify a performance

measure, multiple examples were provided on the questionnaire to exemplify and describe the performance measure. These examples were derived from the original, complete list of performance measures (Appendix Table D) reported by expert panelists during round one of the Delphi process.

During round two, the expert panelists rated the importance of the performance measures. If three or more experts rated a performance measure "not important," that performance measure was not included in the national survey. The specific performance measure fitting this criteria and therefore not included in the national survey was: *percentage stop time of meal assembly line (trayline).* An exception to this rule was when it was apparent that the performance measure was important to one category of foodservice operation, but not to other categories. For example, the performance measure included in the national survey despite a low importance rating was *percentage product purchased from sources.* Also, if a performance measure was added during round two by an expert panelist, it was included in the national survey. Two examples of this were: *supply cost percentage* and *Equal Employment Opportunity (EEO) or union complaints per average number of employees.*

The last section of the survey instrument dealt with the following demographic information about the respondent. The opportunity for additional comments was provided. Questions were:

- Category of foodservice where the respondent currently works
- Job title
- Number of years of work experience in foodservice management

The survey questionnaire, cover letters, advanced notice postcard, and postcard follow-up communication (Appendices G, I, J, K, L) utilized the survey construction methods of Salant and Dillman (63). The cover letters were used to briefly describe the purpose of the research, directions for completing the questionnaire, and the importance of the research. The questionnaire was coded for follow-up purposes only; participants were assured confidentiality.

3.2.3 National Survey Administration

Four separate mailings were conducted in an effort to achieve the greatest possible return of surveys. The mailings and follow-up techniques were as follows:

Mailing	Number	Date Mailed
1. Advance notice postcard (Appendix I)	600	June 24, 1997
2. Original cover letter and questionnaire (Appendix J and Appendix G)	600	July 1, 1997
3. Postcard follow-up (non-respondents only) (Appendix K)	508	July 14, 1997
4. Second cover letter and questionnaire (non-respondents only) (Appendix L and Appendix G)	424	August 11, 1997

The first mailing consisted of the advance notice postcard to all 600 participants. One week after the first mailing, the questionnaire and original cover letter to all 600 participants were mailed. This mailing also included a stamped preaddressed return envelope and a decorative bookmark. The bookmark was included to express appreciation for the participants' time and effort, and served as an incentive to respond to the survey. According to Mangione, "Other than follow-up reminders, there is no technique more likely to improve your response rate than incentives" (68). Three weeks after the first mailing, a reminder postcard was sent to the 508 non-respondents. To achieve the highest possible return rate, seven weeks after the initial mailing, a revised cover letter and the original questionnaire were mailed to the 424 non-respondents. The administration of the questionnaire was based on the basic survey procedures of four separate mailings recommended by Salant and Dillman (63). Times were extended from their basic survey procedures due to the survey instrument being administered during the summer months, a time when some of the participants may not be at work or may be on vacation, particularly the college/university and school foodservice directors.

3.2.4 Identification of Variables Used in the National Survey

Based on the information on benchmarking available in the current literature and researcher's need for demographic information, the following variables and demographic information were selected to study:

(1) Usage of type of benchmarking (2, 3, 5, 12, 16)

(2) Foodservice director's perceived importance of benchmarking

(3) Usage of benchmarking partner (2, 3, 5, 7, 8, 12, 14, 16)

(4) Type of benchmarking partner (2, 3, 14, 15)

(5) Performance measures by usage (2, 8, 12, 14, 15, 34, 37, 38, 40, 51, 52, 56, 59)

(6) Experience with benchmarking outcomes (2, 3, 8, 12, 14, 15, 24)

(7) Reasons why respondent was delayed or prevented from conducting benchmarking (11, 14, 22, 23, 46, 47)

(8) Perceived knowledge about benchmarking

(9) Need for knowledge and skills about benchmarking

(10) Areas where there is a need to develop knowledge and skills about benchmarking

(11) Desired sources to gain knowledge and skills about benchmarking

(12) Category of foodservice operation

(13) Job title

(14) Years of work experience in foodservice management.

3.2.5 Statement of Hypotheses and Statistical Analysis

Factors that were perceived as having an impact on or affecting foodservice benchmarking were selected to be used as hypotheses. The null hypotheses of this research were:

$H_0$1: Usage of types of benchmarking was not associated with foodservice director's: (1) perceived knowledge about benchmarking, (2) perceived importance of benchmarking, and (3) outcomes.

$H_0$2: Category of foodservice operation was not associated with: (1) benchmarking performance measures, (2) type of benchmarking partner, (3) usage of types of benchmarking

$H_0$3: Foodservice director's knowledge about benchmarking was not associated with perceived importance of benchmarking.

Descriptive statistics were used, such as means, standard deviations, and frequency distributions. The associations between variables were analyzed using a Chi Squared test statistic known as the Likelihood Ratio statistic. All tests were done using the computerized statistical package, Applied Statistics and SAS Programming Language, SAS, version 6.12, 1996, SAS Institute, Cary, N.C.

Validity of the survey was assessed. Validity of the survey instrument refers to its ability to measure what it was intended to measure. Question validity was approached using face validity. Face validity was "defined by researcher judgment and is an assessment of whether the question truly measures a behavior, attitude, or opinion" (69). Face validity was determined by the researcher and pilot test participants. Reliability refers to the consistency of the results; reliability was determined by pilot test participants.

4. RESULTS AND DISCUSSION

The purpose of this research was to explore the subject and use of benchmarking in foodservice operations. The first rationale for this research was to understand benchmarking in foodservice because it could be a useful management tool for foodservice directors to use in leading their operations to achieve performance improvement. This research explored current benchmarking practices, activities, attitudes, and beliefs of foodservice directors. One of the expected outcomes was the identification of foodservice directors' needs for knowledge and skills about benchmarking, as well as their desired source(s) to gain information about benchmarking. The results of this research could help focus future benchmarking education and training efforts in the field of foodservice management. Another expected outcome was to generate a practical foodservice benchmarking guide that would describe activities important to the benchmarking process in order to assist foodservice directors in conducting benchmarking in the workplace.

This research involved two parts: (1) the utilization of an expert panel and (2) a national sample of foodservice directors. The expert panel was involved in two activities: the use of the Delphi technique and a mail survey. The Delphi technique (60, 61) was used to identify performance measures used in foodservice benchmarking (round one) and rate the importance (round two). This information was then used to develop a national survey to determine usage of performance measures. The expert panel survey sought information about activities foodservice directors used in three

phases of benchmarking: planning, data collection and analysis, and action. This information was used to develop a foodservice benchmarking guide (Appendix A) for foodservice directors on the benchmarking process. A national randomly selected sample of foodservice directors was sent a mail survey instrument intended to identify current benchmarking attitudes, beliefs, practices, and activities.

4.1 Results - Expert Panel Questionnaires

The expert panel was involved in two tasks: the use of a two round Delphi technique and a mail survey. The Delphi technique was used to identify and rate importance of performance measures used in foodservice benchmarking. The survey identified activities foodservice directors used in the three phases of benchmarking.

Nineteen surveys were initially mailed to experts for round one of the Delphi technique, resulting in eleven completed, returned, and used in the research. The survey return rate was 58% for round one. The round two questionnaire (Delphi round two and survey) was mailed to all eleven of the round one respondents. All eleven expert panelists completed and returned the questionnaire. The round two questionnaire return rate was 100%.

4.1.1 Expert Panel - Round One of Delphi Technique

The first round of the Delphi technique explored performance measures used by foodservice directors when benchmarking. Expert panelists were asked what they

believed were the performance measures that were or could be used in the process of benchmarking by the foodservice director. They were to record the performance measures for four areas: operational, financial, customer satisfaction, and employee performance. A total of 89 different performance measures were identified by the expert panelists. The number of different performance measures per area recorded by expert panelists were: 23 operational, 35 financial, 11 customer satisfaction, and 20 employee performance. Panelists also recorded definitions and other comments pertaining to the performance measures. Appendix Table D exhibits the performance measures and comments recorded by the expert panelists.

4.1.2 Expert Panel - Round Two of Delphi Technique

The 89 performance measures from round one were consolidated by the researcher and a local foodservice management and benchmarking expert and recirculated to panelists to gain consensus and rate importance of 7 operational, 5 financial, 4 customer services, and 3 human resources performance measures with examples for each. For ease of reading this manuscript, the performance measure area is in bold type and the names of the performance measures are italicized. The tables in this section give the complete descriptive evidence. Panelists were also given the opportunity during round two to add any performance measures that were missing. Four measures were added by expert panelists: *supply cost percentage* and *percent profit* in the financial area, and *employee satisfaction* and *union or Equal Employment Opportunity (EEO) complaints per employee* in the human resources area.

Results of 11 expert panelists' ratings on the importance of performance measures are summarized in Table 4.1. The first area of performance measures was **operational**. Eighty-two percent (n=9) of the panelists rated *labor hours per unit* as extremely important; the other 18% (n=2) rated it very important. All panelists rated the following two operational performance measures as somewhat important to extremely important: *percentage accuracy of meal assembly* and *clinical productivity*. Five operational performance measures were rated by 45% (n=5) or more panelists as extremely important: *minutes per unit*, *percentage accuracy of meal assembly*, *clinical productivity*, *labor hours per unit*, and *meals per labor hour*. The operational performance measure rated not important by 27% (n=3) of the panelists was *percentage stop time of meal assembly line (trayline) per total time*, while at least somewhat important to 64% (n=7) of the other panelists. One panelist marked this performance measure as not applicable.

All panelists rated the following two **financial** performance measures as somewhat important to extremely important (of these panelists, 55% rated them extremely important): *actual revenue/expenditures versus budgeted revenue/expenditures* and *cost per unit or area of service*. *Food cost percentage* and *labor cost percentage* were rated as somewhat important to extremely important by 91% (n=10) of the panelists. One performance measure showed wide variation in importance rating by expert panelists. *Percentage product purchased from sources* was rated as not important by 36% (n=4), while 18% (n=2) of the panelists rated this performance measure as very or extremely important.

Table 4.1 Importance of performance measures in performing benchmarking activities.

PERFORMANCE MEASURES	Not Important		Somewhat Important		Very Important		Extremely Important		N/O		N/A	
	#	%	#	%	#	%	#	%	#	%	#	%
Area: Operational												
Labor Hours per Unit (n=11)	0	0	0	0	2	18	9	82	0	0	0	0
Percentage Accuracy of Meal Assembly (n=11)	0	0	3	27	2	18	5	45	0	0	1	9
Clinical Productivity (Patient Care) (n=11)	0	0	1	9	4	36	5	45	0	0	1	9
Minutes per Unit (n=11)	1	9	4	36	1	9	5	45	0	0	0	0
Meals per Labor Hour (n=11)	1	9	2	18	1	9	7	64	0	0	0	0
Inventory Turnover per Time Period (n=11)	1	9	7	64	2	18	1	9	0	0	0	0
Percentage Stop Time of Trayline per Total Time (n=11)	3	27	5	45	1	9	1	9	0	0	1	9
Area: Financial												
Actual Revenue/Expenditures versus Budgeted Revenue/Expenditures (n=11)	0	0	2	18	3	27	6	66	0	0	0	0
Cost per Unit or Area of Service (n=11)	0	0	1	9	3	27	6	55	1	9	0	0
Food Cost Percentage (n=11)	1	9	2	18	5	45	3	27	0	0	0	0
Labor Cost Percentage (n=11)	1	9	2	18	5	45	3	27	0	0	0	0
Percentage Product Purchased from Sources (n=11)[a]	4	36	2	18	1	9	2	18	1	9	0	0
*Supply Cost Percentage** (n=1)	-	-	-	-	1	-	-	-	-	-	-	-
*% Profit** (n=1)	-	-	-	-	-	-	1	-	-	-	-	-

Table 4.1, (Continued)

PERFORMANCE MEASURES	Not Important		Somewhat Important		Very Important		Extremely Important		N/O		N/A	
	#	%	#	%	#	%	#	%	#	%	#	%
Area: Customer Services												
Percent Satisfaction with Quality of Service Factors (n=11)	0	0	2	18	2	18	7	64	0	0	0	0
Outcome as a Result of Service Rendered (n=11)	0	0	1	9	3	27	6	55	0	0	1	9
Average Daily Participation per Total Population (n=11)	2	18	2	18	2	18	4	36	1	9	0	0
Ratio of Customer Complaints to Total Customer Population (n=11)	1	9	4	36	4	36	2	18	0	0	0	0
Area: Human Resources												
Absenteeism per Time Period (n=11)	0	0	2	18	5	45	4	36	0	0	0	0
Number of Work Injuries per Hours Worked (n=11)	1	9	2	18	4	36	3	27	1	9	0	0
Turnover Percentage as a Result of Separations (Dismissal or Voluntary Departure) (n=11)	2	18	2	18	3	27	4	36	0	0	0	0
*Employee Satisfaction** (n=1)	-	-	-	-	-	-	1	-	-	-	-	-
*Union or EEO Complaints per Employee** (n=1)	-	-	-	-	-	-	1	-	-	-	-	-

[a]One missing observation (respondent did not answer question)

* Write-in by respondent during Delphi round two

- No data available

N/O = No Opinion; N/A = Not Applicable

In the **customer services** area, 100% (n=11) of the panelists rated the following two performance measures as somewhat or higher in importance: *percent satisfaction with quality of service factors* and *outcome as a result of service rendered.* Only two customer services area performance measures received low importance ratings: 18% (n=2) of the panelists rated *average daily participation per total population* as not important (contrasted with 36% panelists who rated it extremely important) and 9% (n=1) who rated *ratio of customer complaints to total customer population* as not important (contrasted with 55% of the panelists who rated it very or extremely important).

In the **human resources** area, 100% (n=11) of the panelists rated the *absenteeism per time period* as somewhat or higher in importance. Eighty-two percent (n=9) of the panelists rated *number of work injuries per hours worked* as somewhat or higher in importance. Eighteen percent (n=2) of the panelists rated *turnover percentage as a result of separations* as not important, while 36% (n=4) rated it as extremely important.

4.1.3 Expert Panel - Round Two Survey

Expert panelists were asked to rate the importance of benchmarking activities in each of the three phases of the benchmarking process: planning, collection and analysis of data, and action. Two activities, project topic selection criteria and benchmarking partner identification, were considered in the planning phase of the benchmarking

process. The other two phases of benchmarking were also studied: data collection and analysis phase and action phase.

Table 4.2 Importance rating of project topic selection criteria by foodservice management expert panelists (n = 11).

	Not At All Important		Not Too Important		Moderately Important		Very Important	
Topic Selection Criteria	#	%	#	%	#	%	#	%
Impacts on costs	0	0	0	0	1	9	10	91
Impacts on productivity	0	0	0	0	3	27	8	73
Impacts on quality	0	0	1	9	1	9	9	82
Contributes to the success of the organization	0	0	0	0	4	36	7	64
Impacts on time	0	0	0	0	6	55	5	45
Is "doable"	1	9	0	0	5	45	5	45
Is measurable	0	0	1	9	6	55	4	36
Relates to key processes	0	0	1	9	6	55	4	36
Is an important issue[a]	0	0	1	9	5	45	4	36
Relates to strategic plan	1	9	0	0	7	64	3	27
Impacts margin *	-	-	-	-	-	-	1	-
Impacts outcomes *	-	-	-	-	1	-	-	-
Cost effective/worth the effort *	-	-	-	-	-	-	1	-

[a]One missing observation (respondent did not answer question)
* Write-in by respondent during round two survey, n=1
- No data available

4.1.3.1 Benchmarking Project Topic Selection Criteria

Benchmarking project topic selection criteria were rated on degree of importance by 11 expert panelists as exhibited in Table 4.2. All criteria were rated moderately important or very important by at least 10 of 11 panelists. The three topic selection criteria rated the highest in importance by the greatest number of panelists were: *impacts on costs*, *impacts on productivity*, and *impacts on quality*. Three additional criteria were added by an expert panelist during round two: *impacts on margin*, *impacts outcomes*, and *cost effective/worth the effort*.

4.1.3.2 Benchmarking Partner Identification Criteria

Expert panelists were asked to rate the degree of importance of 13 characteristics that people use in deciding which benchmarking partners to use (Table 4.3). Five benchmarking partner characteristics were rated as moderately important or very important by 100% (n=11) of the expert panelists: *able to meet planned time lines*, *interest in benchmarking topic*, *reputation for excellence*, *willingness to be a partner*, and *willingness to share data and information*. An additional five benchmarking partner characteristics were rated moderately important or very important by 91% (n=10) of the respondents: *comparability of standards or expectations*, *comparability of characteristics*, *same types of processes*, *similar number of employees*, and *willingness to maintain confidentiality*. One characteristic

Table 4.3 Importance rating of benchmarking partner characteristics by foodservice management expert panelists (n = 11).

Benchmarking Partner Characteristics	Not At All Important		Not Too Important		Moderately Important		Very Important	
	#	%	#	%	#	%	#	%
Able to meet planned time lines	0	0	0	0	6	55	5	45
Interest in benchmarking topic	0	0	0	0	8	73	3	27
Reputation for excellence	0	0	0	0	7	64	4	36
Willingness to be a partner	0	0	1	9	2	18	8	73
Willingness to share data and information	0	0	0	0	1	9	10	91
Comparability of standards or expectations	0	0	1	9	4	36	6	55
Comparability of characteristics	0	0	1	9	2	18	8	73
Same types of processes	1	9	0	0	6	55	4	36
Similar number of employees	0	0	1	9	10	91	0	0
Willingness to maintain confidentiality	0	0	1	9	2	18	8	73
Experience with benchmarking	0	0	3	27	6	55	2	18
Same organization type	1	9	1	9	3	27	6	55
Similar workload of employees	1	9	1	9	8	73	1	9

was rated moderately important or very important by 73% (n=8) of the panelists: *experience with benchmarking*. However, this characteristic was also rated not too important by 27% (n=3) of the panelists.

4.1.3.3 Methods to Collect Data

Methods of data collection were examined. Expert panelists were asked to identify in their opinion whether or not they would use ten listed methods to collect data for a benchmarking project (Table 4.4). All 11 expert panelists reported they may use or would definitely use: *internal records* and *mail survey*. Ninety-one percent (n=10) of the panelists stated they may use or would definitely use *personal meetings/site visits* and *telephone interview*. In contrast, 45% (n=5) of the panelists

Table 4.4 Usage of data collection methods by foodservice management expert panelists (n = 11).

Methods of Data Collection	**Not Use**		**May Use**		**Definitely Use**	
	#	%	#	%	#	%
Internal records	0	0	2	18	9	82
Mail survey[a]	0	0	6	55	4	36
Personal meetings/site visits	1	9	7	64	3	27
Telephone interview	1	9	7	64	3	27
Consultant	3	27	6	55	2	18
Publications/media	3	27	5	45	3	27
Service provided by professional association	2	18	3	27	6	55
Service provided by contractor	4	36	5	45	2	18
Service provided by private benchmarking company	5	45	4	36	2	18

[a]One missing observation (respondent did not answer question)

stated they would not use *service provided by private benchmarking company* as a method of data collection, and 36% (n=4) stated they would not use *service provided by a contractor* as a method of data collection. One of the panelists commented, "When a hospital or health care system contracts to use a certain benchmarking program, ... foodservice directors are less apt to want to use another program." Another expert panelist expressed concern that there were too many benchmarking systems available now. The expert panelist stated, "Must measure/compare time taken to participate in [the benchmarking] process related to value of information gained. (May not learn anything you didn't already know - so not worth [the] effort.)"

4.1.3.4 Activities in the Data Collection and Analysis Phase

Expert panelists were asked to rate the importance of the 13 activities in the data collection and analysis phase of foodservice benchmarking (Table 4.5). At least 91% (n=10) of the panelists rated all the listed activities as moderately important or very important. Only two activities were given a rating by one panelist as not at all important: *identify your operation's strengths* and *identify your operation's weaknesses*. This panelist stated the reason for the rating, "Benchmarking does not identify your operation's strengths because competent operators know this."

Table 4.5 Importance rating of data collection and analysis phase activities by foodservice management expert panelists (n = 11).

Activities: Data Collection and Analysis Phase	Not At All Important		Not Too Important		Moderately Important		Very Important	
	#	%	#	%	#	%	#	%
Check for misinformation	0	0	0	0	2	18	9	82
Identify inaccurate data	0	0	0	0	2	18	9	82
Check for misplaced data	0	0	0	0	3	27	8	73
Identify missing data	0	0	0	0	4	36	7	64
Determine "best practice" organization	0	0	0	0	5	45	6	55
Determine the performance gap	0	0	0	0	5	45	6	55
Determine the reason for the performance gap	0	0	0	0	5	45	6	55
Identify your current process practices	0	0	0	0	5	45	6	55
Determine whether best practices can be incorporated or adapted for implementation	0	0	1	9	5	45	5	45
Verify results[a]	0	0	1	9	1	9	8	73
Identify differences between your organization and the benchmark organization	0	0	1	9	4	36	6	55
Identify your operation's strengths	1	9	0	0	2	18	8	73
Identify your operation's weaknesses	1	9	0	0	2	18	8	73

[a]One missing observation (respondent did not answer question)

4.1.3.5 Activities in the Action Phase

Expert panelists were asked to rate the degree of importance of nine activities in the action phase of foodservice benchmarking (Table 4.6). All 11 panelists rated five activities as moderately important or very important: *develop action plan, implement action plan, communicate results to appropriate people*, *establish functional goals*, and *monitor results*. Ninety-one percent (n=10) of the panelists rated moderately important or very important: *assign task force to implement action steps*, *gain*

Table 4.6 Importance rating of action phase activities by foodservice management expert panelists (n = 11).

Activities: Action Phase	**Not At All Important**		**Not Too Important**		**Moderately Important**		**Very Important**	
	#	%	#	%	#	%	#	%
Develop action plan	0	0	0	0	0	0	11	100
Implement action plan	0	0	0	0	0	0	11	100
Communicate results to appropriate people	0	0	0	0	2	18	9	82
Establish functional goals (operational targets for change)	0	0	0	0	2	18	9	82
Monitor results	0	0	0	0	3	27	8	73
Assign task force to implement action steps	0	0	1	9	5	45	5	45
Gain consensus on action steps (obtain functional buy-in)	0	0	1	9	5	45	5	45
Recalibrate benchmark	0	0	1	9	5	45	5	45
Institutionalize benchmarking	1	9	1	9	5	45	4	36

consensus on action steps, and *recalibrate benchmark*. Concerning the activity *assign task force to implement action steps*, one of the respondents commented that the activity may not need a committee. In addition, another panelist remarked that this question was "CQI" (Continuous Quality Improvement) and "benchmarking is just a part of the CQI process - not the whole process."

4.1.3.6 Demographic and Other Information

Demographic information was obtained about the 11 expert panelists. The category of foodservice where they worked was: five in health care; one in correctional; one in school; one in a professional association; one in both health care and business and industry; one in both health care and university/college; and one was a consultant to correctional, school, and commercial restaurant. The job titles of the 11 expert panelists were: four foodservice consultants, three foodservice directors, one dietitian, one foodservice manager, one foodservice supervisor, and one Benchmark Coordinator for a professional association. Nine panelists had more than 15 years experience and two had 6-10 years experience in foodservice management.

Years of experience with foodservice benchmarking varied widely among the panelists: four with more than 10 years, one with 4-6 years, four with 1-3 years, and two with less than 1 year. Types of foodservice benchmarking activities with which they had knowledge and/or experience were: nine with health care, three with school, two with university/college, two with correctional, one with business and industry, and one with commercial.

Expert panelists were asked to state their estimate of the percentage of foodservice directors in health care, university/college, school, and correctional that they believed had experience or knowledge about any benchmarking (Table 4.7). This was asked in order to estimate and anticipate return rates or general response to the national foodservice directors survey. The category with the highest percentage estimate for experience or knowledge was health care, followed by university/college, school, and lastly correctional.

Table 4.7 Expert panelists' estimate of percentage of foodservice directors that have experience or knowledge about any benchmarking.

Foodservice Category	10% or less		11-25%		26-50%		51-75%		76-100%	
	#	%	#	%	#	%	#	%	#	%
Health care (n=11)	0	0	0	0	4	36	4	36	3	27
University/College[a] (n=9)	0	0	2	22	2	22	4	44	1	11
School[a] (n=9)	2	22	2	22	3	33	2	22	0	0
Correctional[a] (n=9)	3	33	3	33	3	33	0	0	0	0
Business & Industry * (n=1)	-	-	-	-	-	-	-	-	1	-
Commercial * (n=1)	-	-	1	-	-	-	-	-	-	-
Other ** (n=1)	1	-	-	-	-	-	-	-	-	-

[a]Missing observations (respondent did not answer question)
* Write-in by one panelist
- Data not available from other panelists
** Other not specified by panelist

4.1.4 Limitations of the Expert Panel Research

The limitations of the study included: (1) willingness of experts to participate in the surveys, (2) participants answering all the questions on the survey (creating missing data), (3) honesty of responses, due to self-reporting, (4) limited experience with benchmarking of some respondents, and (5) researcher's limited knowledge of some of the respondents (some of the respondents were referrals from other experts and not known to the researcher). Wide variation and some polarity in question responses in round one of the Delphi technique made consolidation of responses for round two of the Delphi technique difficult. Wording in the survey on benchmarking activities (round two survey) left one respondent uncertain of how to respond.

4.2 Discussion - Expert Panel Questionnaires

Two tasks were accomplished with the expert panel part of this research. The expert panelists provided a listing of performance measures used in the process of benchmarking by the foodservice director. These performance measures were then consolidated and used as the performance measures in a national survey mailed to a sample of foodservice directors. The other task was determining the importance of management activities when conducting benchmarking in foodservice operations. This information was consolidated into a foodservice benchmarking guide (Appendix A) that could be used by foodservice directors when benchmarking.

4.2.1 Expert Panel - Delphi Technique

Performance measures are important to study when examining the subject of benchmarking, as well as when managing an operation. Performance measures helped define the benchmarking subject, according to Finnigan (8). In addition, measurement managed companies outperformed non-measurement managed organizations (51).

The extensive list of 89 performance measures produced by the expert panelists in this research showed the multiple possibilities of performance measures that could be used by foodservice directors when benchmarking. There was little duplication in the performance measures listed by the individual panelists. Likewise, the extensive list of comments and definitions provided by the panelists showed the differences among panelists as to what performance measure definitions would or would not be used by some. As a result, two concepts discussed in the literature review became critically important: the subject of benchmarking topic selection criteria and data translation.

