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PERFORMANCE MEASUREMENT SYSTEMS:
A BEST PRACTICES STUDY

by

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The purpose of this cost management research was the identification and analysis of internal performance measurement best practices which can serve as a benchmark for companies who seek to improve their performance measurement systems and competiveness. The study used data that were previously collected from eleven diverse, high performing companies.
This study identified twenty-one characteristics of performance measurement systems across eleven companies and across levels of management. The twenty-one characterisitcs have previously been identified in the performance measurement literature as characteristics necessary for organizations to maintain their competitive edge. The study, therefore, is confirmatory.
The summary of performance measurement "best practices" identified in this study, then, can be used as a benchmark for organizations who seek to improve their performance measurement systems and their competitiveness.

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Performance Measurement Systems:
A Best Practices Study

by

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ABSTRACT

The purpose of this cost management research was the identification and analysis of internal performance measurement best practices which can serve as a benchmark for companies who seek to improve their performance measurement systems and competitiveness. The study used data that were previously collected from eleven diverse, high performing companies.

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The summary of performance measurement "best practices" identified in this study, then, can be used as a benchmark by organizations who seek to improve their performance measurement systems and their competitiveness.

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I. INTRODUCTION

The purpose of this Thesis is to examine the Performance Measurement Systems of eleven diverse, high performing companies, by corporate standards. The study provides a summary of performance measurement "best practices" in use today by successful companies and serves as a benchmark for companies who seek to improve their performance measurement systems.

A. BACKGROUND

The relative competitiveness of U.S. manufacturing has declined within the last ten years despite gains in U.S. corporate performance resulting from implementation of new production methods, strict quality standards, and restructuring of traditional corporate organization structures (Young and Selto, 1991, p. 265).

The relative decline has been labeled a "productivity paradox" (Young and Selto, 1991, p. 265). One explanation given for the "productivity paradox" is lack of academic cost management research. Accordingly, Young and Selto (1991), have developed a framework for cost management research which identifies six variables in the cost management environment worthy of research to aid in solving the "productivity paradox". One of the variables is internal performance measures, which is the basis of this study.

B. OBJECTIVE

The objective of this study is to analyze data that were already collected as part of a larger study (Euske, Lebas, and McNair, 1992) to find out what high performing companies, by corporate standards are doing with their performance measurement systems.

The data for this study were gathered through site visits to eleven companies. Interviews were conducted at each site using a population of five specific functions of management at each site. A questionnaire was used to guide the interviews with the object of gathering information, directly and indirectly, about each corporation's performance measurement system. The datum was consolidated into a field report for each site. The field reports are the basis of this study.

II. QUALITATIVE ANALYSIS METHODOLOGY

The research to formulate a model for "best practices" in performance measurement was conducted through a qualitative analysis of archival data. This chapter discusses the methodology used to conduct the Qualitative Analysis.

A. OVERVIEW

The data used in this research were the result of interviews conducted at eleven diverse companies in the United States and Europe, using a population of five specific functions of management in each corporation. The levels of management included: supervisor of the manager of the site, manager of the site, site controller, site quality manager, and an individual in a position of purchasing manager, maintenance, or product design (PMP).

A questionnaire was used to guide each interview with the aim of drawing out information from the interviewees, directly and indirectly, about each organization's performance measurement system. Results from the interviews were converted into field reports and are the basis of this Qualitative Analysis of Performance Measurement Systems.

B. QUALITATIVE ANALYSIS

Qualitative analysis is a nonmathematical analytical procedure (Strauss and Corbin, 1990, p. 18); (Miles and Huberman, 1984, p. 15). A content analysis, a technique that

divides text into units of meaning (Rosengren, 1981, p. 34), is performed on interviews or observations, with data in the form of words, rather than numbers.

Qualitative analysis consists of three components: data reduction, data display, and conclusion drawing and verification.

1. Data Reduction

Data reduction is a process by which theories are built from data. It is an inductive process of simplifying data, labeling concepts, and putting data back together in new ways (Strauss and Corbin, 1990, p. 57).

The data from the eleven field reports was reduced through open coding, pattern coding and writing memos.

a. Open Coding

In open coding, the object is to break down, examine, compare, conceptualize, and categorize phenomenon through the close examination of data (Strauss and Corbin, 1990, p. 62).

Each field report was analyzed phrase-by-phrase for information about an organization's performance measurement system. Each segment of the field report that contained information concerning performance measurement was summarized into a word or phrase. The word or phrase was notated in the left-hand margin of the field report. Each similar encounter of performance measurement was open coded with the same word or phrase throughout each field report and

in each of the eleven field reports. A sample of open coding is in Appendix A.

b. Pattern Coding

Once particular phenomena were named in the eleven field reports through open coding, data were put back together by recognizing emerging themes, through pattern coding (Miles and Huberman, 1984, p. 67). Related concepts were grouped into more general categories by placing a letter code corresponding to a particular pattern coding category next to each open coding phenomenon in field reports. Thirty-seven pattern coding categories were identified across the eleven organizations. A sample of pattern coding is in Appendix A.

c. Memos

The third part of data reduction is writing memos about the data categorized through pattern coding (Miles and Huberman, 1984, p. 69). A memo in the qualitative analysis sense is a conceptual write-up about the coding that has been done. It helps an analyst move from data to a conceptual level and provides the beginning of a written analysis for the formulation of a theory. A memo can be a sentence, a paragraph, or a few pages.