With a wide variety of performance measures possible and just as wide a variation in rating of importance of these measures by different individuals, some type of system for selecting a benchmarking topic becomes necessary to help improve the chances of conducting successful benchmarking. There was not a single performance measure that received the identical rating of importance by all panelists. All of the panelists thought the following measures were at least somewhat important: *percentage accuracy of meal assembly, clinical productivity, labor hours per unit, actual revenue/expenditures versus budgeted revenue/expenditures, cost per unit or area of service, percentage satisfaction with quality of service factors, outcome as a result of*

service rendered, and absenteeism per time period. These measures were from each of the four areas of performance measures (operational, financial, customer services, and human resources). These measures appeared to be quality management, financial, and/or labor issues. Based on the ratings given by these expert panelists, these performance measures, if applicable, should be given strong consideration by foodservice directors as possible measures to use in benchmarking. Other than these measures, all other measures had at least one panelist stating the performance measure was not important and at least one panelist stating the performance measure was extremely important. Various decision matrixes were discussed in the literature (4, 11, 15, 23), as well as Xerox's Ten Questions (2) or Patterson's seven guidelines for deciding what to benchmark (7). A decision matrix is beneficial to foodservice directors when deciding what to benchmark, particularly when there are multiple differences of opinion, as apparent in this research.

When benchmarking, not only does there need to be consensus among team members and/or benchmarking partners about what to benchmark, but the data to be gathered needs to be translated into a common format so it can be compared (8, 14, 17, 40, 59). Apples must be compared to apples, not oranges. Comments made by the expert panelists repeatedly reflected the concern for data translation, as well as reflected the wide variation in what performance measures they would or would not use, particularly measures relating to: *meal*, *labor cost*, and *employee turnover*.

One panelist stated that a performance measure with *meal* varied across institutions and across units in operations, and therefore, such measures were avoided.

Another panelist stated *meal* was "too open to variation . . . requires extensive calculations." Jackson (37) reported on the diversity of calculating *meal*. Some panelists reported performance measures with *meal equivalent*, instead of *meal*. One panelist gave the formula for *meal equivalents* used in health care:

> Formula:
> *meal equivalents* = # of patient meals served
> + nourishment and supplemental feedings meal equivalents
> + non-patient meal equivalents
>
> *nourishment and supplemental feedings meal equivalents* = cost of nourishments and supplemental feedings divided by average cost per patient meal
>
> *non-patient meal equivalents* = cost of food served for non-patient services divided by average cost per patient meal

In contrast, a panelist reported *meals per full time equivalent (FTE)* was the most used performance measure. Results of this research indicated panelists used other performance measures with *meal*: meals per labor hours worked, meals per labor hours paid, food cost per meal, supply cost per meal, and meals per productive hour.

Another example of the importance of data translation was *labor cost*. One expert panelist reported that the calculation of *labor cost per meal - civilian* should not include inmate labor cost. A panelist reported *cost of labor* to be dollars paid for work done in the department to include consultant, part-time, stand-by, and temporary employees but not fringe benefits or time for student teaching or outside research. Another panelist reported *average daily labor cost* was the sum or total annual wages and salaries and fringe benefits divided by total serving days per year. Hence, a

performance measure must be clearly defined before being used in the benchmarking process.

Turnover ratios are another example of the variation in opinion by expert panelists on what performance measures to use and data translation. *Turnover ratios* are performance measures used by one expert panelist. However, another panelist cautioned that "*turnover* is not always reasonable to assume [as] performance related." A third panelist gave the following opinion on *turnover*: "*Turnover* is not valid in health care unless looking at those who leave the institution or are fired. Our job - as the entry level site for workers - is to groom them and assist them in moving up in the organization. Although this is a challenge for foodservice to bear - it is for the good of the whole organization. Turnover rate per quarter implies turnover is necessarily bad."

Percentage stop time of meal assembly line (trayline) per total time and *percentage product purchased from sources* were two performance measures given low importance ratings by some panelists. This could be attributed to the performance measures not being common to certain categories of foodservice operations. For example, *percentage stop time of meal assembly line per total time* would not be used in a foodservice operation without a meal assembly line, such as in some correctional facilities, and therefore could be given a low importance rating for this reason. In contrast, this measure may have high importance as a performance measure to a large health care foodservice operation with an extensive meal assembly line. *Percentage product purchased from sources* may not be important to those facilities that do not have a prime vendor. Therefore, this reinforces the importance of benchmarking

partners being comparable and having similar characteristics so that performance measures fit the needs of the organizations doing benchmarking (3). The association between categories of foodservice and usage of performance measures was explored in the national survey.

4.2.2 Expert Panel Survey

The expert panel survey portion of round two generated valuable information on the importance of activities in the three phases of the foodservice benchmarking process. Using the results of this survey, a foodservice benchmarking guide (Appendix A) was developed. This foodservice benchmarking guide was intended to be used by foodservice directors as a job aid. As a general rule, the decision to include a survey response item in the foodservice benchmarking guide was based on a rating of moderately important or very important by the majority of the expert panelists. Regarding the methods of data collection, the item was included if the majority of expert panelists reported they may use or would definitely use the method.

The benchmarking topic selection criteria used on the expert panel survey showed 10 out of 11 panelists felt all the criteria listed were moderately important or very important. Therefore, foodservice management experts agreed basically with the topic selection criteria used in this research. This was consistent with the business and industry literature (2, 4, 7, 8, 11, 14, 15, 18). Using topic selection criteria and a decision matrix can save an inordinate amount of time when making a decision, particularly in a group situation.

The benchmarking partner characteristics used on the expert panel survey showed 10 out of 11 panelists felt all the characteristics were moderately important or very important in deciding which benchmarking partners to use. One exception was the characteristic *experience with benchmarking*. Three panelists rated this characteristic as not too important. One explanation for this may be that the characteristics are not mutually exclusive. In other words, if a potential partner has other desirable characteristics, this may be enough to participate in a benchmarking project. Also, knowledge about benchmarking may be present, while experience in benchmarking may be absent; knowledge may take precedence over experience which comes with time and opportunity.

All data collection methods listed on the expert panel survey have potential use in foodservice benchmarking. The methods more likely to be considered for use were: *internal records*, *mail surveys*, *personal meetings/site visits*, *professional associations*, and *telephone interviews*. This was consistent with the literature. Sawyer and Richards (34) reported the most common type of data in hospital foodservice benchmarking were internal data or historical data. Also, Camp (3) reported site visits were the most credible, revealing, and interesting of the data collection methods. Some of these methods are less expensive than the higher cost methods, such as consultant and private benchmarking company. Some expert panelists stated they would not use *service provided by contractor* and/or *private benchmarking company*. Cost may be a factor here as well. However, some foodservice directors may not have a choice as to methods of data collection because the method may be dictated by the parent

organization. Also, Spendolini (2) reported that companies may have their own data collection philosophy and have a preference for one method over another. In addition, a method they have had a positive experience with may more likely be used again.

Foodservice management experts agreed basically with the data collection and analysis phase activities stated in this research. This was consistent with the business and industry literature (2, 3, 8, 14, 17). The following activities got particularly high importance ratings by most of the panelists: *check for misinformation*, *check for misplaced data*, *identify inaccurate data*, *identify your operation's strengths and weaknesses*, and *verify results*. This emphasis on accuracy of information is valid because the credibility of the benchmarking effort stems in part from data integrity and accuracy. Also, best practice can not be accurately identified unless the data are accurate. As for knowing your operations' strengths and weaknesses, this is consistent with Spendolini (2). He stated a fundamental rule of benchmarking was to examine and understand processes or products within the organization before collecting data and examining those of others.

Results of the action phase activities portion of the expert panel survey were similar. Therefore, foodservice management experts agreed basically with the activities used in this research. This was consistent with the business and industry literature (2, 3, 8, 12, 16, 48). *Develop and implement an action plan* was considered to be very important by all panelists. This was supported in the literature. This activity was included in many of the models, such as the Baxter (17), Xerox (16), and Spendolini (2) models.

4.2.3 Development of Foodservice Benchmarking Guide

The foodservice benchmarking guide (Appendix A) was an outcome of the expert panel part of this research. It was developed by the researcher with the intention of being used by foodservice directors as a job aid when conducting benchmarking in their organizations. The information in the guide was derived from a review of the literature and data from the expert panel research instruments. The guide includes an overview of each phase of the benchmarking process, key terminology, examples of foodservice performance measures, possible decision criteria for selecting a project topic and identifying benchmarking partner(s), possible data collection methods, and activities that could be considered in the data collection and analysis phase and the action phase of the benchmarking process. In other words, it could aid foodservice directors in conducting benchmarking in their operations by telling them the key activities and issues to be considered when benchmarking. In general, if the majority of expert panelists rated the activities, performance measures, and other information as somewhat or very important, that item was included in the guide. Versions of this foodservice benchmarking guide will be made available to foodservice directors during presentations of this research at professional meetings and through publication in a professional newsletter.

4.3 Results - Foodservice Directors Survey

A foodservice directors survey was conducted to obtain baseline data about foodservice directors' beliefs, attitudes, and practices about benchmarking. This was accomplished with the use of a mail survey.

Of the 600 surveys mailed, 274 (46%) were returned. Of the 274 returned, 6 were returned but not usable, 16 were returned as nondeliverable by the post office, and 5 were returned after data analysis had been completed for the research. Thus, 247 (41%) were usable surveys available for analysis. An alpha level of .05 was used for all statistical tests. Associations between categorical variables were tested using a chi-square test. As a formatting note in this narrative, when chi-square tests are reported, the degrees of freedom and sample size (i.e., the number of independent entries in the chi-square table) are noted in parentheses, followed by the actual chi-square value and probability (p) value (70).

Table 4.8 shows frequencies of responses on the following variables related to the foodservice director's beliefs, attitudes, and practices: level of importance of benchmarking in performing job, level of knowledge about benchmarking, type of benchmarking used, usage of benchmarking partner, usage of benchmarking partners by type, and the need for knowledge and skills about benchmarking. A majority of respondents (77%) stated benchmarking had some or great importance in performing their jobs. Half of the respondents had a moderate level of knowledge about benchmarking. Internal benchmarking had been used by 71% of the respondents;

Table 4.8 Respondents'[a] (n = 247) perceived knowledge about benchmarking, importance of benchmarking, usage of types of benchmarking and of benchmarking partners, and needs to develop knowledge and skills about benchmarking.

	Frequencies	
Variable	#	%[b]
Level of importance in performing job		
No importance	18	7.3
Little importance	20	8.1
Some importance	96	38.9
Great importance	95	38.5
Level of knowledge about benchmarking		
None	31	12.6
Low level	58	23.5
Moderate level	124	50.2
High level	26	10.5
Type of benchmarking used		
Internal	175	70.9
External	147	59.5
Functional/Generic	62	25.1
Usage of benchmarking partner		
No	131	53.0
Yes	106	42.9
Do you need to develop knowledge and skills about benchmarking?		
No	88	35.6
Yes	151	61.1

[a]The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding and missing observations.

external benchmarking, by 60%; and functional/generic, by 25%. Slightly more than a majority of respondents (53%) had not used a benchmarking partner. More than 60% of the respondents reported needing to develop knowledge and skills about benchmarking.

4.3.1 Demographic Information About Respondents

Demographic information was collected on the respondents (Table 4.9). Categories of foodservice where the respondents currently worked were as follows: health care (n = 69, 28%), school (n = 67, 27%), correctional (n = 53, 22%), college/university (n = 52, 21%), other (n = 2, 1%), and business and industry (n = 1).

Table 4.9 Demographic characteristics of respondents[a] (n = 247) completing the foodservice directors questionnaire.

Characteristic	#	%[b]
Category of foodservice where currently work		
Health care	69	27.9
School	67	27.1
Correctional	53	21.5
College or university	52	21.1
Other	2	0.8
Business & industry	1	0.4
Job title		
Foodservice director	141	57.1
Foodservice manager	63	25.5
Foodservice supervisor	25	10.1
Multi-department director	8	3.2
Other	6	2.4
Foodservice consultant	1	0.4
Years work experience in foodservice management		
Less than 2	6	2.4
2 to 5	17	6.9
6 to 10	41	16.6
11 to 15	48	19.4
More than 15	131	53.0

[a]The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding.

The majority of the respondents were foodservice directors (n = 141, 57%). Other respondents had slightly different job titles: foodservice manager (n = 63, 26%), foodservice supervisor (n = 25, 10%), multi-department director (n = 8, 3%), foodservice consultant (n = 1) and other job titles (n = 6, 2%). Over half (n = 131, 53%) had more than 15 years of work experience in foodservice management.

4.3.2 Usage of Types of Benchmarking

Three types of benchmarking were studied: internal, external, and functional/generic. Internal benchmarking was used by 175 respondents (71%); external benchmarking was used by 147 respondents (60%); and functional/generic benchmarking was used by 62 respondents (25%). The relationship between usage of types of benchmarking to respondents' knowledge level of benchmarking, importance of benchmarking, and benchmarking outcomes was examined.

4.3.2.1 Knowledge Level of Benchmarking

The relationship between respondents' knowledge level about benchmarking and usage of types of benchmarking was tested using chi-square (χ^2) test for independence (Table 4.10). The four levels of knowledge were: none, low, moderate, and high, based on self-perception. There was very strong evidence that there was an association between usage of types of benchmarking and respondents' knowledge level of benchmarking. The association between knowledge level of benchmarking and

Table 4.10 Relationship between respondents' knowledge level about benchmarking and usage of types of benchmarking.

Types of Benchmarking	n[a]	Knowledge level of benchmarking: None #	None %[b]	Low level #	Low level %	Moderate level #	Moderate level %	High level #	High level %
Internal Benchmarking***									
Yes, have used	170	5	2.9	36	21.2	104	61.2	25	14.7
No, have not used	41	20	48.8	14	34.2	7	17.1	0	0
Do not know	8	5	62.5	1	12.5	2	25.0	0	0
External Benchmarking***									
Yes, have used	144	2	1.4	26	18.1	91	63.2	25	17.4
No, have not used	61	23	37.7	19	31.2	19	31.2	0	0
Do not know	7	3	42.9	3	42.9	1	14.3	0	0
Functional/Generic Benchmarking***									
Yes, have used	60	0	0	7	11.7	36	60.0	17	28.3
No, have not used	119	23	19.3	32	26.9	57	47.9	7	5.9
Do not know	23	4	17.4	7	30.4	11	47.8	1	4.4

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100 due to rounding.
*** Indicates significant difference ($p < .001$) between usage of type of benchmarking and perceived knowledge level about benchmarking.

usage of internal benchmarking was highly statistically significant, χ^2 (6, n = 219) = 88.70, p =.001. The null hypothesis of no association was rejected. Of the respondents that had used internal benchmarking, over three-fourths had a moderate to high level of knowledge about benchmarking. Likewise, of the respondents who had not used internal benchmarking, over three-fourths had no knowledge or a low level of knowledge about benchmarking. None of the respondents who had not used internal benchmarking had a high level of knowledge. The association between knowledge

level of benchmarking and usage of external benchmarking was highly statistically significant, χ^2 (6, n = 212) = 74.37, p = .001. The null hypothesis of no association was rejected. The majority (80%) of respondents who had used external benchmarking had a moderate or high level of knowledge about benchmarking. Of those respondents that had not used external benchmarking, 69% had little or no knowledge of benchmarking, while 31% had a moderate level of knowledge, and no respondents had a high level of knowledge. The association between knowledge level of benchmarking and usage of functional/generic benchmarking was highly statistically significant, χ^2 (6, n = 202) = 34.99, p =.001. The null hypothesis of no association was rejected. A majority of respondents (88%) that had used functional/generic benchmarking had a moderate to high level of knowledge about benchmarking. Of those respondents that had not used functional/generic benchmarking, 54% had a moderate to high level of knowledge, while 46% had no knowledge or a low knowledge level of benchmarking.

4.3.2.2 Importance of Benchmarking

The relationship between the respondents' belief about the importance of benchmarking to doing their jobs and usage of types of benchmarking was tested using the χ^2 test for independence (Table 4.11). There was very strong evidence of a relationship between the usage of types of benchmarking and the respondents' belief about the importance of benchmarking. The association between perceived importance

Table 4.11 Relationship between respondents' perceived importance of benchmarking and usage of types of benchmarking.

		Perceived Importance of Benchmarking							
		None		Little		Some		Great	
Types of Benchmarking	**n**[a]	#	%[b]	#	%	#	%	#	%
Internal Benchmarking***									
Yes, have used	174	1	0.6	5	2.9	78	44.8	90	51.7
No, have not used	41	15	36.6	10	24.4	14	34.2	2	4.9
Do not know	9	2	22.2	4	44.4	2	22.2	1	11.1
External Benchmarking***									
Yes, have used	146	0	0	5	3.4	61	41.8	80	54.8
No, have not used	62	15	24.2	9	14.5	28	45.2	10	16.1
Do not know	8	2	25.0	3	37.5	2	25.0	1	12.5
Functional/Generic Benchmarking***									
Yes, have used	62	0	0	2	3.2	22	35.5	38	61.3
No, have not used	119	15	12.6	11	9.2	56	47.1	37	31.1
Do not know	25	2	8.0	4	16.0	7	28.0	12	48.0

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100 due to rounding.
*** Indicates significant difference ($p < .001$) between usage of type of benchmarking and perceived importance of benchmarking.

of benchmarking and usage of internal benchmarking was highly statistically significant, χ^2 (6, n = 224) = 109.70, p =.001. The null hypothesis of no association was rejected. Of those respondents who had used internal benchmarking, 52% perceived benchmarking to have great importance and 45% perceived it to have some importance. Similar results were seen with external benchmarking. The association between perceived importance of benchmarking and usage of external benchmarking

was highly statistically significant, χ^2 (6, n = 216) = 69.40, p =.001. The null hypothesis of no association was rejected. Of those that used external benchmarking, over half (55%) felt benchmarking had great importance. The association between perceived importance of benchmarking and usage of functional/generic benchmarking was highly statistically significant, χ^2 (6, n = 206) = 23.27, p =.001. The null hypothesis of no association was rejected. While the majority had not used functional/generic benchmarking, of those that had used this type, 61% perceived benchmarking to be of great importance to doing their job.

4.3.2.3 Category of Foodservice Operation

The relationship between respondents' category of foodservice where they currently work and the respondents' usage of types of benchmarking was tested using χ^2 test for independence (Table 4.12). This research was directed at four categories of foodservice operations: college/university, correctional, health care, and school (primary and secondary). The relationship of the four categories of foodservice and usage of internal benchmarking was not statistically significant, χ^2 (10, n = 223) = 12.08, p = .280. The null hypothesis of no association between these four categories of foodservice and usage of internal benchmarking was not rejected. Usage of internal benchmarking did not appear to be associated with the category of foodservice where the respondent worked.

Table 4.12 Relationship between respondents'[a] category of foodservice and respondents' usage of types of benchmarking.

Types of Benchmarking		Categories of Foodservice							
		College or University		Correctional		Health care		School	
	n	#	%[b]	#	%	#	%	#	%
Internal Benchmarking[ns]									
Yes, have used	173[c]	43	24.9	34	19.7	53	30.6	41	23.7
No, have not used	41	3	7.3	11	26.8	9	22.0	18	43.9
Do not know	9	2	22.2	2	22.2	3	33.3	2	22.2
External Benchmarking[ns]									
Yes, have used	145[d]	36	24.8	25	17.2	52	35.9	31	21.4
No, have not used	62[e]	10	16.1	16	25.8	10	16.1	25	40.3
Do not know	9	1	11.1	2	22.2	3	33.3	3	33.3
Functional/Generic Benchmarking***									
Yes, have used	60	22	36.7	8	13.3	22	36.7	8	13.3
No, have not used	118	16	13.6	22	18.6	33	28.0	47	39.8
Do not know	26	9	34.6	8	30.8	7	26.9	2	7.7

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding.
[c]Includes 1 business & industry and 1 other categories that are not identified in table
[d]Includes 1 other category that is not identified in table
[e]Includes 1 business & industry that is not identified in table
[ns]Not significant , $p > .05$
***Indicates significant difference ($p < .001$) between respondents' usage of type of benchmarking and respondents' category of foodservice

The same appeared to be true of external benchmarking. The relationship of the four categories of foodservice and usage of external benchmarking was not statistically significant, but slightly suggestive, χ^2 (10, n = 216) = 18.08, $p = .054$. The null hypothesis of no association between these four categories of foodservice and usage of external benchmarking was not rejected. More respondents in health care had used external benchmarking than respondents in other categories. One respondent

commented that the biggest problem in attempted external benchmarking was comparability of data collection techniques, definitions, and programmatic differences due to layout and design.

The results were different for functional/generic benchmarking. The relationship between usage of functional/generic benchmarking and respondents' category of foodservice was highly statistically significant, χ^2 (6, n = 204) = 29.39, p = .001. The null hypothesis of no association was rejected. The majority of respondents had not used functional/generic benchmarking; the category with the greatest percentage of respondents reporting having not used this type of benchmarking was school foodservice. The categories with the greatest number of respondents acknowledging usage of functional/generic benchmarking were college/university and health care. One respondent commented, "I view every opportunity as a chance to "benchmark" . . .Any chance to learn something, to observe a new way of doing something, is worth my time, energy, and dedication!" The respondent used the following examples of benchmarking: a fast sandwich at a quick service restaurant, ideas from retailers in the mall or department stores, seasonal decorations at a bank, or service focused classes from a local chain department store.

4.3.2.4 Benchmarking Outcomes

The relationship between respondents' usage of type of benchmarking and experience with benchmarking outcomes was tested using χ^2 test for independence (Table 4.13). Respondents were first asked, in general terms, if they had experienced

benchmarking outcomes. If they had, they were then asked if they had or had not experienced a list of 16 possible outcomes from benchmarking. If they had not experienced benchmarking outcomes, they were told to disregard the list of outcomes and proceed to the next question in the survey.

There was very strong evidence of a relationship between usage of internal benchmarking and general experience with benchmarking outcomes. The relationship between usage of internal benchmarking and general experience with benchmarking

Table 4.13 Relationship between respondents'[a] type of benchmarking usage and experience with benchmarking outcomes.

		Have experienced benchmarking outcomes			
		Yes		No	
Types of Benchmarking	**n**	**#**	**%[b]**	**#**	**%**
Internal Benchmarking***					
Yes, have used	172	137	79.7	35	20.4
No, have not used	38	7	18.4	31	81.6
Do not know	9	2	22.2	7	77.8
External Benchmarking***					
Yes, have used	145	123	84.8	22	15.2
No, have not used	58	21	36.2	37	63.8
Do not know	9	1	11.1	8	88.9
Functional/Generic Benchmarking***					
Yes, have used	61	53	86.9	8	13.1
No, have not used	115	69	60.0	46	40.0
Do not know	26	16	61.5	10	38.5

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding.
***Indicates significant difference ($p < .001$) between respondents' usage of types of benchmarking and respondents' experience with benchmarking outcomes.

outcomes was highly statistically significant, χ^2 (2, n = 219) = 60.85, p = .001 (Table 4.13). The null hypothesis of no association was rejected. Four times more respondents who said they used internal benchmarking reported they had experienced benchmarking outcomes, compared to those who had not used internal benchmarking. However, when respondents were asked about specific outcomes in the list, results showed no statistically significant association between usage of internal benchmarking and experience with any of the specific identified benchmarking outcomes. Most respondents who used internal benchmarking reported they experienced all of the identified outcomes.

Similar results were found with usage of external benchmarking and experience with outcomes. There was very strong evidence of an association between usage of external benchmarking and general experience with benchmarking outcomes. The relationship between usage of external benchmarking and general experience with benchmarking outcomes was highly statistically significant, χ^2 (2, n = 212) = 59.58, p = .001 (Table 4.13). The null hypothesis of no association was rejected. Four times more respondents who said they used external benchmarking reported they had experienced benchmarking outcomes, compared to those who had not used external benchmarking. However, when respondents were asked about specific outcomes, results showed no statistically significant association between usage of external benchmarking and experience with any of the identified benchmarking outcomes. Among those respondents who had used external benchmarking, the outcomes noted by the greatest number of respondents were: *identified strengths* (n = 118) and

identified weaknesses (n = 121). One respondent commented about the use of a vendor benchmarking program that was beneficial and helped with benchmarking against other hospitals. This program also helped administrators look at what they had done and where they were going. Another respondent commented that extensive benchmarking had not led to problem solving or willingness to spend money to fix problems uncovered. "Being a top facility in the 'best practices" section has not prevented or protected us from budget cuts or threat of outsourcing." The respondent reported liking benchmarking as a gauge for comparisons, but that it was not helpful for anything else.

Results found with usage of functional/generic benchmarking and experience with outcomes were similar to that found with external benchmarking. There was very strong evidence of an association between usage of functional/generic benchmarking and general experience with benchmarking outcomes. The relationship between usage of functional/generic benchmarking and general experience with benchmarking outcomes was highly statistically significant, χ^2 (2, n = 202) = 13.94, p = .001 (Table 4.13). The null hypothesis of no association was rejected. Seven times more respondents who said they used functional/generic benchmarking reported they had experienced benchmarking outcomes, compared to those who had not used functional/generic benchmarking. However, when respondents were asked about specific outcomes, results showed no statistically significant association between usage of functional/generic benchmarking and experience with the identified benchmarking outcome.

Table 4.14 Respondents' (n = 247) experience with outcomes when conducting benchmarking.[a]

Benchmarking outcomes experienced	Yes, experienced this outcome	
	#	%
Have experienced benchmarking outcomes	159	64.4
Identified weaknesses	155	62.8
Identified strengths	153	61.9
Improved efficiency	145	58.7
Improved cost effectiveness	143	57.9
Targeted areas for process improvement	142	57.5
Improved decision making	138	55.9
Used as a goal-setting process	136	55.1
Helped make staff sizing decisions	135	54.7
Promoted better problem solving	134	54.3
Provided source of ideas for correcting or eliminating problems	132	53.4
Improved customer satisfaction	132	53.4
Developed accurate performance measures	130	52.6
Determined where to allocate resources most effectively	120	48.6
Uncovered best practices	118	47.8
Helped achieve a competitive position	97	39.3
Identified new breakthroughs that otherwise would not have been recognized	95	38.5

[a]Table does not include number of respondents that responded "no" to experiencing the outcome indicated, missing observations, and not applicable responses.

Irrespective of type of benchmarking used, the overall total number of respondents who had experience with individual benchmarking outcomes was summarized in Table 4.14. Out of the total number of respondents (n = 247), the greatest number of respondents reported experiencing these outcomes: *identified weaknesses* (63%), *identified strengths* (62%), *improved efficiency* (59%), and *improved cost effectiveness* and *targeted areas for process improvement* (both 58%). Two outcomes with the greatest number of respondents reporting they did not experience the outcome were: *helped achieve a competitive position* (n = 60) and *identified new breakthroughs that otherwise would not have been recognized* (n = 56).

4.3.3 Category of Foodservice Operation

The respondents' category of foodservice operation was compared with performance measures and usage of type of benchmarking partner. Knowledge levels about benchmarking among respondents varied; 80% of the college/university, 76% health care, 49% correctional, and 47% school respondents reported having at least a moderate level of knowledge.

4.3.3.1 Performance Measures

Seven operational, six financial, four customer, and four human resources performance measures were compared to respondents' four categories of foodservice.

Table 4.15 Relationship between respondents'[a] operational performance measures usage and category of foodservice operation.

Usage of Operational Performance Measures	n	Categories of Foodservice: College or University #	College or University %[b]	Correctional #	Correctional %	Health care #	Health care %	School #	School %
Minutes per Unit[ns]									
Yes, have used	119[c]	27	22.7	22	18.5	40	33.6	29	24.4
No, have not used	106[d]	23	21.7	25	23.6	22	20.8	34	32.1
Inventory Turnover per Time Period*									
Yes, have used	150[e]	41	27.3	36	24.0	36	24.0	35	23.3
No, have not used	78[f]	9	11.5	14	18.0	26	33.3	28	35.9
Percentage Accuracy of Meal Assembly***									
Yes, have used	83[f]	2	2.4	22	26.5	45	54.2	13	15.7
No, have not used	141[e]	47	33.3	26	18.4	17	12.1	49	34.8
Clinical Productivity (Health care)***									
Yes, have used	61	6	9.8	3	4.9	43	70.5	9	14.8
No, have not used	152[g]	42	27.6	40	26.3	18	11.8	49	32.2
Meals per Labor Hour***									
Yes, have used	185[e]	45	24.3	25	13.5	56	30.3	57	30.8
No, have not used	45[f]	5	11.1	23	51.1	7	15.6	9	20.0
Meals per Time Period[ns]									
Yes, have used	172[c]	42	24.4	34	19.8	48	27.9	47	27.3
No, have not used	57[d]	8	14.0	15	26.3	13	22.8	19	33.3
Labor Hours per Unit**									
Yes, have used	179[e]	44	24.6	32	17.9	57	31.8	44	24.6
No, have not used	50[f]	6	12.0	17	34.0	5	10.0	21	42.0

[a]Complete data set: n=247. Variation in total numbers was caused by missing observations, which were excluded for data analysis.

[b]Percentages do not add up to 100% due to rounding.

[c]Includes 1 business & industry that is not identified in table

[d]Includes 2 in other category that is not identified in table

[e]Includes 1 business & industry and 1 other categories that are not identified in table

[f]Includes 1 other category that is not identified in table

[g]Includes 1 business & industry and 2 other categories that are not identified in table

[ns] Not significant: $p > .05$

*Indicates significant difference ($p < .05$) between respondents' usage of the performance measure and respondents' category of foodservice

***Indicates significant difference ($p < .001$) between respondents' usage of the performance measure and respondents' category of foodservice

Respondents were asked if they had used an identified foodservice performance measure. Each of these 21 performance measures will now be discussed.

Table 4.15 summarizes usage of operational performance measures compared with respondents' category of foodservice operation. Seven **operational** foodservice performance measures were studied: *minutes per unit*, *inventory turnover per time period*, *percentage accuracy of meal assembly*, *clinical productivity*, *meals per labor hour*, *meals per time period*, and *labor hours per unit*.

Respondents were asked to state whether or not they had used the performance measure: *minutes per unit*. The survey gave examples of unit: meal, meal equivalent, and meal transaction. The association between *minutes per unit* and respondents' category of foodservice was not statistically significant, χ^2 (5, n=225) = 8.41, p = .135. The null hypothesis of no association was not rejected. No association between usage of the measure *minutes per unit* and respondents' category of foodservice was found.

Respondents were asked about their usage of the performance measure *inventory per time period*. The survey gave examples of time period: month, quarter, and year. The relationship between usage of *inventory turnover per time period* and respondents' category of foodservice was found to be statistically significant, χ^2 (5, n = 228) = 12.01, p = .035. The null hypothesis of no association was rejected. Twice as many respondents reported using this performance measure, as not. Out of all respondents reporting having used this performance measure, more college/university respondents (27 %) reported having used this performance measure than respondents

from any other category. In contrast, more school respondents (36%) reported having not used this measure than respondents from any other category.

The respondents were asked about their usage of the performance measure: *percentage accuracy of meal assembly*. The association between *percentage accuracy of meal assembly* and respondents' category of foodservice was found to be highly statistically significant, χ^2 (5, n = 224) = 65.59, p = .001. Only 4% of all the college/university respondents had used this measure. Twenty-one percent of all the school foodservice respondents reported having used this measure. This is in contrast to health care; 73% of all the respondents of this category reported having used *percentage accuracy of meal assembly*. Nearly half of the respondents from correctional foodservice had used this measure.

The respondents were asked about their usage of *clinical productivity* performance measures. The survey identified an example of a *clinical productivity* measure: relative value units per man-hour. The association between usage of *clinical productivity* performance measure(s) and respondents' category of foodservice was highly statistically significant, χ^2 (5, n = 213) 74.37, p = .001. The null hypotheses was rejected. Of all the respondents who acknowledged using this performance measure, 71% were in health care.

The respondents were asked about their usage of *meals per labor hour*. The survey gave examples of types of meals: meals equivalents, transactions, and number of customers served. Examples of labor hour were: hours worked and FTE (Full-Time Equivalent). The association between *meals per labor hour* and respondents' category

of foodservice was highly statistically significant, χ^2 (5, n = 230) = 33.2, p = .001. The null hypotheses of no association was rejected. About the same number of correctional respondents reported that they had used *meals per labor hour*, as had not. However, within health care, school, and college/university categories, there were about eight times more respondents that stated they had used that measure, than had not.

Usage of *meals per time period* was analyzed. The survey gave the following examples of time period: day, month, and pay period. At an α level of .05, the association between *meals per time period* and respondents' category of foodservice was not statistically significant, χ^2 (5, n = 229) = 10.29, p = .067. The null hypotheses of no association was not rejected. There did not appear to be any substantial relationship between respondents' category of foodservice and the performance measure *meals per time period*. The majority of respondents within all four categories used this measure.

Usage of *labor hours per unit* was studied. The survey gave the following examples of labor hours: hours worked, hours paid, FTE, inmate, productive, nonproductive, overtime, and total. Examples of unit were: meal or meal equivalent, patient admission, outpatients, month, day or adjusted patient day, adjusted patient discharge, patient admitted at nutritional risk, improved nutritional status after dietitian intervention, and referral. The association between *labor hours per unit* and respondents' category of foodservice was highly statistically significant, χ^2 (5, n = 229) = 19.86, p = .001. The null hypothesis of no association was rejected. Ten times more

Table 4.16 Relationship between respondents'[a] financial performance measures usage and category of foodservice operation.

		Categories of Foodservice							
		College or University		Correctional		Health care		School	
Usage of Financial Performance Measures	n	#	%[b]	#	%	#	%	#	%
Food Cost Percentage **									
Yes, have used	191[c]	51	26.7	35	18.3	46	24.1	56	29.3
No, have not used	45	1	2.2	15	33.3	18	40.0	11	24.4
Labor Cost Percentage* **									
Yes, have used	175[c]	51	29.1	22	12.6	40	22.9	59	33.7
No, have not used	62	1	1.6	29	46.8	24	38.7	8	12.9
Supply Cost Percentage*									
Yes, have used	164[c]	44	26.8	29	17.7	37	22.6	51	31.1
No, have not used	68	8	11.8	20	29.4	25	36.8	15	22.1
Percentage Product Purchased from Sources[ns]									
Yes, have used	117[d]	29	24.8	29	24.8	33	28.2	25	21.4
No, have not used	118[e]	23	19.5	21	17.8	31	26.3	41	34.8
Actual Revenue versus Budgeted Revenue* **									
Yes, have used	183[c]	51	27.9	29	15.9	47	25.7	53	29.0
No, have not used	44	1	2.3	17	38.6	15	34.1	11	25.0
Cost per Unit or Area of Service[ns]									
Yes, have used	185[e]	46	24.9	35	18.9	49	26.5	53	28.7
No, have not used	46[d]	5	10.9	13	28.3	13	28.3	14	30.4

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding.
[c]Includes 1 business & industry and 2 other categories that are not identified in table
[d]Includes 1 other category that is not identified in table
[e]Includes 1 business & industry and 1 other categories that are not identified in table
[ns] Not significant: $p > .05$
*Indicates significant difference ($p < .05$) between respondents' usage of the performance measure and respondents' category of foodservice
**Indicates significant difference ($p < .01$) between respondents' usage of the performance measure and respondents' category of foodservice
***Indicates significant difference ($p < .001$) between respondents' usage of the performance measure and respondents' category of foodservice

health care and seven times more college/university respondents used *labor hours per unit*, than had not. Only twice as many correctional and school respondents used this performance measure, than had not.

Financial performance measures in relation to respondents' category of foodservice are summarized in Table 4.16. The six **financial** performance measures were: *food cost percentage*, *labor cost percentage*, *supply cost percentage*, *percentage product purchased from sources*, *actual revenue versus budgeted revenue*, and *cost per unit or area of service*.

The performance measure *food cost percentage* was studied. *Food cost percentage* means food cost as a percentage of total revenue. There was strong evidence of an association between usage of *food cost percentage* and respondents' category of foodservice, χ^2 (5, n = 236) 18.19, p = .003. The null hypotheses of no association was rejected. Usage within categories was examined. About 98% of the college/university respondents used *food cost percentage*. Within the other categories, 70% correctional, 72% health care and 84% school respondents used this foodservice performance measure.

The usage of the performance measure *labor cost percentage* was studied. *Labor cost percentage* means labor cost as a percentage of total revenue. The association between *labor cost percentage* and respondents' category of foodservice was highly statistically significant, χ^2 (5, n = 237) 53.04, p = .001. The null hypothesis of no association was rejected. About 98% of the college/university and 88% of the

school foodservice respondents *used labor cost percentage*, while only 43% correctional and 63% of the health care respondents used the measure.

Performance measure *supply cost percentage* was examined. *Supply cost percentage* means supply cost as a percentage of total revenue. There was strong evidence of a relationship between *supply cost percentage* and respondents' category of foodservice, χ^2 (5, n = 232) 14.25, p = .014. The null hypothesis of no association was rejected. The percentages of respondents in college/university, correctional, health care, and school having used *supply cost percentage* were: 85, 59, 60, and 77, respectively.

The usage of the performance measure *percentage product purchased from sources* was studied. Examples of sources were: central warehouse, prime vendor, and state contracts. The relationship between *percentage product purchased from sources* and respondents' category of foodservice was not statistically significant, χ^2 (5, n = 235) = 6.91, p = .227. There was not a substantial difference between those respondents who had used this measure and those who had not, with one exception. Almost twice as many school foodservice respondents reported not using the measure, as had used it.

The relationship between *actual revenue versus budgeted revenue* and respondents' category of foodservice was highly statistically significant, χ^2 (5, n = 227) = 21.07, p = .001. Looking at the number of respondents and percentage within category that had used this performance measure, the college/university category had the highest percentage of respondents (n = 51, 98%) using this performance measure.

This was followed by school respondents (n = 53, 83%), health care respondents (n = 47, 76%), and correctional respondents (n = 29, 63%).

The relationship between *cost per unit or area of service* and respondents' category of foodservice was not statistically significant, χ^2 (5, n = 231) = 6.28, p = .280. Approximately 90% of college/university respondents had used this measure. Within the other three categories (correctional, health care, and school), about three and a half times more respondents had used it, than had not.

Usage of customer services performance measures and respondents' category of foodservice is illustrated in Table 4.17. The four **customer services** performance measures were: *percent satisfaction with quality of service factors*, *ratio of customer complaints to total customer population*, *outcome as a result of service rendered*, and *average daily participation per total population*.

The performance measure *percent satisfaction with quality of service factors* was examined. Examples of factors were: presentation, courtesy of services, appearance, environment, temperature of food, timeliness, appropriateness of care, taste, and overall rating. The association between percent satisfaction with quality of service factors and respondents' category of foodservice was highly statistically significant, χ^2 (5, n = 239) = 31.28, p = .001. The null hypothesis of no association was rejected. In health care, 91% of the respondents reported having used this measure; and in college/university, 88% used the measure. These high percentages were in contrast to school (56%) and correctional (64%) foodservice.

Table 4.17 Relationship between respondents'[a] customer services performance measures usage and category of foodservice operation.

Usage of Customer Services Performance Measures	n	Categories of Foodservice: College or University #	College or University %[b]	Correctional #	Correctional %	Health care #	Health care %	School #	School %
Percent Satisfaction with Quality of Service Factors***									
Yes, have used	179[c]	46	25.7	32	17.9	62	34.7	37	20.7
No, have not used	60[d]	6	10.0	18	30.0	6	10.0	29	48.3
Ratio of Customer Complaints to Total Customer Population*									
Yes, have used	75	15	20.0	27	36.0	19	25.3	14	18.7
No, have not used	162[e]	37	22.8	23	14.2	48	29.6	51	31.5
Outcome as a Result of Services Rendered*									
Yes, have used	85[d]	16	18.8	16	18.8	37	43.5	15	17.7
No, have not used	147[c]	35	23.8	32	21.8	30	20.4	48	32.7
Average Daily Participation per Total Population**									
Yes, have used	164[f]	44	26.8	33	20.1	25	15.2	61	37.2
No, have not used	73[g]	7	9.6	17	23.3	42	57.5	5	6.9

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.

[b]Percentages do not add up to 100% due to rounding.

[c]Includes 1 business & industry and 1 other categories that are not identified in table

[d]Includes 1 other category that is not identified in table

[e]Includes 1 business & industry and 2 other categories that are not identified in table

[f]Includes 1 business & industry that is not identified in table

[g]Includes 2 in other category that is not identified in table

**Indicates significant difference ($p < .01$) between respondents' usage of the performance measure and respondents' category of foodservice

***Indicates significant difference ($p < .001$) between respondents' usage of the performance measure and respondents' category of foodservice

The performance measure *ratio of customer complaints to total customer population* was studied. There was strong evidence of an association between usage of *ratio of customer complaints to total customer population* to respondents' category of foodservice, χ^2 (5, n = 237) = 16.53, p = .005. The null hypotheses of no association was rejected. With the exception of correctional foodservice, the majority of respondents within each of the other three categories had not used this performance measure. However, 54% of the correctional respondents used this measure, while 46% of the correctional respondents had not.

Another customer services performance measure was *outcome as a result of services rendered.* The survey gave the example of outcome in health care: improved nutritional status. There was strong evidence of an association between usage of *outcome as a result of services rendered* and respondents' category of foodservice, χ^2 (5, n = 232) = 16.00, p = .007. The null hypothesis of no association was rejected. The category with the greatest number of respondents reporting usage of this performance measure was health care. About 44% (n = 37) of all respondents reporting having used this measure were health care. However, close to the same number of health care respondents reported not having used the measure. In the other categories, about half as many respondents reported having used the measure, as had not.

The performance measure *average daily participation per total population* was studied. The survey gave an example: number of meals per student enrollment. The association between respondents' category of foodservice and *average daily*

participation per total population was highly statistically significant, χ^2 (5, n = 237) = 60.82, p = .001. Of all the respondents who used this measure, the highest percentages were school and college/university foodservice respondents. About 92% of all school foodservice respondents reported having used this measure, and 86% of the college/university respondents used the measure. This is in contrast to correctional and health care; only 66% of the correctional respondents and 37% of health care had used the measure.

The final area of performance measures was **human resources**. Table 4.18 illustrates the comparison between usage of human resources performance measures and respondents' category of foodservice. The four human resources performance measures were: *absenteeism per time period*, *turnover percentage as a result of dismissal or voluntary departure*, *number of work injuries per hours worked*, and *number of Equal Employment Opportunity (EEO) or union complaints per average*.

The association between respondents' category of foodservice and *absenteeism per time period* was not significant, χ^2 (5, n = 238) = 3.98, p = .553. The null hypotheses of no association was not rejected. With the exception of correctional, all other respondents were nearly equally divided between those who had used the measure and those who had not. In correctional, 59% said they had used the measure and 41% said they had not.

Turnover percentage as a result of dismissal or voluntary departure was studied. An example of this measure was the number of replacements per average

Table 4.18 Relationship between respondents'[a] human resources performance measures usage and category of foodservice operation.

Usage of Human Resources Performance Measures	n	Categories of Foodservice: College or University #	College or University %[b]	Correctional #	Correctional %	Health care #	Health care %	School #	School %
Absenteeism per Time Period[ns]									
Yes, have used	126[c]	27	21.4	30	23.8	35	27.8	31	24.6
No, have not used	112	25	22.3	21	18.8	33	29.5	33	29.5
Turnover Percentage as a Result of Dismissal or Voluntary Departure[ns]									
Yes, have used	88[d]	21	23.9	16	18.2	32	36.4	17	19.3
No, have not used	148[e]	31	21.0	32	21.6	36	24.3	48	32.4
Number of Work Injuries per Hours Worked*									
Yes, have used	109[f]	30	27.5	25	22.9	35	32.1	18	16.5
No, have not used	129[g]	22	17.1	26	20.2	32	24.8	47	36.4
Number of EEO or Union Complaints per Average Number of Employees[ns]									
Yes, have used	42	11	26.2	13	31.0	10	23.8	8	19.1
No, have not used	195[c]	41	21.0	37	19.0	57	29.2	57	29.2

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.

[b]Percentages do not add up to 100% due to rounding.

[c]Includes 1 business & industry and 2 other categories that are not identified in table

[d]Includes 2 in other category that is not identified in table

[e]Includes 1 business & industry that is not identified in table

[f]Includes 1 other category that is not identified in table

[g]Includes 1 business & industry and 1 other categories that are not identified in table

[ns]Not significant: $p > .05$

*Indicates significant difference ($p < .05$) between respondents' usage of the performance measure and respondents' category of foodservice

number of employees. At an α level of .05, the association between respondents' category and *turnover percentage as a result of dismissal or voluntary departure* was not statistically significant, but slightly suggestive, χ^2 (5, n = 236) = 10.72, p = .057. The null hypotheses was not rejected. Of the respondents within each category that answered that question, it was noted that fewer respondents had used the measure, than had not. For example, in the college/university category, 40% of the respondents had used it, while 60% had not. In the correctional category, 33% of the respondents had used it, while 67% had not. In health care, 47% of the respondents had used it, and 53% had not. In the school category, 26% of the respondents had used the measure, while 74% had not.

Number of work injuries per hours worked was studied. The relationship between respondents' category of foodservice and *number of work injuries per hours worked* was statistically significant, χ^2 (5, n = 238) = 13.74, p = .017. The null hypotheses of no association was rejected. Only 28% of the school foodservice respondents used the measure, compared to 58% of the college/university respondents, 52% of the health care respondents, and 49% of the correctional respondents. One respondent noted on the survey the usage of the performance measure *number of work injuries per FTE*, not per hours worked.

The last performance measure studied was *number of EEO or union complaints per average number of employees*. The relationship between respondents' category of foodservice and *number of EEO or union complaints per average number of*

Table 4.19 Respondents'[a] (n = 247) usage of foodservice performance measures.

	Usage			
	Yes, do use		No, do not use	
Foodservice Areas and Performance Measures	#	%[b]	#	%
Operational				
Meals per Labor Hour	186	75.3	47	19.0
Labor Hours per Unit	181	73.3	51	20.6
Meals per Time Period	174	70.4	58	23.5
Inventory Turnover per Time Period	152	61.5	79	32.0
Minutes per Unit	120	48.6	108	43.7
Percentage Accuracy of Meal Assembly	83	33.6	144	58.3
Clinical Productivity	61	24.7	155	62.8
Financial				
Food Cost Percentage	193	78.1	46	18.6
Cost per Unit or Area of Service	186	75.3	48	19.4
Actual Revenue versus Budgeted Revenue	185	74.9	45	18.2
Labor Cost Percentage	177	71.7	63	25.5
Supply Cost Percentage	166	67.2	69	27.9
Percentage Product Purchased from Sources	118	47.8	120	48.6
Customer Services				
Percent Satisfaction with Quality of Service Factors	180	72.9	62	25.1
Average Daily Participation per Total Population	166	67.2	74	30.0
Outcome as a Result of Services Rendered	85	34.4	150	60.7
Ratio of Customer Complaints to Total Customer Population	76	30.8	164	66.4
Human Resources				
Absenteeism per Time Period	127	51.4	114	46.2
Number of Work Injuries per Hours Worked	110	44.5	131	53.0
Turnover Percentage as a Result of Dismissal or Voluntary Departure	89	36.0	150	60.7
Number of EEO or Union Complaints per Average Number of Employee	42	17.0	198	80.2

[a]The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding.

employees was not statistically significant, χ^2 (5, n = 237) = 5.08, p = .406. The null hypotheses of no association was not rejected. Out of 237 respondents answering this question, only 42 had used the measure.

Table 4.19 contains a simplified summary (irrespective of category of foodservice) of frequencies of respondents' usage of the performance measures. Overall, the three **operational** performance measures used by the greatest number of respondents were: *meals per labor hour* (75%), *labor hours per unit* (73%), and *meals per time period* (70%). The top three **financial** performance measures, according to total numbers of respondents using them were*: food cost percentage* (78%), *cost per unit or area of service* (75%) , and *actual revenue versus budgeted revenue* (75%). The two **customer services** performance measures used by the greatest number of respondents were *percent satisfaction with quality of service factors* (73%) and *average daily participation per total population* (67%). Finally, the **human resources** performance measure used by the greatest number of respondents was *absenteeism per time period* (51%).

4.3.3.2 Type of Benchmarking Partner

Respondents were queried about usage of benchmarking partners. Only 43% of respondents reported having used benchmarking partners. There was strong evidence of an association between usage of type of benchmarking partner and respondents' category of foodservice (Table 4.20). Of the respondents who reported having used

Table 4.20 Relationship between respondents'[a] usage of type of benchmarking partner and category of foodservice operation.

		Categories of Foodservice							
		College or University		Correctional		Health care		School	
Usage of type of benchmarking partner	n	#	%[b]	#	%	#	%	#	%
College or University Foodservice***									
Yes, have used	38	26	68.4	3	7.9	3	7.9	6	15.8
No, have not used	48	1	2.1	11	22.9	23	47.9	13	27.1
Hospital Foodservice***									
Yes, have used	47	5	10.6	7	14.9	32	68.1	3	6.4
No, have not used	43	14	32.6	11	25.6	2	4.7	16	37.2
Other Health Care Foodservice***									
Yes, have used	34	5	14.7	5	14.7	23	67.7	1	2.9
No, have not used	46	13	28.3	10	21.7	7	15.2	16	34.8
School Foodservice***									
Yes, have used	34	8	23.5	3	8.8	1	2.9	22	64.7
No, have not used	47	11	23.4	12	25.5	24	51.1	0	0
Correctional Foodservice***									
Yes, have used	27	2	7.4	21	77.8	2	7.4	2	7.4
No, have not used	56	15	26.8	1	1.8	23	41.1	17	30.4
Business & Industry Foodservice*									
Yes, have used	43	19	44.2	4	9.3	10	23.7	10	23.3
No, have not used	37	4	10.8	9	24.3	16	43.2	8	21.6
Non-Foodservice Industry***									
Yes, have used	6	6	100.0	0	0	0	0	0	0
No, have not used	60	11	18.3	12	20.0	22	36.7	15	22.7
Other[ns]									
Yes, have used	6	3	50.0	2	33.3	1	16.7	0	0
No, have not used	195	41	21.0	37	19.0	57	29.2	57	29.2

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.

[b]Percentages do not add up to 100% due to rounding.

[ns] Not significant, $p > .05$

**Indicates significant difference ($p < .01$) between respondents' usage of the type of benchmarking partner and respondents' category of foodservice

***Indicates significant difference ($p < .001$) between respondents' usage of the type of benchmarking partner and respondents' category of foodservice

benchmarking partners, the most common partners were ones from the same category as the respondent. The association between respondents' category of foodservice and usage of *college/university foodservice* as the benchmarking partner was highly statistically significant, χ^2 (3, n = 86), = 45.13, p = .001. The null hypothesis of no association was rejected. Of those respondents using this partner, 68% were college/university respondents. The association between respondents' category of foodservice and usage of *hospital foodservice* as the benchmarking partner was highly statistically significant, χ^2 (3, n = 90), = 40.42, p = .001. The null hypothesis of no association was rejected. Of those respondents using this partner, 68% were health care respondents. The association between respondents' category of foodservice and usage of *other health care foodservice* as the benchmarking partner was highly statistically significant, χ^2 (3, n = 80), = 25.77, p = .001. The null hypothesis of no association was rejected. Of those respondents using this partner, 68% were health care respondents. The association between respondents' category of foodservice and usage of *school foodservice* as the benchmarking partner was highly statistically significant, χ^2 (3, n = 81), = 48.19, p = .001. The null hypothesis of no association was rejected. Of those respondents using this partner, 65% were school respondents. The association between respondents' category of foodservice and usage of *correctional foodservice* as the benchmarking partner was highly statistically significant, χ^2 (3, n = 83) = 54.07, p = .001. The null hypothesis of no association was rejected. Of those respondents using this partner, 78% were correctional respondents. Respondents were also asked about another type of foodservice: *business and industry*. There was strong

evidence of an association between usage of *business and industry foodservice* as the benchmarking partner and respondents' category of foodservice, χ^2 (3, n = 80) = 12.94, p = .005. The null hypothesis of no association was rejected. Of those respondents using this partner, 44% were college/university respondents. The association between respondents' category of foodservice and usage of *non-foodservice industry* as the benchmarking partner was highly statistically significant, χ^2 (3, n = 66) = 19.02, p = .001. The null hypothesis of no association was rejected. Of the six respondents using this partner, all six were college/university foodservice respondents. Other partners mentioned by respondents were: telecommunications, clinical/professional services, and consulting company. One respondent remarked that this question was answered in terms of benchmarking done "informally" with these partners, such as a call on the phone to discuss issues.

4.3.4 Foodservice Directors' Knowledge and Beliefs About Benchmarking

4.3.4.1 Importance of Benchmarking

Respondents were asked about their beliefs about the importance (scale = none, little, some, and great) of benchmarking in performing their job, as well as their perceived knowledge level (scale = none, low level, moderate level, and high level) about benchmarking (Table 4.21). The association between respondents' perceived importance and knowledge levels about benchmarking was found to be highly

Table 4.21 Relationship between respondents'[a] perceived importance of benchmarking in performing job and knowledge about benchmarking.

		Perceived Importance of Benchmarking							
		None		Little		Some		Great	
Knowledge Level About Benchmarking* **	**n**	**#**	**%[b]**	**#**	**%**	**#**	**%**	**#**	**%**
None	29	13	44.8	8	27.6	7	24.1	1	3.5
Low Level	53	2	3.8	7	13.2	32	60.4	12	22.6
Moderate Level	115	1	0.9	5	4.4	50	43.5	59	51.3
High Level	26	0	0	0	0	5	5.3	21	22.6

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding.
***Indicates significant association ($p < .001$) between respondents' perceived importance of benchmarking in performing job and knowledge level about benchmarking.

statistically significant, χ^2 (9, n = 223) = 120.28, $p = .001$. The null hypothesis of no association was rejected. About 63% of the respondents had a moderate to high level of knowledge and 84% felt benchmarking had some or great importance in doing their jobs. None of those respondents who had a high knowledge level about benchmarking reported perceiving benchmarking as having no or little importance to doing their job. In contrast, of those respondents who reported no knowledge about benchmarking, 45% of them perceived benchmarking to have no importance.