In this study, approximately 1600 Memos were written for each segment of information from the field reports relating to the performance measurement system of an organization. Each memo was written on a 3X5 card with the specific research site, position of the person about whom the

memo was written, the subject of the pattern coding category being analyzed and the actual memo. A sample of a memo is in Appendix A.

The thirty-seven pattern coding categories were collapsed into twenty-one categories by grouping similar categories under one new category and eliminating categories that pertained to only one site. The categories, which the researcher identified through open coding, pattern coding and writing memos, constitute the twenty-one common characteristics of performance measurement systems across the eleven research sites.

2. Data Display

The second stage of qualitative analysis is data display. Data display is a visual representation of information in an ordered, compact form that an analyst can identify patterns and draw conclusions about the analyzed data (Miles and Huberman, 1984, pp. 21-22).

In this study, each of the twenty-one characteristics of performance measurement systems were displayed in a role-ordered matrix (Miles and Huberman, 1984, p. 104). The role-ordered matrix serves as a summarizing table for each characteristic, displaying data about the characteristic by level of management and corporation. The role-ordered matrices are in Appendix B.

3. Analysis and Conclusions

From data display, this study moved to the final stage of qualitative analysis, analysis and conclusion drawing (Miles and Huberman, 1984, pp. 21-22). By entering the data about each of the common characteristics of performance measurement systems in role-ordered matrices, patterns were noted about how each site, each level of management, and each individual manager perceived an element of the performance measurement systems.

III. ANALYSIS OF COMMON PERFORMANCE MEASUREMENT SYSTEM CHARACTERISTICS

Twenty-one common characteristics (Table I) emerged from the data as factors which mold the Performance Measurement Systems of the eleven companies in this "best practices" study. A summary description of each site is in Appendix B. The interviewees stated and the analysis indicates that promotions, annual/semi-annual performance evaluations, compensation, training and overall corporate climate are affected by these twenty-one common characteristics. A role-ordered data matrix was prepared for each of the twenty-one common performance measurement characteristics. The matrices are in Appendix C. This chapter analyzes the patterns of information found in the role-ordered matrices and how the characteristics are tied to the organizations' reward structures.

A. PATTERNS IN COMMON PERFORMANCE MEASURES

The twenty-one common characteristics evolved from an initial list of thirty-seven identified characteristics affecting the performance measurement systems of the research sites. The thirty-seven characteristics were collapsed into twenty-one characteristics (Table II) by grouping similar categories under one new category. All information in collapsed categories is included in the analysis, but under a

TABLE I

COMMON CHARACTERISTICS OF PERFORMANCE MEASUREMENT SYSTEMS

Physical/Financial Measures

Changes in Performance Measures

Evaluations

Importance of Employees

Quality

Customer Focus

Continuous Improvement

Teamwork

Community Involvement

People Skills

Supplier Relationship

Compensation

Empowerment

Training

Cycle Time

Market Related

Time Frame

Technology

Communication

Leadership/Management

Productivity/Performance

TABLE II

COLLAPSE OF THIRTY-SEVEN CHARACTERISTICS INTO TWENTY-ONE

Original characteristic	New Characteristic
Importance of Employees	Same
Community Involvement	Same
Internal Financial (local)	Physical/Financial
Internal Financial (reporting)	Physical/Financial
Relationship with Superiors	Deleted
Quality	Same
Customer Service	Same
Informal Communication	Communication
Informal Communication	Communication
Continuous Improvement	Same
Teamwork	Same
Executive Importance	Deleted
Formal Employee Evaluations	Evaluations
Informal Employee Evaluations/Feedback	Same
External Financial	Physical/Financial
People Skills	Same
Top-down	Changers Perf Msrs
Performance/Potential/Ambition	Productivity/Perf
Technology	Same
Bench Mark Rates	Deleted
Professional Growth Training	Training
Personal Growth Training	Training
Decentralized	Teamwork

TABLE II CONTINUED

Original Characteristic	New Characteristic
Corporate Culture	Teamwork
Empowerment	Same
Supplier Relationship	Same
Safety	Deleted
Cycle Time	Same
Commitment/Contribution	Teamwork
Leadership/Management	Same
Environment	Deleted
Production Information/Productivity	Productivity/Perf
Centralized	Changes Perf Msrs
Compensation-salary	Compensation
Compensation-bonus	Compensation
Market driven	Market related
Government standards	Deleted

new, broader heading. Six categories were eliminated due to perceived insignificance to the study by the researcher, or due to lack of information.

1. Physical/Financial Measures

All sites in the study used physical (such as customer service, quality, teamwork, and continuous improvement), as well as financial measures of performance, but the sites typically placed more emphasis on physical, rather than on financial measures of performance. However, managers at three of the sites in the study said that, temporarily they were, or sometimes do, place more emphasis on financial measures.

The reason for temporary emphasis of financial measures centers around the operating environment of the organization. A supervisor of a site manager said "when growth and development in the marketplace is weak, financial measures tend to be more important". Another manager said that "emphasis on the financial side is background measurement. Only if the budget is being violated does financial become more important". A PMP Manager said "Right now, financials are key, the measures reflect the economy". The PMP manager said that currently, his site was looking at efficiency rather than effectiveness. There was no characteristic that linked the organizations who occasionally shift the focus of their performance measures from physical to financial.