4.3.4.2 Foodservice Directors' Needs for Knowledge and Skills About Benchmarking

Respondents were asked if they needed to develop knowledge and skills about benchmarking. Of the respondents who replied, 61% (n = 151) reported they did, and 36% (n = 88) reported they did not. In Table 4.22, the association between respondents' category of foodservice and the respondents' belief about an overall need to develop knowledge and skills about benchmarking was not statistically significant, χ^2 (5, n = 236) = 6.22, p = .285. Within college/university and correctional categories, about the same number of respondents reported a need to develop knowledge and skills about benchmarking, as did not need. Within health care and school categories, about

Table 4.22 Association between respondents'[a] overall need to develop knowledge and skills about benchmarking and category of foodservice.

		Categories of Foodservice							
		College or University		Correctional		Health care		School	
Do you need to develop knowledge and skills about benchmarking?[ns]	**n**	**#**	**%[b]**	**#**	**%**	**#**	**%**	**#**	**%**
No	87	22	25.3	23	26.4	21	24.1	21	24.1
Yes	149[c]	26	17.5	29	19.5	46	30.9	45	30.2

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding.
[c]Includes 1 business & industry and 2 other categories that are not identified in table
[ns] Not significant: $p > .05$

Table 4.23 Relationship between respondents'[a] category of foodservice operation and needs for knowledge and skills about benchmarking.

		Categories of Foodservice							
		College or University		Correctional		Health care		School	
Needs for knowledge and skills about benchmarking	**n**	**#**	**%[b]**	**#**	**%**	**#**	**%**	**#**	**%**
How benchmarking is beneficial*									
No need	26[c]	5	19.2	4	15.4	11	42.3	5	19.2
Low need	55[d]	13	23.6	7	12.7	20	36.4	14	25.5
Moderate need	47[d]	7	14.9	10	21.3	10	21.3	19	40.4
High need	22	0	0	10	45.5	5	22.7	7	31.8
How to choose benchmarking partner(s)[ns]									
No need	11	1	9.1	3	27.3	4	36.4	3	27.3
Low need	23[d]	4	17.4	5	21.7	4	17.4	9	39.1
Moderate need	76[c]	14	18.4	13	17.1	22	29.0	26	34.2
High need	43[d]	8	18.6	9	20.9	17	39.5	8	18.6
How to choose a project topic[ns]									
No need	13	3	23.1	2	15.4	5	38.5	3	23.1
Low need	38[e]	9	23.7	6	15.8	10	26.3	11	29.0
Moderate need	73[d]	14	19.2	12	16.4	20	27.4	26	35.6
High need	29	1	3.5	10	34.5	13	44.8	5	17.2
How to collaborate with benchmarking partner(s)[ns]									
No need	11	1	9.1	2	18.2	3	27.3	5	45.5
Low need	20	2	10.0	4	20.0	9	45.0	5	25.0
Moderate need	84[e]	16	19.1	16	19.1	20	23.8	30	35.7
High need	38[d]	8	21.1	9	23.7	14	36.8	6	15.8
How to collect benchmarking data[ns]									
No need	11	1	9.1	2	18.2	5	45.5	3	27.3
Low need	31	5	16.1	5	16.1	10	32.3	11	35.5
Moderate need	77[f]	16	20.8	12	15.6	23	29.9	23	29.9
High need	33	5	15.2	11	33.3	8	24.2	9	27.3
What the benchmarking process is[ns]									
No need	22	3	13.6	4	18.2	10	45.5	5	22.7
Low need	53[g]	12	22.6	8	15.1	16	30.2	14	26.4
Moderate need	50	12	24.0	7	14.0	14	28.0	17	34.0
High need	25	0	0	11	44.0	5	20.0	9	36.0

Table 4.23, (Continued)

Needs for knowledge and skills about benchmarking	n	Categories of Foodservice: College or University #	College or University %[b]	Correctional #	Correctional %	Health care #	Health care %	School #	School %
Other[ns]									
No need	17[d]	3	17.7	3	17.7	5	29.4	5	29.4
Low need	2	1	50.0	1	50.0	0	0	0	0
Moderate need	9	4	44.4	0	0	3	33.3	2	22.2
High need	6	0	0	3	50.0	1	16.7	2	33.3

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer), which were excluded for data analysis.
[b]Percentages do not add up to 100% due to rounding.
[c]Includes 1 business & industry that is not identified in table
[d]Includes 1 other category that is not identified in table
[e]Includes 1 business & industry and 1 other categories that are not identified in table
[f]Includes 1 business & industry and 2 other categories that are not identified in table
[ns] Not significant: $p > .05$
*Indicates significant difference ($p < .05$) between respondents' category of foodservice and needs for knowledge and skills about benchmarking

twice as many respondents did need to develop knowledge and skills, as did not need. This was similar to the overall response. The majority of respondents reported a need to develop knowledge and skills about benchmarking.

If the respondents stated they did need to develop knowledge and skills, they were asked to rate their need (scale = no need, low need, moderate need, and high need) for specific knowledge and skills about benchmarking (Table 4.23). Most respondents (n = 103) had a moderate to low need for knowledge and skills about *how benchmarking is beneficial*. One of the greatest needs was for knowledge and skills about *how to choose benchmarking partners*; 121 respondents had a moderate to high need for this subject. Close to the same number (n = 124) had a moderate to high need

for *how to collaborate with benchmarking partners*. About half (n = 75) had a moderate need for *how to choose a project topic*. About half of the respondents (n = 79) had a moderate need for *how to collect benchmarking data*. Finally, a total of 105 respondents had a low to moderate need for *what the benchmarking process is*. Other knowledge and skills that respondents noted on the survey they needed were: how to convince others of benefits, time versus labor hours, computer programs, long range planning through benchmarking data, identify where greatest need exists, how to use for cost effective areas, comparing like items, best system used to increase benefits, and how to ensure fair comparisons.

Table 4.24 Ratings (mean ± standard deviation) of perceived need[a] to develop knowledge and skills about benchmarking by respondents from four categories of foodservice.

Areas of benchmarking where perceived need to develop knowledge and skills about benchmarking	**Categories of Foodservice**			
	College or university[b]	**Correctional[c]**	**Health care[d]**	**School[e]**
	mean±standard deviation			
How benchmarking is beneficial	2.1±0.7	2.8±1.0	2.2±0.9	2.6±0.9
How to choose benchmarking partner(s)	3.1±0.8	2.9±0.9	3.1±0.9	2.8±0.8
How to choose a project topic	2.5±0.8	3.0±0.9	2.9±1.0	2.7±0.8
How to collaborate with benchmarking partner(s)	3.2±0.7	3.0±0.8	3.0±0.9	2.8±0.8
How to collect benchmarking data	2.9±0.7	3.1±0.9	2.7±0.9	2.8±0.8
What the benchmarking process is	2.3±0.7	2.8±1.1	2.3±0.9	2.7±0.9

[a]Need scale: 4 = high need; 3 = moderate need; 2 = low need; 1 = no need.
[b]College/university respondents: n ranges from 25 to 27 (varies due to missing data)
[c]Correctional respondents: n ranges from 30 to 31 (varies due to missing data)
[d]Health care respondents: n ranges from 45 to 48 (varies due to missing data)
[e]School respondents: n ranges from 45 to 46 (varies due to missing data)

The ratings (mean ± standard deviation) of perceived need to develop knowledge and skills about benchmarking by respondents from the four categories of foodservice are illustrated in Table 4.24. According to the means, college/university had the greatest need (albeit moderate) for *how to collaborate with benchmarking partner(s)* (3.2) and least need (low) for *how benchmarking is beneficial* (2.1). Correctional respondents had the highest need (moderate) for *how to collect benchmarking data* (3.1); and least need (slightly less than moderate) for *how benchmarking is beneficial* (2.8) and *what the benchmarking process is* (2.8). Health care and school respondents had the greatest need (moderate) for *how to choose benchmarking partner(s)* (3.1 and 2.8 respectively), *how to collaborate with benchmarking partner(s)* (3.0 and 2.8 respectively), and *how to collect benchmarking data* (2.7 and 2.8 respectively); with the least need (low to moderate) for *how benchmarking is beneficial* (2.2 and 2.6 respectively). A summary of respondents' level of perceived need for more knowledge and skills about benchmarking irrespective of category of foodservice is illustrated in Table 4.25.

4.3.4.3 Sources to Gain Information About Benchmarking

Respondents were asked how they would like to gain more knowledge and skills about benchmarking (Table 4.26). Most respondents reported they would like any of the sources listed. The source of information that the greatest number of

Table 4.25 Respondents'[a] (n = 247) level of perceived need for more knowledge and skills about benchmarking.

	Frequencies							
	No need		Low need		Moderate need		High need	
Knowledge and skills about benchmarking	#	%[b]	#	%	#	%	#	%
How to choose benchmarking partners	11	4.5	23	9.3	78	31.6	43	17.4
How to collaborate with benchmarking partner(s)	11	4.5	20	8.1	86	34.8	38	15.4
How to collect benchmarking data	11	4.5	31	12.6	79	32.0	33	13.4
How to choose a project topic	13	5.3	38	15.4	75	30.4	29	11.7
What the benchmarking process is	22	8.9	53	21.5	52	21.1	25	10.1
How benchmarking is beneficial	26	10.5	55	22.3	49	19.8	22	8.9
Other	17	6.9	2	0.8	9	3.6	6	2.4

[a]Variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% because they are actually percentages for that item, compared to total data set, n=247. Table does not show percentages for missing data and not applicable data.

Table 4.26 Respondents'[a] (n = 247) desire for sources to gain information on benchmarking.

	Would like to gain more knowledge and skills about benchmarking			
	Yes		No	
Sources to Gain Information on Benchmarking	#	%[b]	#	%
Continuing education programs	146	59.1	27	10.9
Professional newsletters	136	55.1	33	13.4
Professional association meetings	132	53.4	37	15.0
Professional journals	127	51.4	38	15.4
Trade magazines	124	50.2	46	18.6
Self-study materials	116	47.0	50	20.2
Internet	88	35.6	76	30.8
Other	30	12.1	22	8.9

[a]Variation in total numbers caused by missing observations (i.e. respondent did not answer question) were excluded for data analysis.
[b]Percentages do not add up to 100% because they are actually percentages for that item, compared to total data set, n=247. Table does not show percentages for missing data and not applicable data.

Table 4.27 Relationship between respondents'[a] category of foodservice operations and desire to use identified sources to gain information on benchmarking.

		Categories of Foodservice							
		College / University		Correctional		Health care		School	
Sources to Gain Information on Benchmarking	n	#	%[b]	#	%	#	%	#	%
Continuing education programs[ns]									
Yes	146[c]	25	17.1	28	19.2	47	32.2	43	29.5
No	27	8	29.6	4	14.8	7	25.9	8	29.6
Internet[ns]									
Yes	88[d]	21	23.9	12	13.6	25	28.4	29	33.0
No	76[e]	13	17.1	15	19.8	29	38.2	17	22.4
Professional association meetings[ns]									
Yes	132[e]	24	18.2	25	18.9	39	29.6	42	31.8
No	37[d]	7	18.9	4	10.8	15	40.5	10	27.0
Professional journals[ns]									
Yes	127[g]	24	18.9	22	17.3	40	31.5	38	29.9
No	38	7	18.4	6	15.8	14	36.8	11	29.0
Professional newsletters[ns]									
Yes	136[c]	27	19.9	28	20.6	39	28.7	39	28.7
No	33	5	15.2	3	9.1	15	45.5	10	30.3
Self-study materials[ns]									
Yes	116[c]	20	17.2	26	22.4	38	32.8	29	25.0
No	50	12	24.0	5	10.0	13	26.0	20	40.0
Trade magazines[ns]									
Yes	124[f]	27	21.8	25	20.2	37	29.8	32	25.8
No	46	6	13.0	6	13.0	15	32.6	19	41.3
Other[ns]									
Yes	30	7	23.3	7	23.3	8	26.7	8	26.7
No	22[d]	3	13.6	3	13.6	7	31.8	8	36.4

[a]Complete data set: n=247. The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.

[b]Percentages do not add up to 100% due to rounding.

[c]Includes 1 business & industry and 2 other categories that are not identified in table

[d]Includes 1 other category that is not identified in table

[e]Includes 1 business & industry and 1 other categories that are not identified in table

[f]Includes 1 business & industry that is not identified in table

[ns] Not significant: $p > .05$

respondents reported not wanting was the Internet, although it was equally divided (88 said "yes", 76 said "no"). The greatest number of respondents (n = 146) desired continuing education programs. A summary of how categories of foodservice directors compared with benchmarking information sources is in Table 4.27.

4.3.4.4 Beliefs About What Delayed or Prevented Benchmarking

Respondents were asked their opinion about what delayed or prevented them from initiating benchmarking activities. Analyzing respondent data frequencies (Table 4.28), the top three reasons were: *other projects took priority over benchmarking projects* (n = 145, 59%), *lacked trained personnel to conduct benchmarking projects* (n = 133, 54%), and *lacked time necessary to conduct benchmarking* (n = 130, 53%). The two reasons that the greatest number of respondents said did not delay or prevent them from initiating benchmarking activities were: *unaware of any benefits* (n = 158, 64%) and *believed benchmarking was too costly* (n = 175, 71%). One respondent commented that they were mandated to do the benchmarking despite accurate data on performance measures not being available. Another respondent commented that there was a critical need for benchmarking but they were cautious about who had access to internal data. Several respondents wrote on the survey about the problem issue of time. "Most days are taken up with work that must be performed daily." Another respondent commented being very much interested in benchmarking, but did not have the time or training.

Table 4.28 Respondents'[a] (n = 247) beliefs about what delayed or prevented benchmarking activities.

	Frequencies			
	Yes		No	
Reasons why delayed or prevented from benchmarking	#	%[b]	#	%
Other projects took priority over benchmarking projects	145	58.7	71	28.7
Lacked trained personnel to conduct benchmarking projects	133	53.8	84	34.0
Lacked time necessary to conduct benchmarking	130	52.6	87	35.2
Needed to know more about benchmarking	114	46.2	103	41.7
Accurate data on performance measures in organization were not available	101	40.9	116	47.0
Lacked confidence in the accuracy of other people's data	86	34.8	124	50.2
Lacked leadership commitment to benchmarking within the organization	78	31.6	136	55.1
Believed there would be a low return for the effort	70	28.3	144	58.3
Believed the organization's performance measures were not comparable to other organizations	63	25.5	152	61.5
Unaware of any benefits	57	23.1	158	64.0
Believed benchmarking was too costly	40	16.2	175	70.9

[a]The variation in total numbers was caused by missing observations (i.e. respondent did not answer question), which were excluded for data analysis.
[b]Percentages do not add up to 100% because they are actually percentages for that item, compared to total data set, n=247. Table does not show percentages for missing data and not applicable data.

4.3.5 Research Outcome: Null Hypotheses

A summary of the research outcome of the foodservice directors questionnaire is contained in Table 4.29. The rejection and non-rejection of each null hypotheses,

variables, and *p* values are illustrated. A Chi Square test is designed to assess the evidence against the null hypotheses.

4.3.5.1 Null Hypotheses ($H_0$1): Usage of Types of Benchmarking

$H_0$1: Usage of types of benchmarking was not associated with foodservice director's: (1) perceived knowledge about benchmarking, (2) perceived importance of benchmarking, and (3) outcomes.

There was very strong evidence that there was an association between usage of internal, external, and functional/generic types of benchmarking and respondents' **knowledge level** of benchmarking (Table 4.29); null hypotheses of no association was

Table 4.29 Null hypotheses and variables related to foodservice directors survey.

	Statistical Analysis and Null Hypotheses ($p < .05$)	***p* value**
Null Hypotheses		
$H_0$1: Usage of types of benchmarking is not associated with foodservice director's:	Chi-Square[a]	
(1) perceived knowledge about benchmarking,		
a. internal	$H_0$1(1)a **rejected**	.001
b. external	$H_0$1(1)b **rejected**	.001
c. functional/generic	$H_0$1(1)c **rejected**	.001
(2) perceived importance of benchmarking,		
a. internal	$H_0$1(2)a **rejected**	.001
b. external	$H_0$1(2)b **rejected**	.001
c. functional/generic	$H_0$1(2)c **rejected**	.001
(3) outcomes		
a. internal - Have experienced benchmarking outcomes	$H_0$1(3)a **rejected**	.001
b. external - Have experienced benchmarking outcomes	$H_0$1(3)b **rejected**	.001
c. functional/generic - Have experienced benchmarking outcomes	$H_0$1(3)c **rejected**	.001

Table 4.29, (Continued)

	Statistical Analysis and Null Hypotheses ($p < .05$)	p value
Null Hypotheses		
$H_0$2: Category of foodservice operation is not associated with:	Chi-Square[a]	
(1) performance measures		
a. minutes per unit	$H_0$2(1)a not rejected	.135
b. inventory turnover per time period	$H_0$2(1)b **rejected**	.035
c. percentage accuracy of meal assembly	$H_0$2(1)c **rejected**	.001
d. clinical productivity	$H_0$2(1)d **rejected**	.001
e. meals per labor hour	$H_0$2(1)e **rejected**	.001
f. meals per time period	$H_0$2(1)f not rejected	.067
g. labor hours per unit	$H_0$2(1)g **rejected**	.001
h. food cost percentage	$H_0$2(1)h **rejected**	.003
i. labor cost percentage	$H_0$2(1)i **rejected**	.001
j. supply cost percentage	$H_0$2(1)j **rejected**	.014
k. percentage product purchased from sources	$H_0$2(1)k not rejected	.227
l. actual revenue versus budgeted revenue	$H_0$2(1)l **rejected**	.001
m. cost per unit or area of service	$H_0$2(1)m not rejected	.280
n. percent satisfaction with quality of service factors	$H_0$2(1)n **rejected**	.001
o. ratio of customer complaints to total customer population	$H_0$2(1)o **rejected**	.005
p. outcome as a result of service rendered	$H_0$2(1)p **rejected**	.007
q. average daily participation per total population	$H_0$2(1)q **rejected**	.001
r. absenteeism per time period	$H_0$2(1)r not rejected	.553
s. turnover percentage as a result of dismissal or voluntary departure	$H_0$2(1)s not rejected	.057
t. number of work injuries per hours worked	$H_0$2(1)t **rejected**	.017
u. number of EEO or union complaints per average number of employees	$H_0$2(1)u not rejected	.406
(2) type of benchmarking partner		
a. college/university foodservice	$H_0$2(2)a **rejected**	.001
b. hospital foodservice	$H_0$2(2)b **rejected**	.001
c. other health care foodservice	$H_0$2(2)c **rejected**	.001
d. school foodservice	$H_0$2(2)d **rejected**	.001
e. correctional foodservice	$H_0$2(2)e **rejected**	.001
f. business & industry foodservice	$H_0$2(2)f **rejected**	.005
g. non-foodservice industry	$H_0$2(2)g **rejected**	.001
h. other	$H_0$2(2)h not rejected	.243
(3) usage of types of benchmarking		
a. internal	$H_0$2(3)a not rejected	.280
b. external	$H_0$2(3)b not rejected	.054
c. functional/generic	$H_0$2(3)c **rejected**	.001
$H_0$3: Foodservice director's knowledge about benchmarking is not associated with:	Chi-Square[a]	
perceived importance of benchmarking	$H_0$3 **rejected**	.001

[a]Chi square test is designed to assess the evidence against the H_0.

rejected. Of the respondents that had used internal benchmarking, over three-fourths had a moderate to high level of knowledge about benchmarking. Likewise, of the respondents who had not used internal benchmarking, over three-fourths had no knowledge or a low level of knowledge about benchmarking. None of the respondents who had not used internal benchmarking had a high level of knowledge. The majority (80%) of respondents who had used external benchmarking had a moderate or high level of knowledge about benchmarking. Of those respondents that had not used external benchmarking, 69% had little or no knowledge of benchmarking, while 31% had a moderate level of knowledge, and no respondents had a high level of knowledge. A majority of respondents (88%) that had used functional/generic benchmarking had a moderate to high level of knowledge about benchmarking. Of those respondents that had not used functional/generic benchmarking, 54% had a moderate to high level of knowledge, while 46% had no knowledge or low knowledge level of benchmarking.

There was very strong evidence of a relationship between the usage of types of benchmarking and the respondents' belief about the **importance** of benchmarking (Table 4.29); null hypotheses of no association was rejected. Of those respondents who had used internal benchmarking, 52% perceived benchmarking to have great importance and 45% perceived it to have some importance. Of those that had used external benchmarking, over half (55%) felt benchmarking had great importance. While the majority had not used functional/generic benchmarking, those (61%) that had used this type perceived benchmarking to be of great importance to doing their job.

There was very strong evidence of a relationship between usage of internal, external, and functional/generic benchmarking and general experience with benchmarking **outcomes** (Table 4.29); null hypotheses of no association was rejected. Four times more respondents who said they used internal and external benchmarking reported they had experienced benchmarking outcomes, compared to those who had not used internal and external benchmarking. Seven times more respondents who said they used functional/generic benchmarking reported they had experienced benchmarking outcomes, compared to those who had not used functional/generic benchmarking.

4.3.5.2 Null Hypotheses ($H_0$2): Category of Foodservice Operation

$H_0$2: Category of foodservice operation was not associated with: (1) benchmarking performance measures, (2) type of benchmarking partner, and (3) usage of types of benchmarking.

The association between **performance measures** *minutes per unit, meals per time period, percentage product purchased from sources, cost per unit or area of service, absenteeism per time period, turnover percentage as a result of dismissal or voluntary departure,* and *number of EEO or union complaints per average number of employees* and respondents' category of foodservice was not statistically significant (Table 4.29); null hypotheses of no association was not rejected. There did appear to be evidence of a relationship between performance measures *inventory turnover per time period, percentage accuracy of meal assembly, clinical productivity, meals per*

labor hour, labor hours per unit, food cost percentage, labor cost percentage, supply cost percentage, actual revenue versus budgeted revenue, percent satisfaction with quality of service factors, ratio of customer complaints to total customer population, outcome as a result of service rendered, average daily participation per total population, and *number of work injuries per hours worked* and respondents' category of foodservice. For these variables, the null hypotheses of no association was rejected.

Only 43% of respondents reported having used **benchmarking partners**. There was strong evidence of an association between usage of type of benchmarking partner and respondents' category of foodservice (Table 4.29); null hypotheses of no association was rejected. Of the respondents who reported having used benchmarking partners, the most common partners were ones from the same category as the respondent. The null hypotheses of no association between category of foodservice and "other" benchmarking partner was not rejected.

The relationship of the four categories of foodservice and usage of **internal** and **external** benchmarking was not statistically significant (Table 4.29); null hypotheses of no association was not rejected. The relationship between usage of functional/generic benchmarking and respondents' category of foodservice was highly statistically significant (Table 4.29); null hypotheses of no association was rejected. The majority of respondents had not used **functional/generic** benchmarking. The categories with the greatest number of respondents (n = 22, each) acknowledging usage of functional/generic benchmarking were college/university and health care.

4.3.5.3 Null Hypotheses ($H_0$3): Foodservice Directors' Knowledge About Benchmarking

$H_0$3: Foodservice director's knowledge about benchmarking was not associated with perceived importance of benchmarking.

The association between respondents' perceived **importance** and **knowledge** level about benchmarking was found to be highly statistically significant (Table 4.29); null hypotheses of no association was rejected. About 63% of the respondents had a moderate to high level of knowledge and 84% felt benchmarking had some or great importance in doing their jobs. Respondents who had a high knowledge level about benchmarking did not report perceiving benchmarking as having no or little importance to doing their job.

4.3.6 Limitations of the Foodservice Directors Survey

A limitation of the survey was that mail surveys were vulnerable to nonresponse error. One reason was that they were easy for a person to throw away. Another limitation was that not all foodservice directors subscribe to the specific trade journal used as the source for these subjects. Therefore, this sample may not be representative of the entire foodservice director population. Also, the mailing list from this trade journal included a few individuals who, according to their job title, were not considered foodservice directors, although they subscribed to the trade journal for foodservice directors.

4.4 Discussion - Foodservice Directors Survey

Through the administration of the foodservice directors survey instrument, two tasks were accomplished. First, the researcher identified current benchmarking practices, attitudes, and beliefs about benchmarking in foodservice. Second, the researcher identified foodservice directors' current needs for knowledge and skills about benchmarking. For the purpose of this discussion, the respondents were called foodservice directors, since demographic information about the respondents showed 97% to be in foodservice managerial roles, according to job title.

Two of the most influential factors in the rate of return for mail surveys were: education and interest in the topic (71). Some of the typical characteristics of nonresponders were: less educated, male, or less interested in the study (68). Methods and elements recommended to get good response rate, create positive image, and minimize nonresponse error were: good respondent letter, return postage, confidentiality, reminders, pilot tested for clarity of instructions, nonmonetary reward, prenotification, outgoing postage, and aesthetically pleasing questionnaire (color, balance, type style and size, format of questions, and size). These methods were discussed and recommended by Mangione (68), Erdos (71), and Dillman (72). This research utilized all of these methods and elements to minimize nonresponse error.

In analyzing the return rate, the phase of the return was studied in relation to several variables. The date of returns were divided into three phases: phase I was the time between the first survey mailing and the reminder postcard (first two weeks after the first survey was mailed), phase II was the time between the reminder postcard and

the second survey mailing to nonrespondents (weeks three and four), and phase III was the time after the second survey mailing before cut off date (weeks five to twelve). The association between return phase and respondents' perceived knowledge level about benchmarking was not statistically significant, χ^2 (6, n = 239) = 5.17, p = .522. The data shows the respondents' knowledge level about benchmarking was not related to when the respondents returned the surveys. The association between the return phase and respondents' perceived importance of benchmarking was not statistically significant, but slightly suggestive, χ^2 (6, n = 229) = 12.34, p = .055. The percentage of foodservice directors who rated benchmarking as having no or low importance for return phase I, II, and III was: 13%, 10%, and 26%, respectively. The percentage of foodservice directors who rated benchmarking as having some or great importance for return phase I, II, and III was: 87%, 90%, and 74%, respectively. The data suggest that the respondents' perceived assessment of the importance of benchmarking to doing their jobs may or may not have been related to when the respondents returned the surveys. The data slightly suggest those who rated benchmarking as having little or no importance were slightly more likely to return the survey in the last return phase, while those who felt benchmarking had at least some importance were more likely to return the survey in the first two return phases.

The association between the return phase and respondents' category of foodservice operation was statistically significant, χ^2 (10, n = 244) = 20.19, p = .029. The greatest proportion of correctional and health care respondents returned the survey in phase I, while the greatest proportion of school and college/university respondents

returned the survey in the last phase (phase III). This may be attributed to the fact that the survey was mailed in July and August, when some school and college/university foodservice directors may not have been working on a regular basis, particularly if school was not in session.

Data from the foodservice directors survey showed that the majority of respondents had used some type of benchmarking (more respondents had used internal benchmarking, than external and functional/generic). In addition, 80% of the college/university, 76% of the health care, 49% of the correctional, and 47% of the school respondents reported having at least a moderate level of knowledge. This data showed that the expert panelist part of this research underestimated the percentage of foodservice directors that had experience or knowledge about any benchmarking (Table 4.7, page 91). One possible explanation is that the expert panelists could have answered the question in reference to external benchmarking or functional benchmarking, rather than including internal benchmarking in their estimate. Another explanation could have been that the foodservice directors survey respondents were not truly representative of the foodservice director population.

4.4.1 Types of Benchmarking

Usage of types of benchmarking was found to be associated with the foodservice director's perceived knowledge about benchmarking. With functional/generic benchmarking, those that used it had a moderate to high level of knowledge of benchmarking (88%). However, many of those who had not used this

type of benchmarking also had a moderate to high level of knowledge (54%). This could lead one to believe that knowledge about benchmarking needs to be present in order to consider conducting benchmarking, to know whether or not benchmarking is being conducted, or to know when not to conduct certain types of benchmarking.

Quality assessment programs and total quality management have been used for many years now and the monitoring and evaluation of performance measures are key elements to these programs. Therefore, it was not surprising to find many foodservice directors having used internal benchmarking, the type of benchmarking that compares similar internal functions within an organization or within departments of an organization. This is also consistent with the literature (34). In addition, Keehley et al. (45) suggested that those organizations with little or no experience with benchmarking start with internal benchmarking, such as benchmarking their own best practices first. External benchmarking is more complex since it does pose such problems as: willingness to share sometimes sensitive information, data definitions, comparability of data, etc. Functional/generic benchmarking poses some of the same problems, plus it typically involves dissimilar industries. This may require more imagination and thinking "out of the box" for foodservice directors than the other types of benchmarking which were in the same industry, namely foodservice, and familiar territory. For example, benchmarking customer service factors with the airline industry may be difficult for the foodservice director to visualize and/or do. Knowledge level seems to have been associated with usage, regardless of type of benchmarking.

Usage of types of benchmarking appeared to be associated with foodservice directors' perceived level of importance of benchmarking. This may lead one to believe if foodservice directors didn't think benchmarking at least had some importance, they would not be using it. The exception would be those who did not think it was important but who were mandated to use benchmarking because the organization participated in a benchmarking program. However, even those (78%) who had not used functional/generic benchmarking still felt benchmarking had at least some importance.

The majority of foodservice directors in all categories had used internal benchmarking and external benchmarking. However, functional/generic type of benchmarking was different; there was a statistically significant relationship with the foodservice directors' category of foodservice. A large percentage of respondents had not used functional/generic benchmarking. The one category that had more foodservice directors who responded having used functional/generic benchmarking was college/university. However, even college/university respondents were more likely to use internal and external benchmarking than functional/generic. Possible reasons for the low number of foodservice directors having used functional/generic benchmarking were: they were not aware they were doing functional/generic benchmarking (even if informally), they found it difficult to find appropriate partners outside the industry, or lack of comparability. It was the most difficult type of benchmarking to gain acceptance (35) and required broad conceptualization (3). Since it typically showed breakthrough results (16), this may have been one reason why many foodservice

directors had not experienced the outcome *identified new breakthroughs that otherwise would not have been recognized.*

This research found that usage of types of benchmarking was associated with foodservice directors stating in general terms that they had experienced benchmarking outcomes. With two exceptions, more than half of the foodservice directors had experienced the individual, specific benchmarking outcomes listed on the survey. The exceptions were: *helped achieve a competitive position* and *identified new breakthroughs that otherwise would not have been recognized.* One possible reason for the lack of experience with these outcomes, which were exceptions, may have been that some foodservice operations were not in a competitive type of business (e.g. public sector schools and correctional institutions) and breakthroughs were not being sought, for whatever reason.

4.4.2 Performance Measures

Four categories of foodservice operations were studied: college/university, correctional, health care, and school. Respondents from each of these categories were asked about their usage of performance measures in four different areas: operational, financial, customer services, and human resources.

In the **operational** area of foodservice, the five performance measures whose usage was associated with foodservice directors' category of foodservice were: *inventory turnover per time period, percentage accuracy of meal assembly, clinical productivity, meals per labor hour*, and *labor hours per unit*. The two performance

measures whose usage was not associated with the foodservice directors' category of foodservice were: *minutes per unit* and *meals per time period*. One possible reason why many may not have used this measure was because minutes were a small unit of measure, in comparison to hour. Another reason may have been that other time related measures were successfully used in place of this measure, such as *meals per labor hour.*

Unless the category had a clinical component (e.g. correctional institutions with a medical component), it was logical that there were more health care respondents using the *clinical productivity* measure than the respondents from other categories. Also, due to the criticality of meal accuracy in meeting dietary restrictions and nutritional requirements of diet therapy as prescribed for certain medical conditions, it was logical that many respondents in the health care category used the measure *percentage accuracy of meal assembly*. Nearly half of the correctional respondents used this measure, perhaps to ensure meeting medical or religious dietary needs of inmates.

In the **financial** area of foodservice, usage of *food cost percentage*, *labor cost percentage*, *supply cost percentage*, and *actual revenue versus budgeted revenue* were all found to be associated with the foodservice directors' category of foodservice. For most of the measures, the majority of foodservice directors from all categories used the measures. An extremely high percentage of respondents (98%) in the college/university category used the measure *actual revenue versus budgeted revenue*. The reason could be that college/university foodservices were generally self-supporting

and profit centers. A majority of the foodservice directors in correctional did not use the measure *labor cost percentage.* This may be a result of the fact that some correctional foodservice operations used inmates for part of the foodservice workforce. Only usage of one performance measure was found to be not associated with the foodservice directors' category of foodservice: *percentage product purchased from sources.* This was a very specific financial indicator that relates to purchasing. One reason why foodservice directors may not have used this indicator could be related to the availability of data. Also, some operations may simply have used one vendor for all their products, and therefore, this indicator would not have been applicable. Another reason may be that foodservice directors did not see the value in using this measure.

Usage of all of the **customer services** performance measures were found to be associated with foodservice directors' categories of foodservice. Usage of some of these indicators may have been driven by factors unique or common to that category. For example, Joint Commission on Accreditation of Healthcare Organizations has long emphasized quality improvement and outcome measurements in the health care arena (37). Therefore, it was not surprising to see a greater number of health care foodservice directors having used indicators such as *percent satisfaction with quality of service factors* and *outcome as a result of services rendered.* With declining enrollments, colleges/universities were trying to cut expenses, add sales, and increase customer participation (38). Hence, a greater number of college/university foodservice directors used performance measures *percent satisfaction with quality of service factors* and *average daily participation per total population.* Of all the foodservice

directors that used the measure *ratio of customer complaints to total customer population*, the category with the greatest number of respondents was correctional. This could be useful information to foodservice directors because customer complaints in a prison population can contribute to prisoner uprisings (most prison riots start in the dining room) (38).

Usage of four **human resources** performance measures was examined. The only performance measure that showed strong evidence of an association with foodservice directors' category of foodservice was *number of work injuries per hours worked.* In health care and in correctional, approximately the same number of foodservice directors had used this measure, as had not. However, in the college/university category, 58% had used it, while 42% had not. This may have been related to an increased safety concern because this category frequently uses part-time and student employees (a younger and perhaps less experienced workforce). In contrast, 72% of school foodservice directors had not used this measure. One possible explanation could have been the type of foodservice, food preparation, and equipment. Many schools have centralized food preparation and feeding at satellite operations. The satellite operations generally don't have as extensive hazardous equipment as the central facility; hence, safety issues were not as prevalent. A high percentage of respondents had not used the performance measure *number of Equal Employment Opportunity (EEO) or union complaints per average*; this could have been related to the presence, absence, or level of union activity in the organization. If an organization

had EEO or union complaints, it may have been more likely to monitor this performance measure, than an organization without these complaints.

Meals per labor hour and *labor hours per unit* were both used by a high percentage of foodservice directors (75% and 73% respectively). Depending on the *unit* used, they could have used the same data with ratio inverted (e.g. meals/labor hour and labor hour/meals if unit = meal).

The human resources performance measures had a comparatively lower usage rate than many of the operational and financial measures. One reason may have been because these measures were not as commonly known as the others. Plus, other departments within the organization may have been managing or monitoring these measures, such as the human resource department of the organization.

What is the significance of the association between categories of foodservice and performance measures? Knowing what categories of foodservice use particular measures showed the possible opportunities to benchmark with that category, even if it was a category different from one's own. Another significance of this information was simply knowing the commonality, frequency, and usage of these performance measures; some foodservice directors may have been introduced to performance measures that they had not used before which could be considered for their operations in the future. On the other hand, some measures may not have been used because the foodservice director didn't have any control over the variables of the measure, the measure itself did not have importance or applicability to the organization, the measures used were

limited or dictated by a benchmarking database in use, or various factors (e.g. time, availability of data, etc.) may have interfered.

4.4.3 Benchmarking Partners

Slightly less than half (43%) of the foodservice directors reported having used benchmarking partners. Finding partners is not a simple task. Some partners may not be willing to share data and information. Some may not have the time to devote to benchmarking projects. The data from this research showed most of the partners were from the same category as the respondent. For example, a majority of the health care foodservice directors used hospital foodservice or other health care foodservice as benchmarking partners. As stated by Camp (3), there needed to be some level of comparability of primary business performance drivers. Finnigan (8) stated considerations for benchmarking partners included: comparability, willingness to provide data, and comparing similar data. Keehley et al. (45) stated organizations should match themselves fairly closely with partners in terms of similar mission, processes, size, and culture to improve the probability of benchmarking success. One would find the highest level of comparability in the same category of foodservice. However, it is possible to learn from all partners if done carefully.

Fewer foodservice directors had used benchmarking partners (n = 106), than had used external benchmarking (n = 147). This would lead one to believe that some foodservice directors were conducting external benchmarking without benchmarking partners. However, these differences may more likely have been due to the level of

formality of the benchmarking process, use of a benchmarking database, or the foodservice director's interpretation of who was considered a benchmarking partner. It may also have been related to the foodservice directors' knowledge level of how to identify and use benchmarking partners. Some reported a need for knowledge and skills in this area (refer to Table 4.25, page 140). Common places to locate potential partners for foodservice benchmarking are: district and state professional meetings, professional associations, vendors, networking, and continuing education programs. A new potential source could be contacts made through professional listservs, such as the American Dietetic Association listserv.

Some foodservice directors did cross over to other categories to find benchmarking partners, but the number was minimal. Some college/university foodservice directors crossed over to business and industry. This may have been attributed to the growing use of contract companies, retail bakeries, food courts, take-out and delivery services, etc. on college and university campuses. These factors were common in employee feeding, as well (38). College/university foodservice directors were the only category to use non-foodservice industry benchmarking partners. One explanation for this related to the fact that most college/university foodservices were profit centers; they would more likely look outside of the organization and industry for ideas to improve processes, products, and services.

4.4.4 Knowledge and Importance of Benchmarking

The foodservice directors' knowledge about benchmarking was associated with the foodservice directors' perceived importance of benchmarking to doing their jobs. Respondents who had a high knowledge level about benchmarking did not report perceiving benchmarking as having no or little importance to doing their job. In contrast, of those respondents who reported no knowledge about benchmarking, 45% of them perceived benchmarking to have no importance. Therefore, this would lead one to believe that in order to perceive benchmarking as having any importance, one must have had at least some knowledge of benchmarking and its benefits. This was one reason why nearly every book and article on benchmarking discussed what it was and the benefits. Also, perhaps if benchmarking were important to foodservice directors, they would become knowledgeable.

4.4.5 Needs for Knowledge and Skills About Benchmarking

The data showed foodservice directors needed to know *how to choose* and *collaborate with benchmarking partner(s).* Benchmarking partners were usually used in external benchmarking and functional/generic benchmarking, although it was possible to have benchmarking partners with internal benchmarking if doing benchmarking outside of one's department but within the organization. Data show there were a number of respondents using external benchmarking who did not recognize or acknowledge they were using benchmarking partners. This may account

for the need to know about choosing and collaborating with benchmarking partners. This need could have stemmed from the foodservice directors: (1) using benchmarking partners but not being sure if they were doing it correctly, (2) not using partners but wanting to, or (3) wanting to improve their ability to choose and collaborate with benchmarking partners.

For each category of foodservice operation, the respondents had a relatively low need to develop knowledge and skills in the areas of: *how benchmarking is beneficial* and *what the benchmarking process is*. This is compatible with the findings about the perceived importance and knowledge about benchmarking. The majority of respondents believed benchmarking had at least some importance, and respondents had at least a moderate level of knowledge. Therefore, they would not need to know how benchmarking is beneficial, nor what the process is.

Overall, continuing education programs were desired as the source to gain knowledge and skills about benchmarking by the greatest number of foodservice directors. Continuing education programs were sought after because they were required for registered dietitians who hold many of these managerial positions. The Internet was preferred by the fewest number of foodservice directors. This lack of interest for the Internet may be due to lack of access to the Internet or limited knowledge of computers. The lack of desire for the Internet as a source may change in the future as more continuing education programs become available on the Internet, particularly if available for continuing education credit, i.e. for the purpose of maintaining registration status or professional credentialing (e.g. American Dietetic

Association). Knowing the knowledge and skill needs is important because it helps focus benchmarking education on the specific needs and medium desired by the foodservice directors from the respective categories.

4.4.6 Perceived Barriers to Benchmarking

Training and time seemed to be the most common reasons given for the delay or prevention of benchmarking activities by foodservice directors. Most foodservice directors were aware of the benefits; they saw the value. A majority did not feel cost was an issue. Although some commercial benchmarking programs were costly, some were also offered free of charge as a membership benefit, from professional organizations and/or newsletters, and from suppliers. Training could have been an issue because there was a specific process to follow in conducting benchmarking, and those involved in the process needed to know how to do it.

Time was an issue because of: the span of time necessary to complete a benchmarking project, the time commitment going into the process, and the time it took away from other day-to-day pressing issues. For many foodservice directors (59%), other projects took priority over benchmarking, and they (53%) believed they did not have the time necessary to conduct benchmarking. This was consistent with the literature; one source (2) reported the common length of time was four to six months and another source (49) said many benchmarking studies exceeded 9 months.

5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Summary

The foodservice director must continuously look for ways to improve processes, products, or services to stay or get ahead of competitors, keep or attract new customers, or lower or control costs while increasing revenue. Benchmarking is a management process that helps foodservice directors do this. The objective of this research was to identify usage of foodservice performance measures, important activities in foodservice benchmarking, and current benchmarking attitudes, beliefs, and practices by foodservice directors.

Using a mail survey, the Delphi technique was conducted with eleven panelists to identify and rate importance of foodservice performance measures. Panelists had experience and/or knowledge of benchmarking activities in the following types of operations: correctional, health care, school, college/university, and business. This panel also rated the importance of benchmarking activities during the second round of the mail survey.

A questionnaire was mailed nationwide to 600 randomly selected foodservice directors from college/university, correctional, health care, and school foodservice operations, with a 41% return rate (n = 247). The purpose of the questionnaire was to identify attitudes, beliefs, and practices about benchmarking and identify usage of important performance measures generated from round two of the Delphi technique.

In the expert panel part of this research, data analyses included frequencies of importance rating of performance measures and benchmarking activities. For the national survey, data were analyzed using the SAS system. The χ^2 analysis was used to examine: usage of types of benchmarking compared with perceived knowledge and importance of benchmarking, and experience with benchmarking outcomes; foodservice directors' category of foodservice operation compared with usage of performance measures, type of benchmarking partner(s), and type of benchmarking; and foodservice directors' knowledge of benchmarking compared to perceived importance of benchmarking. Statistical significance was reached at $p < .05$.

In round one of the Delphi technique, 89 performance measures were identified by the eleven expert panelists. In round two, these performance measures were consolidated into 19 measures: seven operational, five financial, four customer services, and three human resources generic performance measures. The seven operational performance measures were: *minutes per unit, inventory turnover per time period, percentage accuracy of meal assembly, percentage stop time of meal assembly line per total time, clinical productivity, labor hours per unit,* and *meals per labor hour.* The five financial measures were: *food cost percentage, labor cost percentage, actual revenue/expenditures versus budgeted revenue/expenditures, percentage product purchased from sources,* and *cost per unit or area of service.* A panelist added the measures *supply cost percentage* and *percent profit.* The customer services measures were: *percent satisfaction with quality of service factors, ratio of customer complaints to total customer population, outcome as a result of service rendered,* and

average daily participation per total population. The human resources measures were: *absenteeism per time period, turnover percentage as a result of separations,* and *number of work injuries per hours worked.* Two measures were added by panelists: *employee satisfaction* and *union or Equal Employment Opportunity (EEO) complaints per employee.* All of these measures had at least some importance to the majority of expert panelists.

Benchmarking project topic selection criteria were rated on degree of importance. All criteria were rated moderately important or very important by at least 10 of 11 panelists. The criteria were: *contributes to the success of the organization, impacts on costs, impacts on productivity, impacts on quality, impacts on time, is an important issue, is "doable," is measurable, relates to key processes,* and *relates to strategic plan.* Three criteria were added by a panelist: *impacts margin, impacts outcomes,* and *cost effective/worth the effort.*

The degree of importance of 13 characteristics that people use in deciding which benchmarking partners to use was rated by the expert panelists. All characteristics were rated moderately important or very important by at least 10 of 11 panelists. These characteristics were: *able to meet planned time lines, comparability of characteristics, comparability of standards or expectations, interest in benchmarking topic, reputation for excellence, same organization type, same types of processes, similar number of employees, similar workload of employees, willingness to be a partner, willingness to maintain confidentiality,* and *willingness to share data*

and information. The characteristic rated not too important by 27% of the panelists was *experience with benchmarking*.

Regarding methods to collect data for a benchmarking project, at least 10 of 11 expert panelists reported they may use or would definitely use: *internal records, mail survey, personal meetings/site visits* and *telephone interview*. In contrast, 45% (n=5) of the panelists stated they would not use *service provided by private benchmarking company* as a method of data collection.

Panelists were asked to rate the importance of 13 activities in the collection and analysis of data phase. At least 10 of 11 panelists rated the activities as moderately or very important. The activities were: *check for misinformation, check for misplaced data, determine "best practice" organization, determine the performance gap, determine the reason for the performance gap, determine whether best practices can be incorporated or adapted for implementation, identify current process practices, identify differences between your organization and the benchmark organization, identify inaccurate data, identify missing data, identify your operation's strengths, identify your operation's weaknesses,* and *verify results.*

At least 10 of 11 panelists rated the following nine activities in the action phase as moderately or very important. These activities were: *assign task force to implement action steps, communicate results to appropriate people, develop action plan, establish functional goals (operational targets for change), gain consensus on*

action steps (obtain functional buy-in), implement action plan, institutionalize benchmarking, monitor results, and *recalibrate benchmark.*

The expert panel part of this research accomplished two things: (1) helped verify the applicability of information in the literature about business and industry benchmarking to foodservice operations, and (2) contributed additional information vital to the subject of benchmarking, such as applicable performance measures. The research enabled the researcher to develop a foodservice benchmarking guide (Appendix A): a condensed, detailed "how to" version of the benchmarking process geared specifically to foodservice operators in a variety of settings, e.g. college/university, correctional, health care, and school. This guide is anticipated to be a useful job aid for foodservice directors when conducting benchmarking to assist them in determining: criteria for benchmarking project topic selection and benchmarking partner selection, data collection methods, data collection and analysis phase activities, and action phase activities.

Demographic information on the respondents for the national mail survey included data on where they currently work: 28% health care, 27% school, 22% correctional, 21% college/university, and 1% other. Approximately 97% of the respondents were in foodservice managerial positions. The results of the national mail survey showed a majority of respondents (77%) stated benchmarking had some or great importance in performing their jobs. Over half (61%) of the respondents had a moderate or high level of knowledge about benchmarking, while 36% had a low level or no knowledge. Internal benchmarking had been used by 71% of the respondents;

external benchmarking, by 60%; and functional/generic, by 25%. Slightly more than a majority of respondents (53%) had not used a benchmarking partner. More than 60% of the respondents acknowledged needing to develop knowledge and skills about benchmarking.

There was very strong evidence that there was an association between usage of internal, external and functional/generic types of benchmarking and respondents' knowledge level of benchmarking. Of the respondents that had used internal and external benchmarking, over three-fourths had a moderate to high level of knowledge about benchmarking. Of the respondents who had not used internal benchmarking, over three-fourths had no knowledge or a low level of knowledge about benchmarking. Of those respondents that had not used external benchmarking, 69% had little or no knowledge of benchmarking, while 31% had a moderate level of knowledge, and no respondents had a high level of knowledge. A majority of respondents (88%) that had used functional/generic benchmarking had a moderate to high level of knowledge about benchmarking. Of those respondents that had not used functional/generic benchmarking, 54% had a moderate to high level of knowledge, while 46% had no knowledge or low knowledge level of benchmarking.

There was very strong evidence of a relationship between the usage of types of benchmarking and the respondents' belief about the importance of benchmarking. Of those respondents who had used internal benchmarking, 52% perceived benchmarking to have great importance and 45% perceived it to have some importance. Similar results were seen with external benchmarking. Of those that used

external benchmarking, over half (55%) felt benchmarking had great importance. While the majority had not used functional/generic benchmarking, those (61%) that had used this type perceived benchmarking to be of great importance to doing their job.

The relationship of the four categories of foodservice and usage of internal and external benchmarking was not statistically significant. However, there was evidence of a strong relationship between usage of functional/generic benchmarking and respondents' category of foodservice. The categories with the greatest number of respondents (n = 22, each) acknowledging usage of functional/generic benchmarking were college/university and health care.

There was very strong evidence of a relationship between usage of internal, external, and functional/generic benchmarking and general experience with benchmarking outcomes. Over half of the respondents reported experiencing: *identified strengths*, *identified weaknesses*, *improved efficiency*, and *improved cost effectiveness* and *targeted areas for process improvement*. On the other hand, less than 40% of the respondents reported experiencing the outcomes: *helped achieve a competitive position* and *identified new breakthroughs that otherwise would not be recognized*.

Foodservice directors' category of foodservice operation was associated with these performance measures: *inventory turnover per time period, percentage accuracy of meal assembly, clinical productivity, meals per labor hour, labor hours per unit, food cost percentage, labor cost percentage, supply cost percentage, actual revenue versus budgeted revenue, percent satisfaction with quality of service factors, ratio of*

customer complaints to total customer population, outcome as a result of services rendered, average daily participation per total population, and *number of work injuries per hours worked.* The associations between performance measures *minutes per unit, meals per time period, percentage product purchased from sources, cost per unit or area of service, absenteeism per time period, turnover percentage as a result of dismissal or voluntary departure,* and *number of EEO or union complaints per average number of employees* and respondents' category of foodservice were not statistically significant.

The three operational performance measures used by the greatest number of respondents were: *meals per labor hour*, *labor hours per unit*, and *meals per time period.* The top three financial performance measures, according to total numbers of respondents using them were: *food cost percentage*, *cost per unit or area of service*, and *actual revenue versus budgeted revenue*. The two customer services performance measures used by the greatest number of respondents were *percent satisfaction with quality of service factors* and *average daily participation per total population*. Finally, the human resources performance measure used by the greatest number of respondents was *absenteeism per time period.*

There was strong evidence of an association between usage of type of benchmarking partner and respondents' category of foodservice. The most common benchmarking partners were ones from the same category as the respondent.

Foodservice directors' knowledge about benchmarking was related to perceived importance of benchmarking. About 63% of the respondents had a

moderate to high level of knowledge and 84% felt benchmarking had some or great importance in doing their jobs. Respondents with a high knowledge level about benchmarking did not report perceiving benchmarking as having no or little importance to doing their job.

Sixty-one percent of respondents reported needing knowledge and skills about benchmarking, particularly in the area of how to choose and collaborate with benchmarking partner(s), and how to collect data. A majority of the respondents desired obtaining this information through the use of continuing education programs.

Respondents were asked their opinion about what delayed or prevented them from initiating benchmarking activities. The top three reasons were: *other projects took priority over benchmarking projects, lacked trained personnel to conduct benchmarking projects*, and *lacked time necessary to conduct benchmarking.*

Overall, looking at the data reported by the majority of respondents, benchmarking:

- has at least some importance in foodservice;
- is being used, particularly internal and external;
- is being done mostly with partners in the same category, if any partners are used at all;
- is used by foodservice directors with some knowledge but who want more, especially through continuing education programs, particularly on the subjects of how to choose and collaborate with partners and how to collect data;

- has some barriers which may or may not be overcome; and
- is a process that can help foodservice directors achieve many positive outcomes.

The benchmarking process includes a number of activities in each phase which, if done, may ultimately lead to improvement in processes, products, or services. The process could be planned, formal benchmarking or unplanned, informal benchmarking, depending on the situation. The four different categories of foodservice (college/university, correctional, health care, and school), studied in this research showed similarities and differences in the performance measures used, needs for knowledge and skills about benchmarking, and preferred sources to gain this information. This research produced baseline data that provides the foundation upon which future research can build and educational efforts can be expended to facilitate the use of benchmarking in foodservice operations.

5.2 Conclusions

Benchmarking is a useful management tool in assisting foodservice directors to make improvements in their operation's processes, products, and services. The benchmarking process includes identifying benchmarking topics and benchmarking partners, selecting the appropriate data collection method(s), and performing various activities in the data collection and analysis phase and the action phase. This research explored the subject and use of benchmarking in foodservice operations. The nation-wide foodservice directors survey data produced baseline data on foodservice

benchmarking practices, attitudes and beliefs, along with usage information on generic performance measures.

Data from the foodservice directors survey showed that 90% of the college/university, 82% of the health care, 72% of the correctional, and 67% of the school respondents had used some type of benchmarking. More respondents had used internal benchmarking, than external and functional/generic. In addition, 80% of the college/university, 76% of the health care, 49% of the correctional, and 47% of the school respondents reported having at least a moderate level of knowledge. This data suggests they were likely to need at least some knowledge of benchmarking before they would use it. The majority of respondents believed benchmarking had at least some importance in foodservice, even if their knowledge level was moderate. Many who used internal and external benchmarking believed benchmarking had at least some importance. However, many foodservice directors who believed benchmarking to be of great importance to doing their job had not used functional/generic benchmarking. Foodservice directors hesitate to conduct functional/generic benchmarking because it requires broad conceptualization and special attention to comparability issues, is in an unfamiliar environment, and requires thinking "outside the box." If foodservice directors were to use functional/generic benchmarking, they may find that it would yield an outcome that perhaps has evaded them, namely - identifies new breakthroughs that otherwise would not be recognized. For example, foodservice directors could benchmark with local retail department stores or supermarket chains on security measures.