One site, a service organization, which emphasized financial measures more than physical measures, did so on a permanent basis, unlike other organizations. This organization, which did place a large emphasis on a constant level of quality and customer service, emphasized profit and loss/financial results more than physical measures.

Another pattern of information is that financial measures were weighted heavier, or were more important for the top two levels of management than the lower levels, which makes sense.

2. Changes in Performance Measures

Half of the sites placed reliance on self-directed work teams for creating new performance measures, and one organization relied solely on leadership teams to develop performance measures. Despite these initiatives, the pattern across sites and across levels of management was that changes in performance measures still predominantly came from the top of the organizations.

3. Evaluations

Performance evaluations were looked at from a standpoint of whether employee performance evaluations were based on a formal process or an informal process.

Every organization in the study and every level of management had an established performance evaluation process conducted either semi-annually or annually. Additionally, informal evaluations and feedback were used as a performance

measurement yardstick evenly among all levels of management with one outlier.

The Site Controllers relied not only on formal means of evaluation to know whether they had done a good job, but also relied on informal indicators/feedback, such as "I'm still here", "nobody rags on me", "the 'returns' I receive when I don't do my job right", and "feedback from customers".

4. Importance of Employees

The importance of employees to an organization was looked at from the perspective of whether an organization viewed employees as a valuable resource. The managers at every site in the study said that their employees are a valuable resource and respected this resource for the contributions made to the success of the organization. Employee value was important across the board for each level of management interviewed, with only one or two exceptions in each level of management. One Site Controller summed it all up by saying "Obviously without my staff, I could get nothing done"; the employees were considered the cornerstones of the organizations.

5. Quality

The drive for quality was at the forefront of the Performance Measurement System of every research site, and from the information found in the field reports, actually guided the entire direction of the organizations. Not only

was a quality theme evident in every corporation, but also at every level of management.

Quality had different meanings for different organizations. For service industry corporations, the managers talked about the end product and customer satisfaction with that end product, not about the process. For service corporations, delivering a quality service to a customer was a given, despite the economic environment. One Quality Manager said "...quality is constant. What may change is our ability to make money. But that is our challenge, to continue to make money in a declining environment while maintaining constant quality."

In manufacturing, the quality focus was both on the process, and the end product, and customer satisfaction with the end product. Measures such as "first time yield", "piece parts per million", "defect density", "finished product average quality", "product reliability", and "customer acceptance rate" were used in manufacturing.

6. Customer Focus

Customer focus was crucial to every site, at every level of management interviewed. Having a customer focus meant the same thing across the organizations. Specifically, customer focus meant that all of the activities of an organization centered around providing what the customer wanted, and if the customers' needs changed, then the corporations did whatever was necessary to meet the changed

need. One Site Manager said, "Customer needs/wants changes what is important and what should be measured at the site". One Purchasing Manager summed up the importance the organizations placed on having a customer focus: "...if they don't buy, we don't make, they're the reason for our existence". The customer was considered the lifeblood of the corporations. In order to continue to survive in the competitive environment, one Site Controller said, "...if the market requests it, we must find the way to satisfy the demand". Customer satisfaction was number one in these organizations.

7. Continuous Improvement

In order to stay at the top of their respective industries, the managers of the organizations in this study recognized that they cannot perform at their current level, but they must have continuous improvement in their operations in order to produce an even higher quality, lower cost product to the customer. The focus on continuous improvement shows up at every level of management, in every organization. The organizations operate under the expectation that "...if we have done it once we can continue doing it at that level and we must use that new reference as our point of departure for continuous improvement", as explained by one of the Site Managers.

8. Teamwork

The ability of a person to work in a team atmosphere and the value of the output of self-directed work teams is important in these successful organizations. According to one PMP Manager, "ability to manage a team" is a criterion for subordinate promotion. One Site Manager used "ability in terms of teamwork" as criteria for subordinate promotion. Another Site Manager said: "I look at how we are working as a team. Are we improving? Do we meet the milestones? Did we react right?" as an indicator of whether he was doing well.

The interviewees explained that by creating a teamwork environment and involving all levels in the decision making process, people would be more likely to "buy-in" to the strategy and goals of the organization and would have a vested interest in the success of the organization.

To facilitate the teamwork concept, many organizations were working on "trying to get the organization more horizontal than vertical", so they could open up communication channels, as one PMP Manager noted. Also, training in teamwork and team building was helping half of the organizations to maximize the output of the team involvement process. The importance of the total involvement of people was spoken about in every organization, across all levels of management.

9. Community Involvement

Involvement with the local community is a characteristic that does not show up as part of every organization's Performance Measurement System (seven of eleven sites), but it was a factor in the top two levels of management. Every manager in the category of Supervisor of the Manager of the Site (only four in the study) noted his involvement with the local community and was aware of the impact his organization had on the local community. Two of the Site Managers, whose bosses were involved in the local community, also had community involvement as part of their Performance Measurement System.

10. People Skills

People skills were mentioned by at least one manager in every organization, but by not more than four managers in any organization. People skills were important to the two top levels of management, and also to the Quality Managers and the PMP Managers, mentioned by eight, five, and six managers respectively. Site Controllers, as a group, did not place a heavy emphasis, on people skills.

11. Supplier Relationship

In an era when Just-in-Time (JIT) manufacturing is making a bold entrance into traditional American manufacturing plants (Stasey and McNair, 1990, p. vii), it is interesting to note that organizations are placing emphasis on their relationship with suppliers. According to one Site Manager,

managing suppliers is key, while one PMP Manager said knowing where your quality materials are coming from is critical. Site Managers, Quality Managers, and PMP Managers were the levels of management concerned about supplier relationship. Of the 31 managers in these categories, 10 discussed this characteristic. They are the functions of management most likely to deal with suppliers.