Many respondents had reported experiencing a large number of outcomes from benchmarking efforts, whether they were internal, external, or functional/generic. Outcomes included identifying strengths and weaknesses, improving efficiency and cost effectiveness, and targeting areas for process improvement. As the results of this or other research or experience with foodservice benchmarking are published, foodservice directors would see evidence of colleagues' experience with these positive outcomes; this will induce some to try benchmarking. It is important to note, however, that not all the outcomes identified in this research can be achieved in every benchmarking study; benchmarking is not a "miracle drug". Examples of outcomes that show benchmarking could be worth the time, effort, and resources expended are as follows. If six months were spent on a benchmarking project that provided a source of ideas for correcting or eliminating problems that existed for the past three years, it was worth the time, effort and resources. If one year was spent on a benchmarking productivity and staffing project that helped make staff sizing decisions and significantly reduced personnel requirements and labor costs, it was worth the time and effort.

The need for further education and training on benchmarking was identified. What specific benchmarking-related training do they need? College/university and health care foodservice directors needed to know *how to choose and collaborate with benchmarking partner(s)*; correctional foodservice directors needed to know *how to collaborate with benchmarking partners*, *how to collect benchmarking data*, and *how to choose a project topic*; and school foodservice directors needed to know *how to choose and collaborate with benchmarking partner(s)* and *how to collect*

benchmarking data. Foodservice directors prefer receiving benchmarking training from the following sources: college/university foodservice directors desired *professional newsletters* and *trade magazines*; correctional foodservice directors desired *continuing education programs* and *professional newsletters*; and health care and school foodservice directors desired *continuing education programs*. Thus, for example, school foodservice directors want to learn in continuing education programs about how to choose and collaborate with benchmarking partners and how to collect benchmarking data. This program could be accomplished by a benchmarking expert at district or state school foodservice meetings. As people gain this education and training, the use of internal, external and functional/generic benchmarking may increase. It could also eliminate one of the barriers to implementing benchmarking noted by respondents, i.e. lack of training.

The three reasons why many foodservice directors delayed or did not initiate benchmarking were: *other projects took priority over benchmarking projects, lacked trained personnel to conduct benchmarking projects*, and *lacked time necessary to conduct benchmarking*. Benchmarking is not a quick-fix process. However, some of the most worthwhile endeavors do need to be given high priority and do take time and training. Some ways to enhance the use of benchmarking include: use a consultant to obtain the necessary training and/or assist with all or part of the benchmarking process, use a private benchmarking company or professional organization with a database, conduct projects of limited scope in subject matter and number of benchmarking partners, find partners that are easily accessible and clearly comparable, and find

interested employees to assume part or all of the responsibility of conducting benchmarking as a special project.

This research confirmed that numerous performance measures were available and used in foodservice operations. The data on the performance measure usage showed possible opportunities to benchmark internally, outside one's organization, and even outside one's category of foodservice operation and industry, particularly as benchmarking experience and knowledge level increased. For example, many college/university foodservice directors used the performance measures *food cost percentage*, *labor hours per unit*, and *average daily participation per total population*; but fewer used *percentage accuracy of meal assembly* and *outcome as a result of services rendered*. Many health care foodservice directors used *food cost percentage*, *labor hours per unit*, *outcome as a result of services rendered*, and *percentage accuracy of meal assembly*; but fewer used the *average daily participation per total population*. Therefore, health care foodservice directors may consider the possible opportunity to conduct benchmarking with college/university foodservice directors on performance measures *food cost percentage* and *labor hours per unit*. On the other hand, they would be less likely to consider benchmarking with them on performance measures *percentage accuracy of meal assembly, outcome as a result of services rendered,* and *average daily participation per total population* . Categories of foodservice operations who use the same performance measures would make good candidates to consider for benchmarking partners. However, numerous other

benchmarking partner characteristics also need to be considered, such as comparability, same types of processes, and willingness to maintain confidentiality.

Clarity of performance measure definitions and data comparability are critical elements of the data collection and analysis phase in foodservice benchmarking. The extensive list of 89 performance measures produced by the expert panelists in this research showed the multiple possibilities of performance measures that could be used by foodservice directors when benchmarking. The extensive list of comments and definitions provided by the panelists showed the differences among panelists as to what performance measures definitions would or would not be used by some, and concern for data translation and comparability, particularly when benchmarking outside the organization.

As stated in the introduction of this manuscript, colleagues wanted to know how to conduct a benchmarking project starting at the beginning. This same need to learn more about how to do benchmarking was reflected in the training needs identified by survey respondents. A benchmarking guide for foodservice (Appendix A, page 195) was created from data collected in the expert panel part of this research. The guide includes activities recommended for all three phases of benchmarking and tells foodservice directors how to conduct benchmarking, starting at the beginning, as a planned and formal process. This research also introduced the possibility of variability from this planned process, such as an informal, unplanned structure for benchmarking.

In the planning phase of benchmarking in foodservice operations, key criteria should be utilized to assist in the decision making process of selecting a benchmarking

project topic and benchmarking partners. Although data from this research showed most foodservice directors used benchmarking partners in the same category, these benchmarking partner selection criteria are not category-specific. Therefore, the opportunity is there to benchmark with other categories, if these factors are carefully considered. Not all criteria need to be used for all projects. For example in selecting a project topic or partner, a benchmarking team may want to select the five most important criteria for each, and then proceed with their decision making process.

A wide variety of methods can be used for collecting performance measure data in foodservice benchmarking projects. Some methods may be more easily accepted than others. Based on results of this research, if individuals are new to benchmarking and/or financial resources are limited, the most likely methods to obtain data for benchmarking comparisons would be the use of *internal records*, *mail survey, personal meeting/local site visit* and *telephone interview.*

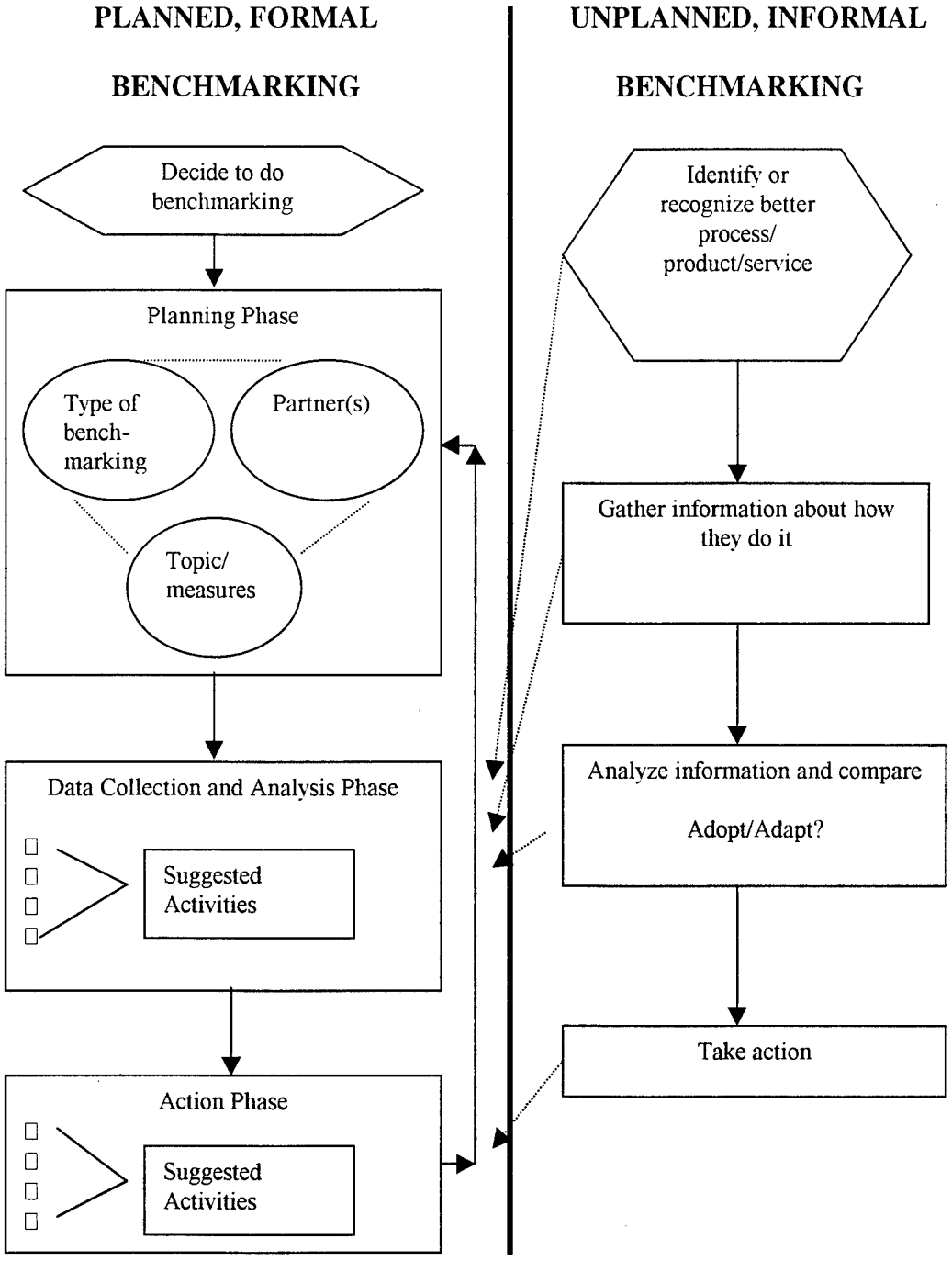
Numerous activities are important to perform in the data collection and analysis phase and the action phase of foodservice benchmarking. Although these activities are not absolutely essential, inclusion of these activities in performing benchmarking can improve the likelihood of achieving successful outcomes. A review of a list (such as the activity lists in the foodservice benchmarking guide) can be useful to foodservice directors when benchmarking to remind them of important functions to perform.

The foodservice benchmarking guide explains a detailed process of planned, formal benchmarking. However, personnel in foodservice management may not always desire to take this formal approach to benchmarking. There may be times

when an opportunity for improvement may be missed if benchmarking does not take place immediately when the occasion arises. Hence, the researcher also developed and a concept map (Figure 5.1, page 182) of benchmarking that can be applied to foodservice. A concept map is a graphic way of showing relationships among ideas (73).

The concept map of benchmarking illustrates the structure and interaction of elements of planned, formal benchmarking and unplanned, informal benchmarking. The planned, formal benchmarking is a more detailed, slight variation to the generic model of benchmarking previously noted in Figure 2.1, page 24. According to the planned, formal benchmarking portion of the concept map, the foodservice director (or other personnel) begins by deciding to conduct benchmarking. This leads directly into the planning phase when decisions are made about identifying the type of benchmarking, project topic and performance measures, and benchmarking partner(s). This research identified important criteria that can be considered in the decision making process for selecting the topic and partner(s). There is an association between type of benchmarking, topic and measures, and partners. For example, if the decision is made to do external benchmarking, the partners will be outside the organization. The topic may be selected through mutual agreement amongst the benchmarking partners. The benchmarking partners will most likely select performance measures

Figure 5.1 Concept map of foodservice benchmarking.



relating to the topic that are currently available and/or easily obtainable. After the planning phase has been completed, the next phase is to collect and analyze the data. This research identified numerous activities to consider in this phase, such as checking data for misinformation, determining best practice, and identifying reason for the benchmarking gap, etc. After completion of this phase, the action phase also has numerous suggested activities, such as developing and implementing an action plan, monitoring the results, and recalibrating the benchmark.

In unplanned, informal benchmarking, the process is less structured and vastly simplified. In simplified terms, it is a process of compare-investigate-adopt/adapt-improve. Purists may not recognize this process as benchmarking. However, some individuals may not consider the use of planned, formal benchmarking because it may appear too labor intensive, cumbersome, and time consuming. As seen in this research, time was a barrier to implementing benchmarking. There may be instances when spontaneity and less structure are appropriate so as not to lose an opportunity for improvement. The need for improvement could be self-identified or customer-driven. An example of a self-identified need would be the need for menu improvement, as determined by the foodservice director who observed the menu had not been updated in over 3 years. An example of a customer-driven need would be the need to reduce waiting times, as determined by the receipt of multiple complaints from customers about excessive waiting times at the dining room cashier line.

The unplanned, informal benchmarking process starts with the identification or recognition of a process, product or service that is better than one's own. The next step is to gather information about how the other organization does it and what the

process is that makes them "better" than one's own organization. The term "better" is used because the organization may or may not be "best practice," but better in comparison to own organization. The third step is to analyze this information and determine whether these newly identified processes can be adopted or adapted for own organization. The first three steps may utilize some of the activities suggested in the planned, formal benchmarking model when appropriate. For example, before comparisons are made to another organization, own strengths, weaknesses, and internal processes may be identified. This activity could be done in the unplanned, informal benchmarking process or may already be known entities prior to benchmarking. The final step is to take action. This step could also utilize some or all of the activities in the planned, formal benchmarking process, as appropriate.

When is planned, formal benchmarking appropriate to use or when is unplanned, informal benchmarking the best to use? This depends on many factors, such as availability of resources, time, opportunity, etc. For example, if a health care foodservice director is on vacation and sees a great example of warming/cooling equipment and a food transport system used by a private catering company to keep food at the appropriate temperature while awaiting service, the planned, formal benchmarking process would not be appropriate. It would result in a missed opportunity; unplanned, informal benchmarking would be more appropriate. If the foodservice director has been experiencing rising labor costs over the past three years and needs to control or lower these costs, the director may decide to conduct benchmarking in a planned, formal manner. Other opportunities for planned, formal benchmarking may be for a college foodservice director to benchmark with hotels on

customer satisfaction with courtesy, or benchmark sanitation factors with hospitals. Both planned and unplanned benchmarking have benefits, but planned benchmarking has more potential for documented improvements of outcomes on processes, products, and services.

The benchmarking process, regardless of what it is called, will continue to survive and thrive. It is not a passing fad. A process that has positive outcomes, is successful in solving problems and making decisions, and can improve performance and quality, will always be an important management tool for foodservice directors to utilize.

5.3 Recommendations for Future Research

Since this was the first research in foodservice benchmarking, there is great potential for future research. While this research examined three types of benchmarking: internal, external, and functional/generic, worthy of consideration for future research is the subject of benchmarking using process and performance benchmarking classifications. If the types of benchmarking were classified in terms of the goals, they would be called performance benchmarking and process benchmarking. Performance benchmarking is research that helps assess relationships with competitors and industry leaders in terms of price, product quality, product features (including service factors), or other performance measures, and usually utilizes trend analysis from database searches or surveys. Process benchmarking uses face-to-face studies and observations of an organization's key processes (e.g. customer billing, product

delivery, strategic planning) (8). Questions to be answered are: what are the differences, advantages and disadvantages, and outcomes of process vs. performance benchmarking? Is benchmarking using databases as effective as alternative methods, such as site visits, telephone interviews, and mail surveys? What is the effectiveness rating of different types of benchmarking?

Another research opportunity is to narrow the focus and concentrate on just a single performance measure area, such as financial or operational. Examine each individual, specific performance measure and its usefulness and effectiveness for a particular category of foodservice, such as correctional or schools. This research studied various performance measures that were identified only in broad, generic terms.

Future research could examine the association of outcomes to different types of benchmarking (internal versus external versus functional/generic), i.e. which types of benchmarking yield which economic outcomes. For example, do the results of internal or external benchmarking lead to greater cost effectiveness, or do they both? Are best practices more frequently uncovered in external benchmarking or in functional/generic? How much cost savings can result from conducting benchmarking? How long does it take to conduct benchmarking in foodservice? Further examination of the different types of benchmarking could lead to a study of what activities are needed for which types of benchmarking.

Another consideration for future research is to determine exactly what comparability factors are the most useful in performing foodservice benchmarking. Particularly when benchmarking outside one's organization, it is important that there is

comparability among benchmarking partners. Are comparability factors different for the various categories of foodservice? Are similar mission, processes, physical size, number of employees, and organizational structure key comparability factors? What methods are foodservice directors actually using to find benchmarking partners? How effective are those methods? This information would be useful to those interested in finding and collaborating with benchmarking partners.

Another idea for future research is to determine the impact of using the benchmarking process versus using a non-benchmarking approach to improve processes, products, or services. Are the outcomes different? If they are, how do they differ? Are they both equally cost effective and time efficient?

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APPENDICES

Appendix A Foodservice Benchmarking Guide

FOODSERVICE BENCHMARKING GUIDE

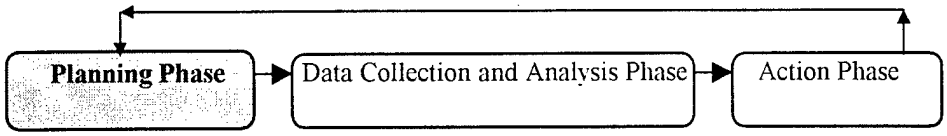
Benchmarking is a continuous, systematic, management process for measuring work processes, products, and services for the purpose of organizational comparison and improvement.

Bonnie C. Johnson, Ph.D., R.D., L.D.

April 1998

Appendix A Foodservice Benchmarking Guide (Continued)

Planning Phase of Benchmarking



A Generic Benchmarking Model

Overview:

The planning phase prepares the foodservice department for the benchmarking study. Central to this phase are: (1) identification of the benchmarking topic and (2) identification of benchmarking partners. Other activities include developing or defining benchmarking study goals, recruiting benchmarking team members from the foodservice department or organization, identifying performance measures appropriate for selected benchmarking topic (see page 5 and 6 of this guide), and determining scope and constraints of the study (including costs, time, and review of ethical and legal requirements).

Key Terms:

Benchmarking partners: Individuals or organizations who associate in a collegial relationship involving close cooperation to conduct benchmarking studies

External benchmarking: Benchmarking against external organizations or direct competitors

Functional/generic benchmarking: Done with external functional leader organizations (may be non-foodservice industry)

Internal benchmarking: Compares similar internal functions within an organization or within departments of an organization

Performance measures: Key indicators or critical success factors

Identification of Benchmarking Topic:

Possible criteria to consider or use in deciding what benchmarking topic to study are listed. Use any or all that are appropriate and applicable to your department.

- Contributes to the success of the organization
- Impacts on costs
- Impacts on productivity
- Impacts on quality
- Impacts on time
- Is an important issue
- Is "doable"
- Is measurable
- Relates to key processes
- Relates to strategic plan
- Additional criteria: Impacts margin, impacts outcomes, cost effective/worth the effort

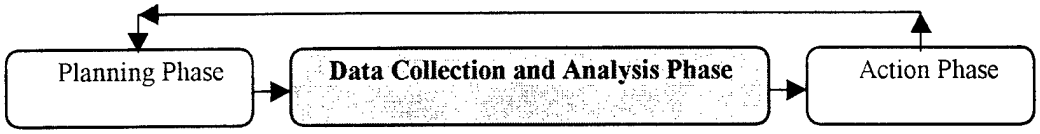
Identification of Benchmarking Partners:

Determine whether the benchmarking study is going to be internal, external, or functional/ generic. Next, identify appropriate partner(s), taking into consideration some or all of the following criteria.

- Able to meet planned time lines
- Comparability of characteristics
- Comparability of standards or expectations
- Interest in benchmarking topic
- Reputation for excellence
- Same types of processes
- Similar number of employees
- Similar workload of employees
- Willingness to be a partner
- Willingness to maintain confidentiality
- Willingness to share data and information

Appendix A Foodservice Benchmarking Guide (Continued)

Data Collection and Analysis Phase of Benchmarking



A Generic Benchmarking Model

Overview:

The data collection and analysis phase includes collection of performance measures and other information on the topic selected; analyzing internal performance and current process practices, both strengths and weaknesses; and performing a comparative analysis. Best practice is identified. The benchmarking gap is determined and best practice is assessed. This is followed by ascertaining whether or not best practice processes can or should be adopted or adapted.

Key Terms:

Benchmarking gap: The difference in performance between the benchmark organization and other organizations.

Best practice: Superior performance or methods that lead to exceptional performance.

Methods of Data Collection:

The following are possible methods of data collection. Select the most appropriate method of benchmarking data collection depending on: type, quantity, quality, and accuracy of data needed; experience with methods; comparability of the data; and time and resources constraints.

- Internal records
- Mail survey
- Telephone interview
- Personal meetings/site visits
- Publications/media
- Service provided by professional association
- Consultant
- Service provided by private benchmarking company

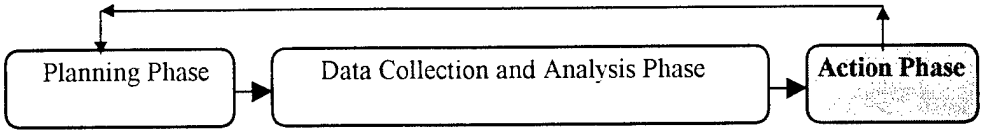
Recommended Activities:

The following activities are recommended for successful execution of this phase of benchmarking.

- Identify missing data and inaccurate data
- Check for misplaced data and misinformation
- Verify results
- Identify and analyze current process practices, and own operation's strengths and weaknesses
- Determine "best practice" organization
- Determine the performance gap
- Identify differences between own organization and the benchmark operation
- Determine the reason for the performance gap
- Determine whether best practices can be incorporated or adapted for implementation

Appendix A Foodservice Benchmarking Guide (Continued)

Action Phase of Benchmarking



A Generic Benchmarking Model

Overview:

The action phase consists of communicating the results of the analysis to appropriate individuals, establishing functional goals for change, developing and implementing an action plan, monitoring the results, and recalibration. Then, repeat the process with the same topic or a new topic.

Key Terms:

Recalibration: Reapplying the benchmarking process to target studies to fill in information gaps; reassess performance measures, benchmarks, and best practice findings; reassess the appropriateness, value and importance of the study; or take a new direction for study.

Institutionalizing benchmarking: Individuals at all levels seek out best practices to improve the foodservice operation; benchmarking activities are included in the operation's business plans, goals, and objectives.

Recommended Activities:

The following are activities recommended for successful execution of this phase of benchmarking in foodservice operations.

- Communicate results to appropriate people
- Develop action plan
- Establish functional goals (operational targets for change)
- Gain consensus on action steps (obtain functional buy-in)
- Assign task force to implement action steps
- Implement action plan
- Monitor results
- Recalibrate benchmark
- Institutionalize benchmarking

Sources of Benchmarking Information

1. Camp RC, Tweet AG. Benchmarking applied to health care. *J Qual Improvement*. 1994; 20(5):229-238.
2. Camp RC. *Benchmarking: The Search for Industry Best Practices That Lead to Superior Performance*. Milwaukee, WI: ASQC Quality Press; 1989.
3. Czarnecki MT. *Benchmarking Strategies for Health Care Management*. Gaithersburg, MD: Aspen Publishers, Inc.; 1995.
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5. Spendolini MJ. *The Benchmarking Book*. NY: AMACOM; 1992.
6. Finnigan JP. *The Manager's Guide to Benchmarking*. San Francisco, CA: Jossey-Bass Publishers; 1996.

Appendix A Foodservice Benchmarking Guide (Continued)

Foodservice Performance Measures

AREA:	GENERIC PERFORMANCE MEASURES	EXAMPLES
Operational	Minutes per Unit	• Minutes per meal • Minutes per meal equivalent • Minutes per meal transaction
	Inventory Turnover per Time Period	• Inventory turnover per month • Inventory turnover per quarter
	Percentage Accuracy of Meal Assembly	• Percentage accuracy of tray assembly per meal period (breakfast, lunch, dinner)
	Clinical Productivity	• Relative value units per man-hour
	Meals per Labor Hour	• Meals or meal equivalents per labor hours worked • Meals or meal equivalents per FTE • Transactions per hours worked • Number of customers served per FTE
	Meals per Time Period	• Meals per day • Meals per pay period • Meals or meal equivalents per labor hour
	Labor Hours per Unit	• Labor hours worked per meal equivalent • FTE per adjusted patient day • FTE per occupied bed • Hours worked or hours paid per referral • Labor hours worked or hours paid per each patient admitted identified at nutritional risk • Hours worked and hours paid per patient day • Productive hours per adjusted patient day • Non-productive hours per each patient admitted and identified to be at nutritional risk
Financial	Food Cost Percentage	• Food cost as a % of total revenue
	Labor Cost Percentage	• Labor cost as a % of total revenue
	Supply Cost Percentage	• Supply cost as % of total revenue
	Percentage Product Purchased from Sources	• Percentage product purchased from prime vendor • Percentage product purchased from state contracts

Appendix A Foodservice Benchmarking Guide (Continued)

AREA:	GENERIC PERFORMANCE MEASURES	EXAMPLES
Financial	Actual Revenue/Costs versus Budgeted Revenue/Costs	• Operational costs for each cost center compared to budgeted costs • Actual revenue for each cost center compared to budgeted revenue
	Cost per Unit or Area of Service	• Labor including fringe benefits per meal • Food cost per meal or meal equivalent • Labor cost per meal or meal equivalent • Supply cost per patient day • Supply cost per meal equivalent • Supplement costs per adjusted patient day • Total cost per adjusted patient day • Small equipment/repair parts costs per meal
Customer Services	Percent Satisfaction with Quality of Service Factors	• Percent satisfaction with presentation, courtesy of services, appearance, environment, temperature of food, timeliness, appropriateness of care, taste, cleanliness, and overall rating
	Ratio of Customer Complaints to Total Customer Population	• Ratio of customer complaints to total customer population
	Outcome as a Result of Services Rendered	• Patients readmitted with similar nutrition problems after education by dietitian • Patients with improved nutritional status after dietitian intervention
	Average Daily Participation per Total Population	• Actual customers per student enrollment
Human Resources	Absenteeism per Time Period	• Absenteeism rate per pay period
	Turnover Percentage as a Result of Dismissal or Voluntary Departure	• Turnover percentage as a result of voluntary departure • Turnover percentage as a result of dismissal
	Number of Work Injuries per Unit	• Work injury incidents per days or hours worked • Work injury incidents per FTE
	Number of Complaints per Average Number of Employees	• Number of EEO or union complaints per average number of employees

Appendix A Foodservice Benchmarking Guide (Continued)

Foodservice Benchmarking Guide Summary

PHASE	TASK	
PLANNING PHASE	*To select a benchmarking topic, consider using some of these criteria*	• Contributes to the success of the organization • Impacts on costs • Impacts on productivity • Impacts on quality • Impacts on time • Is an important issue • Is "doable" • Is measurable • Relates to key processes • Relates to strategic plan • Additional criteria to consider: Impacts margin, impacts outcomes, cost effective/worth the effort
	To select a benchmarking partner, consider using some of these criteria	• Able to meet planned time lines • Comparability of characteristics • Comparability of standards or expectations • Interest in benchmarking topic • Reputation for excellence • Same types of processes • Similar number of employees • Similar workload of employees • Willingness to be a partner • Willingness to maintain confidentiality • Willingness to share data and information
DATA COLLECTION AND ANALYSIS PHASE	*Possible methods of data collection*	• Internal records • Mail survey • Telephone interview • Personal meetings/site visits • Publications/media • Service provided by professional association • Consultant • Service provided by private benchmarking company
	Recommended activities	• Identify missing data and inaccurate data • Check for misplaced data and misinformation • Verify results • Identify own current process practices • Identify own operation's strengths and weaknesses • Determine "best practice" organization • Determine the performance gap • Identify differences between own organization and the benchmark operation • Determine the reason for the performance gap • Determine whether best practices can be incorporated or adapted for implementation
ACTION PHASE	*Recommended activities*	• Communicate results to appropriate people • Develop action plan • Assign task force to implement action steps • Establish functional goals (operational targets for change) • Gain consensus on action steps (obtain functional buy-in) • Implement action plan • Monitor results • Recalibrate benchmark • Institutionalize benchmarking

Appendix B Expert Panel Delphi Questionnaire

Expert Panel
Delphi Questionnaire
[Round One]

Benchmarking in Foodservice Operations

Conducted by the
Department of Nutrition and Food Management
Oregon State University
Milam Hall, Room 108
Corvallis, Oregon 97331-5103

April 1997

Delphi Questionnaire

(Complete and return as soon as possible or no later than May 5, 1997. Thank you.)

Directions:

(1) Foodservice operations frequently measure performance in the following areas: **operational, financial, customer satisfaction, and employee performance.**

Definition of performance measures:

> Performance measures are key indicators that determine significance of outcomes. They are also called critical success factors, leading operational indicators, key result areas, comparative performance characteristics, or standards of comparison. They are subjects significant to warrant the use of benchmarking.

(2) What do ***you*** believe are the performance measures that are or could be used in the process of benchmarking by the foodservice director?

- ***Record*** the performance measures in the space provided for each area.
- Comments are welcome.
- If the performance measure is known to have different definitions, please record the definition or formula ***you*** use for that performance measure (for example, the definition of total labor cost includes the salaries that are paid for regular time, overtime, nonproductive time, and fringe benefits).
- ***Type or print in ink.***

What do *you* believe are the performance measures that are or could be used in the process of benchmarking by the foodservice director?

PERFORMANCE MEASURES	COMMENTS
Area: Customer Satisfaction	
(Examples: % customers satisfied with food temperatures, % return customers)	(Include definitions as appropriate)

(continue)

What do *you* believe are the performance measures that are or could be used in the process of benchmarking by the foodservice director?

PERFORMANCE MEASURES Area: Operational (Example: Meals per labor hour, meals per full-time equivalents (FTEs))	COMMENTS (Include definitions as appropriate)

(continue)

What do *you* believe are the performance measures that are or could be used in the process of benchmarking by the foodservice director?

PERFORMANCE MEASURES Area: Financial (Examples: labor cost per meal, food cost per day)	COMMENTS (Include definitions as appropriate)

(continue)

What do ***you*** believe are the performance measures that are or could be used in the process of benchmarking by the foodservice director?

PERFORMANCE MEASURES **Area: Employee Performance** (Examples: Productive hours per day, turnover rate per quarter)	**COMMENTS** (Include definitions as appropriate)

(Thank you)

Appendix C Expert Panel Questionnaire (Final Round)

Expert Panel Questionnaire

[Final Round]

Benchmarking in Foodservice Operations

Conducted by the
Department of Nutrition and Food Management
Oregon State University
Milam Hall, Room 108
Corvallis, Oregon 97331-5103

May 1997

Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Your comments will be appreciated, either here or in a separate envelope.

Your contribution to this effort is greatly appreciated.

Please return your completed questionnaire in the enclosed, stamped envelope to:

Bonnie Johnson, M.S., R.D., L.D.
Department of Nutrition and Food Management
Oregon State University, Milam Hall 108
Corvallis, OR 97331-5103

Appendix C Expert Panel Questionnaire (Final Round) (Continued)

PERFORMANCE MEASURES

Directions: For each performance measure, rate the importance of the measure in performing benchmarking activities, mark "N/O" for "No Opinion," or mark "N/A" for "Not Applicable." Revise any with which you disagree, and add any that are missing. *(Circle one number for each performance measure.)*

Q1.

AREA: OPERATIONAL	NOT IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT	N/O	N/A
a. Minutes per Unit . . . . . *(Examples of **Unit**: meals, meal equivalent, meal transaction)*	1	2	3	4	N/O	N/A
b. Inventory Turnover per Time Period. . . . . *(Examples of **Time Period**: month, quarter, year)*	1	2	3	4	N/O	N/A
c. Percentage Accuracy of Meal Assembly.	1	2	3	4	N/O	N/A
d. Percentage Stoptime of Trayline per Total Time.	1	2	3	4	N/O	N/A
e. Clinical Productivity (Patient Care). . . . . *(Example: Relative Value Units per Man-hour)*	1	2	3	4	N/O	N/A
f. Labor Hours per Unit. . . . . *(Examples of **Labor Hours:** Hours Worked, Hours Paid, FTE, Inmate, Overtime, Productive, Nonproductive, Total)* *(Examples of **Unit:** Meals or Meal Equivalent, Patients Admitted, Outpatients, Month or Pay Period, Day or Patient Day or Adjusted Patient Day, Adjusted Patient Discharge, Patient Admitted at Nutritional Risk, Improved Nutritional Status after Dietitian Intervention, Referral)*	1	2	3	4	N/O	N/A
g. Meals per Labor Hour. . . . . *(Examples of Types of **Meals:** Meal Equivalent, Transactions, Number of Customers Served)*	1	2	3	4	N/O	N/A
Others: (Please Identify) **h.**	1	2	3	4	N/O	N/A
i.	1	2	3	4	N/O	N/A

(PLEASE GO ON TO THE NEXT PAGE)

Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Performance Measures (Continued)

Q2.

AREA: FINANCIAL	NOT IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT	N/O	N/A
a. Food Cost Percentage..... (Food Cost as % of Total Revenue)	1	2	3	4	N/O	N/A
b. Labor Cost Percentage..... (Labor Cost as % of Total Revenue)	1	2	3	4	N/O	N/A
c. Actual Revenue/Expenditures versus Budgeted Revenue/Expenditures.....	1	2	3	4	N/O	N/A
d. Percentage Product Purchased from Sources..... *(Examples of **Sources:** Central Warehouse, Prime Vendor, State Contracts)*	1	2	3	4	N/O	N/A
e. Cost per Unit or Area of Service. *(Examples of Types of **Costs:** Labor Including Fringe Benefits, Labor Excluding Fringe Benefits, Food, Supply, Nutritional Supplements, Small equipment/Repair Parts, Total)* *(Examples of Types of **Unit or Area of Service**: Meal or Meal Equivalent; Day or Patient Day or Adjusted Patient Day; Patient Admitted at Nutritional Risk; Clinical Nutrition Referral; Revenue Generated; Patient Admission; Patient Discharge or Adjusted Discharge; Serving or Portion of Food; Cost Centers, such as Inpatient Nutrition Care Services, Patient Food Services, Outpatient Nutrition Care Services, Retail or Commercial Operations, Cafeteria)*	1	2	3	4	N/O	N/A
Others: (Please Identify) **f.**	1	2	3	4	N/O	N/A
g.	1	2	3	4	N/O	N/A

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Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Performance Measures (Continued)

Q3.

AREA: CUSTOMER SERVICES	NOT IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT	N/O	N/A
a. Percent Satisfaction with Quality of Service Factors.	1	2	3	4	N/O	N/A
(Examples of Factors: Presentation, Courtesy of Services, Appearance, Environment, Temperature of Food, Timeliness, Appropriateness of Care, Taste, Overall Rating)						
b. Ratio of Customer Complaints to Total Customer Population.	1	2	3	4	N/O	N/A
c. Outcome as a Result of Services Rendered.	1	2	3	4	N/O	N/A
(Example of Outcome in Healthcare: Improved Nutritional Status)						
d. Average Daily Participation per Total Population	1	2	3	4	N/O	N/A
(Example: Number of Meals per Student Enrollment)						
Others: (Please Identify) e.	1	2	3	4	N/O	N/A
f.	1	2	3	4	N/O	N/A

Q4.

AREA: HUMAN RESOURCES						
a. Absenteeism per Time Period . . .	1	2	3	4	N/O	N/A
b. Turnover Percentage as a Result of Separations (Dismissal or Voluntary Departure).	1	2	3	4	N/O	N/A
(Example: Number of separations per normal number of employees per year)						
c. Number of Work Injuries per Hours Worked.	1	2	3	4	N/O	N/A
Others: (Please Identify) d.	1	2	3	4	N/O	N/A
e.	1	2	3	4	N/O	N/A

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Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Additional questions relating to the benchmarking process in foodservice operations:

Directions: The benchmarking process consists of three phases: planning, collection and analysis of data, and action. Please identify activities that you perceive to be important in each of these phases when conducting foodservice benchmarking. You are strongly encouraged to add to the respective lists by recording in the "other" section.

Q5. *Planning Phase*: *Project Topic Selection Criteria.*
In the planning phase of benchmarking, the following are some examples of criteria used in deciding benchmarking project topics (subject of benchmarking project).

Identify the degree of importance of each criteria you believe should be utilized in deciding which topic(s) to use in foodservice benchmarking. (*Circle one number for each)*

Topic Selection Criteria:	DEGREE OF IMPORTANCE			
	NOT AT ALL	NOT TOO IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT
a. Contributes to the success of the organization.	1	2	3	4
b. Impacts on costs.	1	2	3	4
c. Impacts on productivity.	1	2	3	4
d. Impacts on quality.	1	2	3	4
e. Impacts on time.	1	2	3	4
f. Is an important issue.	1	2	3	4
g. Is "doable".	1	2	3	4
h. Is measurable.	1	2	3	4
i. Relates to key processes.	1	2	3	4
j. Relates to strategic plan.	1	2	3	4
k. Others: (Please Identify)				
1._____	1	2	3	4
2._____	1	2	3	4
3._____	1	2	3	4
4._____	1	2	3	4

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Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Q6. *Planning Phase. Benchmarking Partner Identification*

A benchmarking partner is another party who associates in a collegial relationship for the purpose of conducting benchmarking projects. In the planning phase of benchmarking, the following are characteristics that some people use in deciding which benchmarking partners to use.

In your opinion, identify the degree of importance of each characteristic in deciding which benchmarking partners to use. *(Circle one number for each)*

	DEGREE OF IMPORTANCE			
Benchmarking partner characteristics:	NOT AT ALL	NOT TOO IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT
a. Able to meet planned time lines (activities timetable).	1	2	3	4
b. Comparability of characteristics. . . .	1	2	3	4
c. Comparability of standards or expectations.	1	2	3	4
d. Experience with benchmarking.	1	2	3	4
e. Interest in benchmarking topic.	1	2	3	4
f. Reputation for excellence.	1	2	3	4
g. Same organization type.	1	2	3	4
h. Same types of processes.	1	2	3	4
i. Similar number of employees.	1	2	3	4
j. Similar workload of employees. . . .	1	2	3	4
k. Willingness to be a partner.	1	2	3	4
l. Willingness to maintain confidentiality.	1	2	3	4
m. Willingness to share data and information.	1	2	3	4
n. Others. (Please Identify)				
1. _____	1	2	3	4
2. _____	1	2	3	4
3. _____	1	2	3	4
4. _____	1	2	3	4

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Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Q7. *Collection and Analysis of Data Phase: Methods of Data Collection*
The following are methods that some people use to collect data for a benchmarking project.

Please identify your opinion on whether or not you would use these methods. (*Circle one number for each)*

Methods of Data Collection:	USE OF METHOD NOT USE	MAY USE	DEFINITELY USE
a. Archival research.	1	2	3
b. Consultant.	1	2	3
c. Internal records.	1	2	3
d. Mail survey.	1	2	3
e. Personal meetings / site visits. . . .	1	2	3
f. Publications / media.	1	2	3
g. Service provided by professional association.	1	2	3
h. Service provided by contractor. .	1	2	3
i. Service provided by private benchmarking company.	1	2	3
j. Telephone interview.	1	2	3
k. Others. (Please Identify)			
1. _____	1	2	3
2. _____	1	2	3
3. _____	1	2	3
4. _____	1	2	3

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Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Q8. *Collection and Analysis of Data Phase: Activities*

The following are activities that some people include in the collection and analysis of data phase of benchmarking.

In your opinion, please identify the degree of importance of each activity in the collection and analysis of data phase of foodservice benchmarking. *(Circle one number for each)*

Activities: Data Collection and Analysis Phase	DEGREE OF IMPORTANCE: NOT AT ALL	NOT TOO IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT
a. Check for misinformation.	1	2	3	4
b. Check for misplaced data.	1	2	3	4
c. Determine "best practice" organization. . .	1	2	3	4
d. Determine the performance gap.	1	2	3	4
e. Determine the reason for the performance gap.	1	2	3	4
f. Determine whether best practices can be incorporated or adapted for implementation.	1	2	3	4
g. Identify your current process practices	1	2	3	4
h. Identify differences between your organization and the benchmark organization.	1	2	3	4
i. Identify inaccurate data.	1	2	3	4
j. Identify missing data.	1	2	3	4
k. Identify your operation's strengths.	1	2	3	4
l. Identify your operation's weaknesses.	1	2	3	4
m. Verify results.	1	2	3	4
n. Others. (Please Identify)				
1. _____	1	2	3	4
2. _____	1	2	3	4
3. _____	1	2	3	4
4. _____	1	2	3	4

(PLEASE GO ON TO THE NEXT PAGE)

Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Q9. *Action Phase*

The following are activities that some people include in the action phase of benchmarking.

In your opinion, please identify the **degree of importance of these activities in the action phase** of foodservice benchmarking. *(Circle one number for each)*

Activities: Action Phase	DEGREE OF IMPORTANCE: NOT AT ALL	NOT TOO IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT
a. Assign task force to implement action steps.	1	2	3	4
b. Communicate results to appropriate people.	1	2	3	4
c. Develop action plan.	1	2	3	4
d. Establish functional goals (operational targets for change).	1	2	3	4
e. Gain consensus on action steps (obtain functional buy-in).	1	2	3	4
f. Implement action plan.	1	2	3	4
g. Institutionalize benchmarking.	1	2	3	4
h. Monitor results.	1	2	3	4
i. Recalibrate benchmark.	1	2	3	4
j. Others. (Please Identify)				
1. _____	1	2	3	4
2. _____	1	2	3	4
3. _____	1	2	3	4
4. _____	1	2	3	4

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Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Finally we would like to ask a few questions for statistical purposes.
DEMOGRAPHICS AND OTHER INFORMATION

Q10. Benchmarking can be done internally (comparing data within your own organization) and/or externally (competitive or functional/generic type benchmarking that compares data with organizations other than your own).

To the best of your ability, state your estimate of **the percentage of foodservice directors** in the following categories that you believe have **experience or knowledge about any benchmarking**? *(Circle one number for each)*

	10% OR LESS	11-25%	26-50%	51-75%	76-100%
a. Correctional.....	1	2	3	4	5
b. Healthcare.....	1	2	3	4	5
c. School.....	1	2	3	4	5
d. University / College.	1	2	3	4	5
e. Other..... (Please specify) _____	1	2	3	4	5

Q11. Identify the **types** of foodservice benchmarking activities with which you have knowledge and/or experience. *(Circle one number for each)*

		HAVE	HAVE NOT
a.	Correctional.....	1	2
b.	Healthcare.....	1	2
c.	School.....	1	2
d.	University / College..	1	2
e.	Other: (Please specify) _____	1	2

Q12. Indicate the **category** of foodservice where you currently work (your primary and/or present position). *(Circle one number)*

1 CORRECTIONAL
2 HEALTHCARE
3 SCHOOL
4 UNIVERSITY / COLLEGE
5 OTHER. PLEASE SPECIFY: _____

(PLEASE GO ON TO THE NEXT PAGE)

Appendix C Expert Panel Questionnaire (Final Round) (Continued)

Q13. Indicate what best describes your **job title**. *(Circle one number)*

1 DIETITIAN
2 FOODSERVICE CONSULTANT
3 FOODSERVICE DIRECTOR
4 FOODSERVICE MANAGER
5 FOODSERVICE SUPERVISOR
6 MULTI-DEPARTMENT DIRECTOR (INCLUDING FOODSERVICE)
7 OTHER. PLEASE SPECIFY: _____

Q14. Indicate how many years of **experience** you have in **foodservice management**. *(Circle one number)*

1 0 - 5 years
2 6 - 10 years
3 11 - 15 years
4 More than 15 years

Q15. Indicate how many years **experience** you have with **foodservice benchmarking**. *(Circle one number)*

1 Less than 1 year
2 1 - 3 years
3 4 - 6 years
4 7 - 10 years
5 More than 10 years

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Appendix D Cover Letter, Delphi Questionnaire

DEPARTMENT OF NUTRITION AND FOOD MANAGEMENT

OREGON STATE UNIVERSITY
Milam Hall 108 · Corvallis, Oregon 97331-5103
Telephone 503-737-3561

April 11, 1997

Name
Address

Dear :

We would like to invite you to be on an **expert panel** and participate in a study on benchmarking. This study will be conducted by mail over a short period of time, continuing through May 1997.

The purpose of this research is to identify important activities in the foodservice benchmarking process. Results of feedback from this research will be used to: (1) develop a working tool for foodservice directors in conducting benchmarking and (2) provide input for a national survey instrument on the subject of benchmarking practices and opinions, mailed to foodservice directors. A summary of the expert panel findings and research results will be mailed to you if desired at the end of this project.

Benchmarking is a management process for continuous improvement that measures products, services, and practices against industry leaders, ultimately leading to superior performance. Although benchmarking is being conducted throughout the foodservice industry in varying degrees, actual research on foodservice benchmarking activities has not been reported in the professional journals.

The expert panel study will use the Delphi technique. This technique is used to obtain agreement among the group of experts through a series of surveys that will ultimately lead to a consensus of opinion on the selected topics. This study will involve two rounds of surveys mailed to each expert; responses will remain anonymous throughout the inquiry. The first round survey is included in this envelope.

The topic of the Delphi questionnaire is benchmarking performance measures (otherwise known as indicators) used in foodservice. Round one will take approximately 30 minutes of your time to complete. Round two will take approximately the same time to complete.

The surveys will have an identification number for mailing purposes only. We hope you can participate in this study because your knowledge and experience will improve the outcome of this study. Your cooperation in this research will be appreciated.

Appendix D Cover Letter, Delphi Questionnaire (Continued)

Please complete the bottom of this page (*Agreement to Participate*) and return the agreement and the Delphi questionnaire **as soon as possible or no later than May 5** in the self-addressed stamped envelope or FAX to Jean Chambers at (541) 737-6914. If you decide not to participate, please return the agreement so we will know your intent and will not be waiting for your response. If you have any questions, feel free to contact Bonnie Johnson, phone: (541) 752-8447, or e-mail: johnsbon@ucs.orst.edu.

Sincerely,

Bonnie Johnson, M.S., R.D., L.D.
Project Coordinator

Jean Chambers, Ph.D., R.D., L.D.
Assistant Professor

Attachment:
Delphi Questionnaire

AGREEMENT TO PARTICIPATE IN BENCHMARKING STUDY

_____I agree to serve as a panel expert for this foodservice benchmarking research. If at any time, I can no longer participate in this study, I may withdraw my consent and discontinue participation. Names and organizations of participants will not be identified in this study or any subsequent work.

_____I do NOT desire to participate in this research study.

NAME: _____ DATE: _____
Telephone: _____ FAX: _____ E-Mail: _____
Address: _____
_____

Preferred method to receive surveys: ____FAX ____Mail

Preferred method to communicate with researchers, if needed:
____E-Mail ____Telephone ____FAX

I would like a summary of the expert panel findings and research results at the end of this project.
____Yes ____No

*Please return the agreement and the questionnaire **as soon as possible or no later than May 5** to Bonnie Johnson in the self-addressed stamped envelope or FAX to Jean Chambers. Thank you.*

Bonnie Johnson, M.S., R.D., L.D.
Department of Nutrition and Food Management
Oregon State University
Milam Hall 108
Corvallis, OR 97331-5103

Jean Chambers, Ph.D., R.D., L.D.
FAX number: (541) 737-6914
Phone number: (541) 737-0961

Appendix E Cover Letter, Expert Panel Questionnaire (Final Round)

DEPARTMENT OF NUTRITION AND FOOD MANAGEMENT

OREGON STATE UNIVERSITY
Milam Hall 108 · Corvallis, Oregon 97331-5103
Telephone 503-737-3561

May 29, 1997

NAME
ADDRESS

Dear

Thank you for agreeing to continue to participate on our expert panel and completing the *Benchmarking in Foodservice Operations* round one Delphi questionnaire. Your prompt response in the first round was very much appreciated.

Please find enclosed a questionnaire that includes round two of the Delphi study on foodservice benchmarking performance measures. Your responses regarding performance measures have been consolidated and recorded on this questionnaire. We received a wide variety of responses from experts from four categories of foodservice operations: correctional, schools, colleges/universities, and healthcare. During the consolidation process, we tried to make the performance measures as generic as possible because the measures will be used on a national survey. Some categories of operations use measures specific to that category. In addition, we want to acknowledge that there was some controversy over the use of "meal" as a performance measure. Some avoid using "meal" and some use meal or meal equivalent with a clearly defined definition of the term.

In this round, we are asking you to rate the importance of each performance measure that was derived from round one. In addition, please answer several questions about activities important to the benchmarking process in foodservice operations. This questionnaire should require approximately 45 minutes of your time.

All individual responses will be kept strictly confidential; results will be reported only in summary form and a copy sent to you upon completion of the study. Your knowledge and experience continue to be invaluable to the success of this study.

Appendix E Cover Letter, Expert Panel Questionnaire (Final Round) (Continued)

Please complete the entire questionnaire and return **as soon as possible** or no later than **June 16, 1997** in the self-addressed stamped envelope or FAX to Jean Chambers at (541) 737-6914. If you have any questions, please feel free to contact Bonnie Johnson, phone: (541) 752-8447, or e-mail: johnsbon@ucs.orst.edu. The enclosed bookmark is to express our appreciation for your efforts and to thank you for your continued participation.

Sincerely,

Bonnie C. Johnson, M.S., R.D., L.D.
Project Coordinator

Jean Chambers, Ph.D., R.D., L.D.
Assistant Professor

Attachment
Questionnaire

PILOT TESTING
EXPERT PANEL RESEARCH INSTRUMENTS

*****ROUND ONE*****

Round One consists of two parts: an expert panel survey and a Delphi questionnaire. The survey includes questions about activities important to each phase of the benchmarking process. The benchmarking process consists of three phases: planning, data collection and analysis, and action. The Delphi questionnaire asks respondents to identify performance measures important to benchmarking in foodservice operations.

Directions: Circle Yes/No. If you respond with a "No," record comments (such as location in the research instrument or identification of problem) as desired in the appropriate column for each feedback question. You may also annotate directly on the research instruments. (Shaded blocks indicate areas where a response is not applicable.)

Feedback Question	*Yes*	*No*	*Cover Letter Comments*	*Survey Comments*	*Delphi Questionnaire Comments*
1. Were all the words understood?	Yes	No			
2. Were the instructions clear?	Yes	No			
3. Were any of the questions too difficult to answer?	Yes	No			
4. Was anything confusing?	Yes	No			
5. Did you hesitate before answering any questions? If so, state which question and why you hesitated.	Yes	No			

6. Was anything missing in the content?	**Yes**	**No**			
7. Was the length acceptable? a. What was the approximate length of time to complete the **survey**? _____minutes b. What was the approximate length of time to complete the **Delphi questionnaire**? _____minutes	**Yes**	**No**			
8. Did you like the appearance?	**Yes**	**No**			
9. Was it easy to read?	**Yes**	**No**			
10. Did it create a positive impression, one that motivates people to answer it?	**Yes**	**No**			
11. Did any aspect of it suggest bias on the part of the researcher?	**Yes**	**No**			

What was your overall impression (such as: format, content, usefulness of information to be gained from this research, applicability of the research to your professional activities)?

_____

_____

PILOT TESTING
EXPERT PANEL RESEARCH INSTRUMENTS

*******ROUND TWO*******

Round Two consists of the second stage of the Delphi technique. This Delphi questionnaire asks respondents to rate the importance of identified performance measures to foodservice directors when conducting benchmarking in foodservice operations.

Directions: Circle Yes/No. If you respond with a "No," record comments (such as location in the research instrument or identification of problem) as desired in the appropriate column for each feedback question. You may also annotate directly on the research instruments. (Shaded blocks indicate areas where a response is not applicable.)

Feedback Question	*Yes*	*No*	*Cover Letter Comments*	*Delphi Questionnaire Comments*
1. Were all the words understood?	Yes	No		
2. Were the instructions clear?	Yes	No		
3. Was anything confusing?	Yes	No		
4. Was anything missing in the content?	Yes	No		
5. Did you like the way it looked?	Yes	No		
6. Was it easy to read?	Yes	No		
7. Did it create a positive impression, one that motivates people to answer it?	Yes	No		

What was your overall impression (such as: format, content, usefulness of information to be gained from this research, applicability of the research to your professional activities)? _____

_____

Your comments will be appreciated, either here or on a separate page.

Your contribution to this effort is greatly appreciated.

Please return your completed questionnaire in the enclosed, stamped envelope to:

Bonnie Johnson, M.S., R.D., L.D.
Department of Nutrition and Food Management
Oregon State University, Milam Hall 108
Corvallis, OR 97331-5103

Foodservice Directors Questionnaire

Benchmarking in Foodservice

Benchmarking is a continuous, systematic, management process for measuring work processes, products, and services for the purpose of organizational comparison and improvement.

Conducted by the
Department of Nutrition and Food Management
Oregon State University
Milam Hall, Room 108
Corvallis, Oregon 97331-5103

Definition of Benchmarking:

Benchmarking is a continuous, systematic, management process for measuring work processes, products, and services for the purpose of organizational comparison and improvement.

Type of benchmarking.

There are 3 types of benchmarking: internal, external, and functional/generic.

Internal benchmarking compares similar internal functions within an organization or within departments of an organization (not with any other organization), such as comparing historical data from your own departmental records.

External benchmarking is benchmarking against external organizations (organizations other than your own) or direct competitors, such as benchmarking your hospital food cost against another hospital's food cost. It could include a comparison against national norms or an exchange of information from a consortium of companies (collaborative).

Functional/generic benchmarking is benchmarking done with external functional competitors or industry leader organizations, even if not in the foodservice industry, such as comparing employee turnover of an industry's foodservice operation to a retail sales company's turnover (not foodservice).