Supplier relationship is a concern not only for corporations who practice JIT inventory; even managers in organizations that do not practice large scale JIT inventory management, because of small batch processing, talked about the importance of suppliers. Their focus on supplier relationship is because the managers know that suppliers can heavily impact the quality of the final product delivered to the customers. One PMP Manager said that they "are up on visits to suppliers, so they know who they are dealing with".

12. Compensation

Information on compensation was not available from all organizations participating in the study (information from five of eleven sites). Information that was available indicated that compensation was made up primarily of a base salary, plus a bonus tied to unit performance. This pattern of compensation was consistent across the sites and across levels of management for the corporations for which information was available, with the exception of one

corporation who said compensation consisted of salary for the plant manager and everyone else.

13. Empowerment

Empowerment was looked at in the corporations with an eye toward specific things that companies do that respect individuals, recognize the competence of individuals, and simply, actions that support treating people as professionals.

Managers in these corporations said they are adopting an empowerment focus because they said they realized that they are in a support role. One PMP Manager saw his job as providing his "employees with the right equipment, tools, building, and environment so they can do their job". One Site Controller said "I am mainly helping get work accomplished through others"; and one Site Manager saw his job as "leader, cheerleader, inspirer". These managers said that they see themselves as facilitators.

The data show that, overall, each level of management had the same degree of focus on the aspects of empowerment, with the exception that PMP Managers emphasized aspects of empowerment more than any other level of managers. Every PMP Manager, except one, had an empowerment focus, whereas only half of the managers in the other categories had an empowerment focus. Every level of management interviewed in the European corporations talked about some aspect of empowerment, whereas not every level of management in U.S. corporations mentioned an aspect of empowerment.

14. Training

Professional growth training was an important aspect to every level of management in every organization. Training for the managers interviewed was in the general management domain, while training for their subordinates tended to be a mix of technical and general management training.

15. Cycle Time

Cycle time was examined from a perspective of whether managers mentioned it and how they defined it. While cycle time was not a characteristic for service industry organizations, it was mentioned at least once in every manufacturing organization in the study, and had an equal focus throughout the levels of management interviewed (three out of eleven managers at each level discussed cycle time). No one group stood out in the data. Cycle time definitions included "the difference between when I get the request and when I answer it" (a Site Controller); "from placement of raw material order to ultimate delivery" (a Site Manager); and "flow reduction" (a PMP Manager).

16. Market Related

This characteristic was examined from the point of view of how focused the organizations are on fluctuations in market share, market penetration and where their corporation was in terms of the competition. PMP Managers were most concerned about the market (six out of eleven). This group

was very focused on what the competition was doing, bench marking against the competition, and getting products out into the market faster than the competition. A PMP Manager explained: "If a new product arrives from a competitor sooner than we expected, that will have a large impact on our performance".

17. Time Frame

The characteristic of time frame was examined from the perspective of whether or not the managers mentioned a time focus, and whether it was a short-term or long-term focus.

The data shows that not every site (eight of eleven) and not every manager (sixteen of forty-seven) mentioned a time frame. Those organizations that did mention time frame were geared to the long-term due to long-term contracts, and the managers were mostly concerned with keeping "us in the game for the long-haul", as one PMP Manager stated.

Generally, all of the managers who even spoke in terms of time frame were geared to the long-term, with two outliers from different levels of management. Managers who had a short-term focus said they were concerned with the short-term because of rapid turnovers in technology that affected their organization.

18. Technology

Technology was examined from a stand point of whether or not changing technology impacts job performance.

A mention of the impact of technology was made at some level in each site, except one organization which did not mention technology at all.

All levels of management were equally concerned (three out of five) with technology impacts, with two outliers. One category is the Quality Managers, who generally were not concerned with technology issues.

The second outlier was in the Site Controller category. This group saw their performance, in terms of reporting and information gathering, heavily affected by technology. As a Site Controller explained, "without the computers, I could not turn out the volume of work I do turn out with the staff I do have"; and in another organization, world-wide consolidated results for all plants was accomplished in three days. The research sites wanted up-to-date financial information, and technology provided the vehicle to produce the information.

19. Communication

The flow of informal and formal communication was important in all of the organizations and to seven out of eleven managers in each level of management. Although all levels of management were focused on communication, the top two levels of management indicated they dealt with informal communication more, through talking to people and walking around, as opposed to the managers below the Site Manager, who rely more heavily on formal communication.

20. Leadership/Management

The importance of Leadership/Management in the organizations was focused towards training in leadership and management domains for the managers interviewed and for their subordinates. Eight out of eleven organizations emphasized training in leadership/management, while no fewer than five out of eleven managers in each level of management emphasized leadership/management training. The importance of leadership and management training is consistent with the organizations placing a higher level of importance on physical measures of performance (customer focus, employee satisfaction, quality), than financial measures.

21. Productivity/Performance

Meeting "production schedules", "production volume", "throughput", and "ability to produce output" are important measures of production and productivity for all levels of management interviewed throughout the research sites.

Performance, or "getting the job done" is what matters, according to one PMP Manager. "Effectiveness in past positions", "doing well in current positions", and potential to get the job done in future positions was considered a key issue across every organization, throughout every level of management.

B. COMMON CHARACTERISTICS TIE TO REWARD STRUCTURE

Twenty-one characteristics are common to the Performance Measurement Systems of the eleven research sites in this study. These twenty-one characteristics were examined to determine if the characteristics are actually tied to the reward structures of the organizations.

A summary of the findings is displayed in Appendix C. With three exceptions, the twenty-one characteristics are actually rewarded in the organizations. Exceptions noted are supplier relationship, time frame, and technology.

IV. DISCUSSION/CONCLUSIONS

This chapter ties the results of the study to current literature on Performance Measurement Systems, and draws conclusions concerning the results of the study.

A. TIE TO CURRENT LITERATURE

In today's competitive corporate environment, non-financial measures of performance are becoming increasingly important (Fisher, 1992, pp. 31 and 38), as was found in this study. Reasons cited for the emergent emphasis of physical, rather than financial measures are that financial measures reflect the results of past decisions, not the steps needed to be taken to survive in today's competitive environment (Fisher, 1992, p. 31; Lessner, 1989, p.24). Also, while traditional financial measures may be appropriate for external reporting purposes, not only can they be abused (Chan and Lynn, 1991, p. 60), but also, they are inadequate for trying to motivate behavior within the company (Cross and Lynch, 1989, p. 21; Bruns, 1992, p. 279).

Although the mix of performance measures is shifting toward more non-financial measures, financial measures have not been completely abandoned, especially at higher levels of management in this study. Financial measures are perceived to be more important at the strategic level of the firm than at lower levels of the firm (Young and Selto, 1991, p. 282).

This makes sense in that top executives are typically held more responsible to the parent corporation and stockholders than the lower levels.

Managers in organizations that want to be competitive in today's corporate environment, then, recognize the need to redesign their performance measurement systems (Bruns, 1992, p. 279; Lessner, 1989, p. 27). As is noted in this study, the key to success in changing the performance measures is through self-directed work teams, a combination of top-down and bottom-up approaches (Dixon, Nanni and Vollman, 1990, p. 37). The use of self-directed work teams in this study, to make changes to the Performance Measurement Systems, using personnel from all levels of management, was part of a larger focus the managers in these organizations had on teamwork.

Cultivating corporate culture based on teamwork (Shank and Govindarajan, 1992, p. 20), where employees at all levels are involved in decision making and problem solving is necessary for an organization to compete effectively in today's environment (Bruns, 1992, p. 20), and was recognized by the managers in the research sites of this study as a critical success factor. Teamwork not only results in excited workers, but also fosters improved communication and commitment of employees to the strategy and goals of the organization (Atkinson, et al, 1991, p. 86; Ernst and Young, 1990, p. 163). And as Dixon, Nanni and Vollman (1991) point out, a trend relevant to performance measurement, which is also supported

in this study, is a growing interest in better communication of the manufacturing strategy to all levels of an organization.

The improved communication in an organization focusing on teamwork is not only the result of a greater amount of time spent in meetings, as found in this study, but also is a result of fewer layers of hierarchy, less compartmentalization, and functional integration (Dertouzos, Lester, and Solow, 1989, pp. 118, 122, 124).

Quality, cycle time, and innovation were all characteristics recognized by the managers of the organizations in this study as critical success factors for being competitive. Bruns (1992) emphasized teamwork as integral to achieving quality, cycle time and innovation goals.

Product quality is emerging as perhaps the most important manufacturing performance area (Kaplan, 1983, p. 686). The recognition of the need for greater emphasis on quality has led to widespread implementation of quality improvement frameworks which emphasize breaking down vertical and horizontal boundaries to facilitate lateral, cross-functional collaboration necessary to improve processes and enhance quality (Bruns, 1992, p. 218).

But quality circles do not work unless workers' wages, job security or profit-sharing arrangements give them a sense that they have a stake in the firm's future (Dertouzos, Lester and

Solow, 1990, p. 124). In innovative companies, including the research sites in this study, the key word is "incentive": what kinds of new financial arrangements will give people the incentive to put out their best efforts? The top performing corporations in this study said they used salary, plus a bonus tied to unit performance, to compensate their employees.

Cycle time is a performance measure of world class manufacturing organizations (Turney, 1989, p. 104), and was seen in the organizations of this study. Bruns (1992) argues that functional teamwork is key in achieving fast cycle time in new product development. Demands for rapid new-product development, time-to-market cycles and on-time delivery create pressure for speedy execution. Cooperation among all levels and throughout levels permits parallel processing and real-time resolution of problems.

Another performance measure of world class organizations is continuous improvement (Turney, 1989, p. 103). Innovation through continuous improvement is becoming increasingly important to competitiveness, as recognized by the organizations in this study, and as Bruns (1992) notes, is often produced by teamwork. Needs that cannot be resolved within one frame of reference can be met through combinations of perspectives and knowledge bases resulting from lateral integration through teamwork.

The managers in this study said they recognized that the successful implementation of teamwork requires a reduction in

the number of layers in the organizational hierarchy, less compartmentalization, and achievement of greater cross-functional integration, as is noted earlier. But to fully reap the benefits from teamwork requires an additional paradigm shift, a change in the way of thinking, in an organization. The additional paradigm shift is focusing on the aspects of empowerment, which supports putting power for decision making and action at the lowest levels of the organization (Dertouzos, Lester, and Solow, 1990, p. 124; Atkinson, et al, 1990, p. 89); Stromberg and Kleiner, 1989, p. 17), in the hands of those who actually manufacture the product. Instead of simply responding to orders received from the supervisor, the subordinates of the managers interviewed in this study are entrusted to analyze variations and causes, and implement solutions on their own.