Q1. Indicate whether or not you have used these **types of benchmarking**. *(Circle a number for each)*

	USAGE		
	YES, HAVE USED	NO, HAVE NOT USED	DO NOT KNOW
a. Internal benchmarking.	1	2	3
b. External benchmarking.	1	2	3
c. Functional/generic benchmarking.	1	2	3

Q2. How **important** is **benchmarking** to you in performing your job? *(Circle one number)*

1 NO IMPORTANCE
2 LITTLE IMPORTANCE
3 SOME IMPORTANCE
4 GREAT IMPORTANCE

(PLEASE GO ON TO THE NEXT PAGE)

Q11. Indicate what best describes your **job title**. *(Circle one number)*

1 FOODSERVICE CONSULTANT
2 FOODSERVICE DIRECTOR
3 FOODSERVICE MANAGER
4 FOODSERVICE SUPERVISOR
5 MULTI-DEPARTMENT DIRECTOR (INCLUDING FOODSERVICE)
6 OTHER. PLEASE SPECIFY:_____

Q12. Indicate the number of years of work **experience** you have in **foodservice management**. *(Circle one number)*

1 LESS THAN 2
2 2 TO 5
3 6 TO 10
4 11 TO 15
5 MORE THAN 15

(PLEASE TURN THE PAGE)

Q9. **How would you like to gain more knowledge and skills about benchmarking?** ***(Circle a number for each)***

	YES	NO
a. Continuing educational programs	1	2
b. Internet	1	2
c. Professional association meetings	1	2
d. Professional journals	1	2
e. Professional newsletters	1	2
f. Self-study materials (i.e. books, tapes)	1	2
g. Trade magazines	1	2
h. Other. Please specify:_____	1	2

Finally we would like to ask a few questions for statistical purposes.

DEMOGRAPHICS AND OTHER INFORMATION

Q10. Indicate the category of foodservice where you currently work (your primary and/or present position). ***(Circle one number)***

1 BUSINESS & INDUSTRY
2 COLLEGE OR UNIVERSITY
3 CORRECTIONAL
4 HEALTHCARE
5 SCHOOL
6 OTHER. PLEASE SPECIFY: _____

Q3. **Benchmarking partners**

Benchmarking partners are individuals or organizations who associate in a collegial relationship involving close cooperation to conduct benchmarking projects. Have you ever used benchmarking partners? ***(Circle one number)***

1 NO, (SKIP TO QUESTION 4)
2 YES

Q3a. Indicate whether or not you have used these types of benchmarking partners. ***(Circle a number for each)***

	USAGE	
	YES, HAVE USED	NO, HAVE NOT USED
a. College or university foodservice	1	2
b. Hospital foodservice	1	2
c. Other healthcare foodservice	1	2
d. School (primary and secondary) foodservice	1	2
e. Correctional foodservice	1	2
f. Business & industry foodservice	1	2
g. Non-foodservice industry Specify type:_____	1	2
h. Other. Specify type:_____	1	2

Q4. Performance measures are otherwise known as key indicators or critical success factors. Please indicate whether or not you use each of the following foodservice performance measures. *(Circle a number for each)*

	USAGE	
	YES, DO USE	NO, DO NOT USE
Q4a. AREA: OPERATIONAL		
a. Minutes per Unit ... *(Examples of Unit: Meal, Meal Equivalent, Meal Transaction)*	1	2
b. Inventory Turnover per Time Period ... *(Examples of Time Period: Month, Quarter, Year)*	1	2
c. Percentage Accuracy of Tray Assembly ...	1	2
d. Clinical Productivity (Healthcare) *(Example: Relative Value Units per Man-hour)* ...	1	2
e. Meals per Labor Hour ... *(Examples of Types of Meals: Meal Equivalents, Transactions, Number of Customers Served)* *(Examples of Labor Hour: Hours Worked, FTE)*	1	2
f. Meals per Time Period ... *(Examples of Time Period: Day, Month, Pay Period)*	1	2
g. Labor Hours per Unit ... *(Examples of Labor Hours: Hours Worked, Hours Paid, FTE, Inmate, Productive, Nonproductive, Overtime, Total)* *(Examples of Unit: Meal or Meal Equivalent, Patient Admission, Outpatients, Month, Day or Adjusted Patient Day, Adjusted Patient Discharge, Patient Admitted at Nutritional Risk, Improved Nutritional Status after Dietitian Intervention, Referral)*	1	2

(PLEASE GO ON TO THE NEXT PAGE)

Q7. What is your perceived knowledge level about benchmarking? *(Circle one number)*

1 NONE
2 LOW LEVEL
3 MODERATE LEVEL
4 HIGH LEVEL

Q8. Do you need to develop knowledge and skills about benchmarking? *(Circle one number)*

1 NO, (SKIP TO QUESTION 10)
2 YES

Q8a. For which of the following areas of benchmarking do you have the greatest need for developing knowledge and skills about benchmarking? Rate your need for gaining knowledge and skills for the following topics. *(Circle a number for each)*

	NEED			
	NO NEED	LOW NEED	MODERATE NEED	HIGH NEED
a. How benchmarking is beneficial	1	2	3	4
b. How to choose benchmarking partner(s)	1	2	3	4
c. How to choose a project topic	1	2	3	4
d. How to collaborate with benchmarking partner(s)	1	2	3	4
e. How to collect benchmarking data	1	2	3	4
f. What the benchmarking process is	1	2	3	4
g. Other. Please specify:_____	1	2	3	4

(PLEASE TURN THE PAGE)

Q6. Listed below are **reasons why some people do not** conduct benchmarking. In your opinion, what delayed or prevented you from initiating benchmarking activities? *(Circle a number for each)*

	YES, DID DELAY OR PREVENT	NO, DID NOT DELAY OR PREVENT
a. Accurate data on performance measures in the organization were not available	1	2
b. Believed benchmarking was too costly	1	2
c. Believed the organization's performance measures were not comparable to other organizations.	1	2
d. Believed there would be a low return for the effort	1	2
e. Lacked leadership commitment to benchmarking within the organization	1	2
f. Lacked confidence in the accuracy of other people's data	1	2
g. Lacked time necessary to conduct benchmarking.	1	2
h. Lacked trained personnel to conduct benchmarking projects	1	2
i. Needed to know more about benchmarking	1	2
j. Other projects took priority over benchmarking projects	1	2
k. Unaware of any benefits	1	2

(PLEASE GO ON TO THE NEXT PAGE)

Q4. ***Performance Measures (Continued)***
(Circle a number for each)

Q4b. AREA: FINANCIAL

	USAGE: YES, DO USE	USAGE: NO, DO NOT USE
a. Food Cost Percentage *(Food Cost as % of Total Revenue)*	1	2
b. Labor Cost Percentage *(Labor Cost as % of Total Revenue)*	1	2
c. Supply Cost Percentage *(Supply Cost as % of Total Revenue)*	1	2
d. Percentage Product Purchased from Sources *(Examples of Sources: Central Warehouse, Prime Vendor, State Contracts)*	1	2
e. Actual Revenue versus Budgeted Revenue	1	2
f. Cost per Unit or Area of Service *(Examples of Types of Costs: Labor Including Fringe Benefits, Labor Excluding Fringe Benefits, Food, Supply, Nutritional Supplements, Small Equipment/Repair Parts, Total)* *(Examples of Types of Unit or Area of Service: Meal or Meal Equivalent; Day or Adjusted Patient Day; Patient Admitted at Nutritional Risk; Clinical Nutrition Referral; Revenue Generated; Patient Admission; Adjusted Patient Discharge; Serving or Portion of Food; Cost Centers, such as Inpatient Nutrition Care Services, Patient Food Services, Outpatient Nutrition Care Services, Retail or Commercial Operations, Cafeteria)*	1	2

(PLEASE TURN THE PAGE)

Q4. ***Performance Measures (Continued)***
(Circle a number for each)

	USAGE: YES, DO USE	USAGE: NO, DO NOT USE
Q4c. AREA: CUSTOMER SERVICES		
a. Percent Satisfaction with Quality of Service Factors. ***(Examples of Factors: Presentation, Courtesy of Services, Appearance, Environment, Temperature of Food, Timeliness, Appropriateness of Care, Taste, Overall Rating)***	1	2
b. Ratio of Customer Complaints to Total Customer Population	1	2
c. Outcome as a Result of Services Rendered. ***(Example of Outcome in Healthcare: Improved Nutritional Status)***	1	2
d. Average Daily Participation per Total Population. ***(Example: Number of Meals per Student Enrollment)***	1	2
Q4d. AREA: HUMAN RESOURCES		
a. Absenteeism per Time Period	1	2
b. Turnover Percentage as a Result of Dismissal or Voluntary Departure. ***(Example: Number of Replacements per Average Number of Employees)***	1	2
c. Number of Work Injuries per Hours Worked	1	2
d. Number of EEO or Union Complaints per Average Number of Employees	1	2

(PLEASE GO ON TO THE NEXT PAGE)

Q5. Benchmarking Outcomes

The following items are possible outcomes of conducting benchmarking. Identify whether or not you experienced these outcomes when conducting benchmarking.
(Circle a number for each)

		YES	NO
a.	Have experienced benchmarking outcomes. **(IF NO, SKIP TO QUESTION 6)**	1	2
b.	Determined where to allocate resources most effectively.	1	2
c.	Developed accurate performance measures.	1	2
d.	Helped achieve a competitive position.	1	2
e.	Helped make staff sizing decisions.	1	2
f.	Identified new breakthroughs that otherwise would not have been recognized.	1	2
g.	Identified strengths.	1	2
h.	Identified weaknesses.	1	2
i.	Improved cost effectiveness.	1	2
j.	Improved customer satisfaction.	1	2
k.	Improved decision-making.	1	2
l.	Improved efficiency.	1	2
m.	Promoted better problem solving.	1	2
n.	Provided source of ideas for correcting or eliminating problems.	1	2
o.	Targeted areas for process improvement.	1	2
p.	Uncovered best practices.	1	2
q.	Used as goal-setting process.	1	2

(PLEASE TURN THE PAGE)

PILOT TESTING
NATIONAL RESEARCH INSTRUMENT

Directions: The following is a list of questions to consider when pilot-testing the cover letter and the survey. Please respond to these questions by annotating directly on the research instruments any specific comments you have. Any overall comments can be made on this form.

Feedback Question	***Cover Letter and Survey Comments***
1. Were all the words understood?	
2. Were the instructions clear?	
3. Were any of the questions too difficult to answer?	
4. Was anything confusing?	
5. Did you hesitate before answering any questions? If so, state which question and why you hesitated.	
6. Was anything missing in the content?	
7. Was the length acceptable? What was the approximate length of time to complete the survey? _____minutes	
8. Did you like the appearance?	
9. Was it easy to read?	
10. Did it create a positive impression, one that motivates people to answer it?	
11. Did any aspect of it suggest bias on the part of the researcher?	

What was your overall impression (such as: format, content, usefulness of information to be gained from this research, applicability of the research to your professional activities)? _____

Appendix I Advance Notice Postcard, Foodservice Directors Questionnaire

JULY 1997

DEAR FOODSERVICE DIRECTOR:

Within the next few days, you will receive a request to complete a brief questionnaire. We are mailing it to you in an effort to learn about benchmarking in foodservice operations. Benchmarking is a continuous, systematic, management process for measuring work processes, products, and services for the purpose of organizational comparison and improvement.

We would greatly appreciate your taking the few minutes necessary to complete and return your questionnaire by using the enclosed return, postage-paid envelope contained in your questionnaire package. Thank you in advance for your help. LOOK FOR IT SOON!

Bonnie Johnson, Project Director

Appendix J Original Cover Letter, Foodservice Directors Questionnaire

DEPARTMENT OF NUTRITION AND FOOD MANAGEMENT

OREGON STATE UNIVERSITY
Milam Hall 108 · Corvallis, Oregon 97331-5103
Telephone 503-737-3561

July 1, 1997

Dear Foodservice Director:

We are conducting a study on benchmarking in foodservice operations. In recent years, there has been much discussion and enthusiasm about benchmarking, particularly in business and industry. In this rapidly changing environment, an organization must constantly strive to improve its products, services, and practices in order to be competitive and meet the needs of its customers. We are interested in knowing about foodservice directors' benchmarking activities and needs for additional knowledge.

Your participation in this survey is completely voluntary; however, in order to gather a fair impression of benchmarking in different foodservice settings, it is important that as many people as possible respond to the survey. *If you are not a foodservice director, manager, or supervisor, please pass along this survey to an individual who is willing to complete the questionnaire.* You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off of the mailing list when your questionnaire is returned. Responses will not be linked to your name or organization. If you would like a copy of the results, please write your name and mailing address on the back of the return envelope. Do not record this information on the questionnaire itself.

Please complete the questionnaire and return **as soon as possible or no later than July 22, 1997** in the self-addressed stamped envelope. The enclosed bookmark is to express our appreciation for your time and effort in completing this questionnaire and to thank you for your participation. If you have any questions, feel free to contact Bonnie Johnson at Dr. Chamber's office, phone: (541) 737-0961, or e-mail: johnsbon@ucs.orst.edu.

Sincerely,

Bonnie Johnson, M.S., R.D., L.D.
Project Director

Jean Chambers, Ph.D., R.D., L.D.
Assistant Professor

Attachment:
Questionnaire

Appendix K Follow-up Postcard, Foodservice Directors Questionnaire

JULY 1997

DEAR FOODSERVICE DIRECTOR:

JUST a friendly reminder! Last week, a questionnaire was mailed to you seeking information about benchmarking in foodservice operations. Your name was drawn randomly from a list of foodservice directors nation-wide. If you have already completed and returned the questionnaire to us, please accept our sincere thanks. If not, please do so today and expedite the process by using the enclosed return, postage-paid envelope contained in your questionnaire package. We are especially grateful for your help.

If you did not receive a questionnaire, or if it was misplaced, please call (541) 737-0961 or send an e-mail message to: johnsbon@ucs.orst.edu and we will get another one in the mail to you today. **THANK YOU!**

Bonnie Johnson, Project Director

Appendix L Second Cover Letter, Foodservice Directors Questionnaire

DEPARTMENT OF NUTRITION AND FOOD MANAGEMENT

OREGON STATE UNIVERSITY
108 Milam Hall · Corvallis, Oregon 97331-5103
Telephone 541-737-3561 Fax 541-737-6914

July 28, 1997

Dear Foodservice Director:

About four weeks ago, we wrote to you seeking information about benchmarking in foodservice operations. As of today, we have not received your completed questionnaire. We realize that you may not have had time to complete it. If you have already completed and returned it to us, please accept our sincere thanks. In the event that your questionnaire has been misplaced, a replacement is enclosed, along with a self-addressed stamped envelope. We would appreciate your **reply as soon as possible**. If you have any questions, please contact Bonnie Johnson at Dr. Chamber's office, phone: (541) 737-0961, or e-mail: johnsbon@ucs.orst.edu.

We are contacting you again because each questionnaire is of great significance to the usefulness of this study. In order for information from the study to be truly representative, it is essential that each person in the sample return their questionnaire. Your response will improve the accuracy of the study results. As mentioned in the first letter, you may be assured of complete confidentiality. *If you are not a foodservice director, manager, or supervisor, please pass along this survey to an individual who is willing to complete the questionnaire.* The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off of the mailing list when your questionnaire is returned. Responses will not be linked to your name or organization. If you would like a copy of the results, please write your name and mailing address on the back of the return envelope. Please do not record this information on the questionnaire itself.

Your contribution to the success of this study will be greatly appreciated.

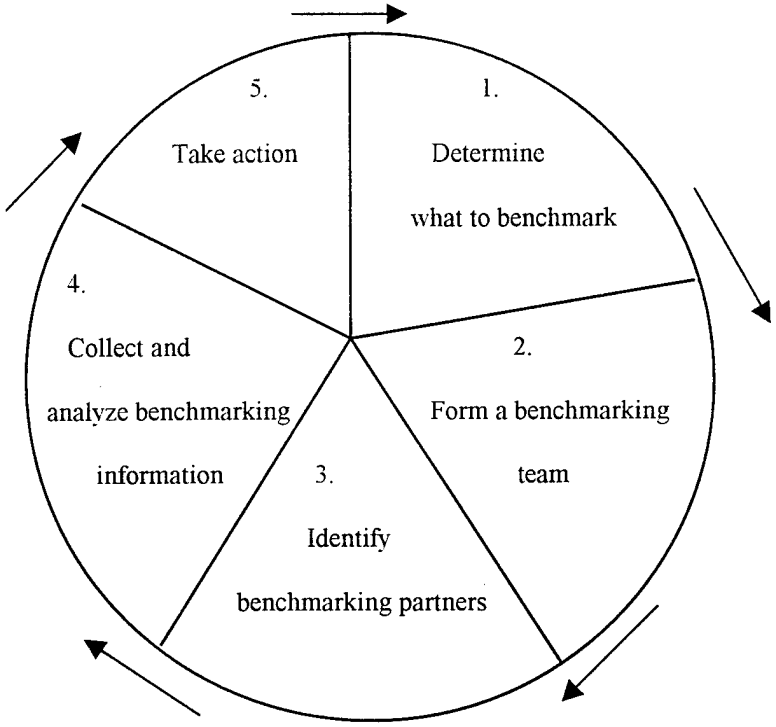
Sincerely,

Bonnie Johnson, M.S., R.D., L.D.
Project Director

Jean Chambers, Ph.D., R.D., L.D.
Assistant Professor

Attachment:
Questionnaire

Appendix Figure A Spendolini's 5-Stage Benchmarking Process



SOURCE: Spendolini MJ. *The Benchmarking Book*. NY: AMACOM; 1992. (2)

Appendix Table A Benchmarking Network, Inc. Benchmarking Model

Benchmarking Network, Inc. Benchmarking Model
Project Planning
1. Develop management commitment
2. Develop mission statement
3. Identify topic
4. Build consensus on topic
5. Develop process flow chart
6. Identify "Easy Wins"
7. Identify customers
Project Research
8. Perform library research
9. Develop performance measures
10. Develop questionnaires
11. Pilot test questionnaires
12. Track field surveys
13. Assess customer needs
14. Identify / solicit partners
Best Practice Identification
15. Develop a response scoring sheet
16. Scrub and analyze data
17. Identify best performers
18. Prepare for site visits
19. Conduct site visits
Buy-In Process
20. Repeat process
21. Monitor results
22. Present findings and obtain go-ahead
23. Write final report
24. Conduct workshop to identify practices
25. Prioritize issues for workshops

SOURCE: Czarnecki MT. *Benchmarking Strategies for Health Care Management.* Gaithersburg, MD: Aspen Publishers, Inc.; 1995. (14)

Appendix Table B Baxter Benchmarking Model

Baxter Benchmarking Model	
Preparation Phase	1. Define goals 2. Define processes 3. Choose what to measure 4. Select benchmarking partners 5. Commit resources
Analysis Phase	1. Identify sources of data 2. Collect data 3. Translate data to common format 4. Identify best level of achievements, that is, the benchmark 5. Identify differences between your organization and the benchmark 6. Identify factors driving the difference 7. Verify the results 8. Present the results and conclusions 9. Agree on action steps 10. Form task forces to implement action steps

SOURCE: Lenz S, Myers S, Nordlund S, Sullivan D, Vasista V. Benchmarking: Finding ways to improve. *J Qual Improvement*. 1994; 20(5):250-259. (17)

Appendix Table C Xerox 10-Step Benchmarking Process

Phase I - Planning	Step 1:	Select a subject to benchmark - Determine the purpose - Recruit the team - Determine the measurements - Determine the scope and constraints - Obtain support of all major stakeholders
	Step 2:	Identify the best practitioner(s) - Prepare a list - Select the benchmarking partner(s)
	Step 3:	Determine the data-collection method and collect the data - Prepare a list of questions - Answer the questions for your own operation - Search for data in existing studies - Review processes for collecting new data - Select process(es) and develop guidelines - Determine who will conduct data gathering - Review legal, ethical, and protocol requirements - Collect data using process guidelines
Phase II - Analysis	Step 4:	Determine the current gap - Tabulate the data - Analyze data against the purpose of the study - Determine the benchmark - Determine the gap - Determine the general reasons - Determine specific drivers and practices
	Step 5:	Project future performance - Identify assumptions used in the projection - Project the gap
Phase III - Integration	Step 6:	Communicate the results of analysis - Understand your audience - Determine method of communication - Organize your analysis - Obtain acceptance from stakeholders
	Step 7:	Establish functional goals - Identify current goals - Determine what changes could and should be made - Revise your gap projection - Obtain commitment to changes - Revise functional goals
Phase IV - Action	Step 8:	Develop action plans - Prepare action plans - Organize your plan - Obtain functional buy-in
	Step 9:	Implement plan and monitor results - Implement action plans - Monitor results
	Step 10:	Recalibrate benchmarks - Identify appropriate time frame - Repeat steps 1 - 9

SOURCE: Camp RC, Tweet AG. Benchmarking applied to health care. *J Qual Improvement*. 1994; 20(5):229-238. (16)

Appendix Table D Expert Panelists' Suggested Performance Measures

PERFORMANCE MEASURES	COMMENTS
Area: Operational	
• Meals per labor worked • Meals per labor paid	Can use meals or transactions or number served
• Meal per labor hour (old)	Poor due to definition of meal
• Meals per civilian labor hour • Meals per labor hour	Number of meals divided by number of labor hours
• Meals per FTE	Most used
• Meal equivalent	Sales in dollars divided by $2.00
• Meal equivalents per labor hour paid	Number of patient meals served + number of meal equivalents for nourishments and supplemental feedings (cost of nourishments and supplemental feedings divided by average cost per patient meal) + number of meal equivalents for non-patient food services (cost of food served for non-patient services divided by average cost per patient meal)
• Labor hours per meal (old)	Poor due to definition of meal; The definition of a meal varies so across institutions and across units in an operation (patient vs. retail). We try to stay away from such ratios.
• Hours worked and hours paid per each patient admitted identified at nutritional risk (looking at possibility of factoring in acuity) (clinical nutrition -inpatient)	
• Hours worked and hours paid per referral (clinical nutrition -outpatient)	
• Hours worked/hours paid to generate a certain volume of revenue, e.g. $100 (Rehabilitation foodservice)	
• Hours worked/hours paid per patient day (patient foodservice)	
• Trays per minute • Labor hours per tray • Minutes of stop time or percent stop time of meal assembly line	
• Meal accuracy	

Appendix Table D Expert Panelists' Suggested Performance Measures (Continued)

PERFORMANCE MEASURES	COMMENTS
• FTEs per occupied bed	Used by administrators - managed care
• On time service to dining room and cell blocks	
• Productive hour per adjusted patient day	Productive = hours worked
• Total hours per adjusted patient day	Total = all paid hours, vacation, holidays, sick, worked
• Average daily participation	Number of meals divided by enrollment
• Inventory turnover per month	Number of serving days in month divided by: (month's ending inventory ($) divided by average daily food cost)
Area: Financial	
• Labor cost per meal	Average hourly labor cost divided by meals per labor hour
• Labor category cost per meal – civilian (e.g. correctional category)	Do not count inmate labor cost (wages - regular and overtime and vacation, sick, etc.)
• Labor cost per patient day	
• Labor cost per meal equivalent	Cost of labor - $ paid for work done in the department to include consultant, part-time, stand-by, and temporary employees but not fringe benefits or time for student teaching or outside research
• Labor cost percentage	Includes all paid $ for labor
• Average daily labor cost	Sum of total annual wages and salaries and fringe benefits divided by total serving days per year
• Average hourly labor cost	Average daily labor cost divided by total labor hours per year
• Inmate labor cost	
• Food cost per meal	
• Food cost per meal equivalent	
• Food cost per patient day	
• Food cost percentage (food cost/revenue)	
• Average daily food cost	Annual cost of food divided by total serving days per year
• Supply cost per meal	Paper products/soap

Appendix Table D Expert Panelists' Suggested Performance Measures (Continued)

PERFORMANCE MEASURES	COMMENTS
• Supply cost per patient day • Supply cost per meal equivalent • Total cost per meal equivalent • Total cost per patient day • Total cost per adjusted patient day	Total costs = all costs expensed to department
• Floor stock cost per meal or per patient day • Supplement cost per meal or per patient day	
• Cost per patient day	Inpatient: not per meal - too open to variation; if try to define meal requires extensive calculations. Avoid any reference to licensed bed - an irrelevant figure
• Costs per adjusted patient day. Costs: total labor, total food, total supplies (all non-food, non-capital)	Adjusted patient day = inpatient visits + (Outpatient visits times outpatient revenue per visit divided by inpatient revenue per visit); includes day surgeries and some outpatient volume
• Cost per admission	
• Cost per serving	Cost per purchase unit divided by number of servings per purchase unit
• Meal cost	Everyone desires, but no one calculates the same. Patient and nonpatient meal variance in reporting contributes to poor data.
• Check average per customer	Can use equivalent meal price or equivalent meal cost as part of ratios
• Revenues: Operational costs for each cost center • Actual revenue compared to budget revenue • Small equipment/repair parts per meal • Percent of product purchased from Central Distribution Center	
• Percent of product purchased from "Prime" vendor • Percent of product purchased through state contracts	

Appendix Table D Expert Panelists' Suggested Performance Measures (Continued)

PERFORMANCE MEASURES	COMMENTS
• Net cost (cash) per adjusted patient day	Cash = money
• Net cost (cash and credits) per adjusted patient day	Credits = internal transfer to other departments
Area: Customer Satisfaction	
• Transactions per hour	
• Ratio of customer complaints	
• Items missed per trays served	
• Patients with improved nutritional status after dietitian intervention	Albumin, Prealbumin, weight, total lymphocyte count
• Patients readmitted with similar nutrition problems after education by dietitian	Within past 2-5 years
• Percent satisfaction of both retail and inpatient: presentation, courtesy of servers, appearance, taste, temperatures, environment (retail)	
• Percent of overall satisfaction:	
• Patient: Flavor, appearance, variety, temperature, friendliness, and helpfulness of food service personnel	
• Cafeteria: Flavor, variety, cleanliness, value, courtesy and helpfulness of staff	
• Rating scale with questions for patient customer and nonpatient customer	One question is adequate.
• Inmate acceptability surveys	Quarterly
• Average daily participation	
• Usage factor of total population to customers	
Area: Employee Performance	
• Overtime hours per period	Period could be day, week, month, pay period, etc.
• Worked hours per period	
• Total hours per period	
• Non-productive hours per period	
• Non-productive hours per each patient admitted and identified to be at nutritional risk	Could be expressed in percent
• Non-productive hours per referral	

Appendix Table D Expert Panelists' Suggested Performance Measures (Continued)

PERFORMANCE MEASURES	COMMENTS
• Non-productive hours per $100 of revenue	
• Non-productive hours per 100 meal equivalents produced	
• Productive hours per day	
• Percentage productive hours per day	Turnover is not always reasonable to assume performance related
• Meals per productive hour	Meals = meal equivalent based on defined components
• Turnover ratios	
• Work injury - incident per hours worked or days	
• Trays per minutes worked	Rather than trays per minute. Use total hours/minutes worked
• Minutes per trays	
• Nutrition care	Relative Value Units
• Absenteeism rate	
• Rating scale based on history, versatility, competency, and flexibility, cross-training skills acquired	
• Employee annual evaluations	
• Recording of required temperatures and other information for inspecting agencies	