In order to push responsibility for decision making to the lowest levels, at least two issues need to be recognized by an organization's management, as was recognized by the managers of the organizations in this study. First, the importance of an organization's employees as a valuable resource must be recognized. According to Ernst and Young (1990), "people are at the heart and spirit of all that counts", and so U.S. firms must view employees as a resource to be maximized rather than as a cost to be minimized (Hitt, Hoskisson, and Harrison, 1991, p. 16).

Employees are a critical resource for building a sustained competitive advantage in the 1990s (Ulrich and Lake, 1991, p. 89), and were said to be highly valued by the managers in this study. According to Ulrich and Lake (1991), organizational capability now includes the competence of employees, so hiring competent employees and developing those competencies enhances organizational capability.

The second issue that was recognized by the managers of the organizations in this study then, as crucial to being successful in empowering employees, is that employees must be developed through ongoing education. Breadth of skills, and greater flexibility do have an effect on industrial performance (Dertouzos, Lester, and Solow, 1989, p. 89). According to Dertouzos, Lester, and Solow (1989), broad skills improve productivity not only through their direct effects on worker performance, but also through their effects on work place organization. An organization whose employees have broad skills typically has fewer layers of hierarchy because workers are better able to understand organizational issues, coordinate their activities without the intervention of supervisors, and are more likely to be able to repair, maintain, and change over the equipment with out bringing in the technicians (Dertouzos, Lester, and Solow, 1989, p. 89; Atkinson, et al, 1990, p. 93), which is the essence of the empowerment concept.

As stated earlier, human resource development also has an effect on productivity, (Hitt, Hoskisson, and Harrison, 1991, p. 19; Dertouzos, Lester, and Solow, 1989, pp. 3, 89, 312). And despite the other variables present in the performance measurement systems of the high performing organizations in this study, what really seemed to count was productivity and performance. The managers of the top performing organizations in this study said they recognized productivity as a key indicator of firm success and a key factor in efforts to sustain long-term competitiveness (Young and Selto, 1991, p. 281; Stromberg and Kleiner, 1989, p. 17).

Factors that can enhance productivity are reduction in inefficiencies solved by vertical partnerships which connect an organizations with its suppliers below and customers above (Dertouzos, Lester, and Solow, 1990, p. 99; Tyndall, 1989, p. 55), as well as the integration of technology into an organization.

The influence suppliers have on a company's ability to improve product and service quality and productivity is too great to be ignored (Ernst and Young, 1990, p. 187). As was recognized by the managers of the sites in this study, both those sites using JIT inventory and those sites not using JIT inventory, the importance of fostering and maintaining a partnership with suppliers is critical to success. According to Ernst and Young (1990), it is not enough to improve internal processes only. In order to be world class,

manufacturers must align themselves with suppliers who share a common commitment to excellence.

A partnership with customers not only enhances productivity, but also is viewed by the managers of the organizations in this study as an element of competitive advantage that requires fundamental dedication by the organization (Atkinson, et al, 1990, p. 88). Being constantly aware of and driven by customers allows managers to organize activities to the activity's maximum value (Ulrich and Lake, 1991, p. 89). The managers of the organizations in this study said they dedicated themselves to identifying customer needs and translating those needs into products or services.

Translating customer needs into products or services often involves enhancing technology and implementing the latest technology in the operations of the organizations. Integrating technology into the entire business process is key. As was found in this study, the creative use of information technology is an integral part of the strategies of leading firms because of vital quick response systems, short product life cycles, and rapidly changing customer tastes (Dertouzos, Lester, and Solow, 1990, p. 121).

Another segment that managers in today's competitive organizations, including those in this study, communicate with is the community (Linowes, 1974, p. 20). The managers of today's companies realize that the presence of a corporation in a community shapes lifestyles and standards, so the

managers are undertaking innovations to encourage employee participation in community affairs (Linowes, 1974, pp. 3, 20). Efforts include summer work experience programs for youth and the handicapped, and participation in urban revitalization programs, all with the goals of giving local communities a positive perception of the corporation (Brooks and Schelling, 1984, p. xiii).

Since relationships with customers, suppliers, employees, and the community are valued by managers of competitive firms, it is not suprising to find that people skills, to enhance communication with these groups, were important to managers, as was found in this study. Most of managers' time is spent with other people, and oral communication, either in person or by telephone, dominates all other kinds (Mintzberg, 1975, p. 52); (McKinnon and Bruns, 1992, p. 105). Ernst and Young (1990) argue, therefore, that evaluations need to become much more subjective and should include interpersonal skills, which is being done by the managers at the research sites in this study.

The ability of an organization to compete in the market place over the long-term is critical to success and, as Lessner (1989) argues, should be a major concern of top management, as was found in this study. Competing over the long-run requires management to maintain a focus on long-term strategies and break the cycle of short-term actions (Hitt Hoskisson, Harrison, 1991, p. 19).

Competing in the marketplace involves several aspects. Maintaining market share, market penetration, and keeping an edge on the competition can be accomplished through bench marking (Camp, 1989, p. 73), which is practiced by the managers of the organizations in this study. According to Camp (1989), establishing operating targets based on bench marking against the industry practices is a critical component to maintaining a competitive advantage.

Peters and Waterman (1982) found that a characteristic of organizations who were able to maintain a competitive edge, was a strong leader who played an integral role with making the company excellent in the first place. Good leaders and managers are seen to play an important role in the success of the organization, as was found in this study. But, as Ulrich and Lake (1991) and Ernst and Young (1990) argue, leadership is not just the realm of top managers. In this era of increasing reliance of participative management, managers and employees must feel empowered to think and behave as leaders within his or her domain. It is not surprising, then, that to foster this leadership and management at all levels, the managers of the corporations in this study said they focused heavily on leadership and management training to enable their employees to effectively participate in the successful management of the organizations.

All of the measures, or characteristics discussed thus far, are recognized by both the interviewees at the research

sites in this study and in current literature as vital to an organization as being competitive in today's corporate environment. The key to effectively using the identified characteristics is to adopt the identified characteristics as part of a formal evaluation process. Every organization in this study had an established formal performance evaluation process, as well as informal feedback loops. A system for performance evaluation helps managers understand the tasks and activities expected of them. Managers who explicitly understand the performance expected of them and whose performance is regularly evaluated, will focus their activity and accomplish their individual objectives (Bruns, 1992, p. 4).

Evaluation and appraisal, particularly coupled with incentive compensation cited in this study, holds managers attention and directs their activity (Bruns, 1992, p. 9). That activity is what this whole study is based on - that which will solve the "productivity paradox" and increase the competitiveness of U.S. corporations.

A. CONCLUSION

The twenty-one performance measures identified in this "best practices" study have all been identified in current literature. The research sites in this study are top performers by corporate standards and have adopted the measures previously identified in cost management research.

While this study has not identified any new performance

measures to increase competitiveness of U.S. firms, it has furthered the field of cost management research. This study has confirmed that measures previously identified in cost management research as measures that will contribute to competitiveness are used in successful organizations.

The summary of performance measurement "best practices" identified in this study, then, can be used as a bench mark for companies who seek to improve their Performance Measurement Systems, to solve the "productivity paradox".

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is feedback from the guests on "what they really feel and whether they'll come back. Also, information on what the staff feels." He said "I pour coffee every morning in the restaurant just so I'll get a sense of how the guests are reacting to the food service. As I hear a snip of conversation here and a snip of conversation there, I get an understanding of the guests' reaction." He said the most important information that leaves his office falls into a number of categories. Some of the information is mechanical such as profit information. Another type of information is whether the menu is handled properly and developed properly. A third type of information is the communication of standards to new staff. Then he said either as a part of that information, maybe even a fourth category, is information on how to encourage people to uphold the standards of service.

The director of engineering said that the most important information that reaches him is the daily report. The daily report contains total sales and income, along with occupancy figures. He said the most important information that he generates is at the morning meetings with his staff. At these meetings, he tasks them for the day.

The comptroller said of the information coming in that there is "no one thing." He said "I tend not to look at any particular report. Guests inquiries and complaints are important to me. Also, satisfying my internal customers is very important."

He said of the information he sends out "the daily report is very important. It indicates how much money has been made and how much it costs to make the money." He said also the weekly and monthly reports for corporate are important.

Question #4–What are the major meetings or encounters?

question.

Manager of quality operations said, "my report card is the number of different kinds of information; there are no major issues when we're audited by the feds or customers, influencing benchmarks and the benchmarks are met, 'bottom line'--if customer gets product with few problems and if the product is improving."

Question #7--What are the primary performance measures used to evaluate you? Your area of responsibility?

Vice president and general manager said, "probably most significant are the traditional profit, ROS (Return on Sales), ROI (Return on Investment). However, I do feel we are customer driven. There is also a focus on the efficiency of the organization."

Director of production operations said quality and asset management. Quality was discussed above. Asset management is measured in terms of terms of inventory, ROA (Return on Assets), and capital expenditures (staying within the capital budget). Cycle time is now on that list.

Manager of material operation said on-time delivery to the customer. The single most important measure is kit issue yield. Kit issue yield is a measure of the number of kits that have all the parts required for production. "In addition to those measures, from our personal evaluation, the achievement of continuous improvement in how I manage that improvement is important."

Manager of financial services was asked what are the primary performance measures used to evaluate the director of production operations. The answer was--the biggest one is product delivery. It's dollar dollar. A mixed variance can result from this measure.

Corporation O: Manager of Customer Support

Leadership/Management:

This organization has several leadership and management courses taught in-house, such as "The Leader in you". This organization emphasizes training, and also leadership and management abilities. Page 26

Corporation D: PMP Manager

Continuous Improvement:

This organization is working on continuous improvement in areas such as customer service, safety, and costs.

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APPENDIX B

SUMMARY DESCRIPTION OF RESEARCH SITES

SITE A SUMMARY

Site A was in the aeronautics industry. This organization was customer-focused. Management placed emphasis on quality, continuous improvement, cycle time, market-related issues and empowered its work force. Training, productivity, teamwork, employees, interpersonal skills, and supplier relationship were also important to the management of this organization. The yearly evaluations focused on physical measures of performance. The managers had a long-term focus. Compensation was primarily salary, with a bonus tied to unit performance.

The managers interviewed in this organization were customer-oriented and believed that delivering a quality product to the customer was key. The managers relied heavily on feedback from customers, worked actively with vendors, bench marked factors that influenced quality, and concentrated on first-time yield in order to provide a quality product. The managers received information on every item rejected by its major customer.

Although it would appear that the managers did not care about cycle time because of its policy of cycling products an additional time to catch quality defects, the managers and employees did work very hard on improving cycle time. They worked to improve the cycle time from placement of raw

material order to ultimate delivery.

Cycle time was just one of the aspects on which the managers focused for continuous improvement. Improvements were made in delivery service, billing time, and reducing the number of vendors.

The emphasis of training for both managers and subordinates was the topics of continuous improvement programs, quality, stress management, and how the customers used the product. The management had a goal of twenty-eight hours of training per employee per year.

One aspect of customer focus the managers of the organization had was the use of cross-functional teams representing all levels of the organization to seek solutions to customer product problems. Involving all levels of the organization in making decisions was related to the value the managers placed on their employees. The managers said they liked their staffs to have the freedom to make decisions and for the employees to think on their own. Part of the emphasis on training by the managers in this organization, mentioned earlier, was to let the staff know that management considered the employees an important resource.

Measures in the performance measurement system of this organization were primarily physical (nonfinancial) although profit, revenue growth and return on assets were also used for the managers interviewed and their employees. The physical measures included customer focus, quality, cycle time, ability

to think their own, and continuous improvement. Compensation was primarily salary, with bonuses tied to unit performance. Measures of unit performance included productivity, efficiency and market share. The managers said that although they may talk more about short-term issues such as market share, the managers of the organization were committed to the long-term.

The managers interviewed said that the organization had a high impact on the local community. They said that they were sensitive to the effect of their decisions on the local community.

SITE B SUMMARY

Site B was in the consumer chemical products industry. This organization was quality-oriented. Management valued employees as resources, empowered its work force, and focused on continuous improvement and teamwork. Annual employee evaluations focused on nonfinancial measures.

The managers interviewed in this organization emphasized the importance of the freedom to deal directly with the individual who had the knowledge to address an issue rather than being concerned with formal channels. The managers said that the organization was truly an open give-and-take, with employees four and five levels down in the organization respected for the knowledge they had and their expertise in particular matters.

Respecting the employees for the knowledge and expertise they had was part of the focus the managers of this organization had on valuing the employees as resources and empowering the work force. The important role of employees was underscored by the fact that managers were evaluated on human resource development. Also the managers interviewed said that they valued their employees, as exemplified by the promote-from-within strategy of the organization. Because of the promote-from-within strategy, continuing education was important for managers and employees at all levels, down to the technician level.

The managers of this organization focused on empowering

their employees by creating an atmosphere in which the technicians at the plant felt they really owned the facility. The managers said this was accomplished through identifying the owner of any new system.

The managers interviewed in this organization said that by identifying the owner of a new system, employees at the plant felt like team members, contributing to the dependability and total quality emphasis of the organization. The managers said that the dependability and quality goals of the organization were elusive in that they were changing or moving targets. The target were always changing and moving because of the continuous improvement focus of the management of the organization.

Measures in the performance measurement system of this organization were set by leadership teams, and were primarily physical (nonfinancial) for management and employees. The physical measures included leadership, human resource development, creativity/innovation, technical understanding, and communication.

Communicating across functional lines was important for managers and employees. Part of the communication across functional lines involved the blending of leadership teams to set the annual goals and objectives of the organization. The managers interviewed said that the goals and objectives are under continuous review by the leadership teams, which created an ongoing flow of information up and down the organization.

Compensation for management and employees in this organization was primarily salary.

SITE C SUMMARY

Site C was in the information services industry. This organization was customer-focused. Management emphasized quality, continuous improvement, valued employees as resources and empowered its work force. Teamwork, interpersonal skills, job performance, training, and formal and informal communication were important to the management of this organization. The yearly evaluations focused on nonfinancial measures, with changes in performance measures originating from both the top and bottom of the organization. The managers had both a long-term market focus and a short-term technology focus due to rapidly changing technology. The managers of the organization saw a dramatic change in technology coming in as little as eighteen months. The rapid change in technology was part of the continuous improvement aspect of the organization.

The managers interviewed in this organization were a very customer-oriented group and strived to maintain the image of the ultimate service organization. The managers of the organization said that customer satisfaction was driven by the quality of the product the organization delivers, so the managers and employees had a zero-defect orientation.

The employees of the organization were valued as part of the team working toward the zero-defect goal. The ideas and inputs of the employees were valued by the managers as evidenced by the "dance card" meetings held three times a week

by top management with the lowest level individuals in the organization to find out what was going on in the organization. Also once a month the top management took six employees, who represented all levels of the organization except management, off site to discuss opportunities and long-term concerns of the organization.

Involving employees in making decisions for the organization not only fostered teamwork, but also empowered the employees. Although most changes in performance measures came from the top down, part of the empowerment focus of management involved turning over the responsibility for performance measure changes to goal setting teams, which had representatives from all levels of the organization. Other aspects of empowerment the managers believed in were respecting their employees, treating employees like adults, and developing employees. To develop the employees, the organization had an in-house training program for both managers and employees in general management areas, including team building and presentation skills.

The managers said that the organization consisted of a very forward-thinking group of individuals that was focusing on fixing processes, not on blaming the individual.

Although the managers of the organization had regularly scheduled daily and weekly meetings, they also relied heavily on informal communication such as e-mail, the "dance card" meetings with employees, and informal liaisons with customers.

Possessing good interpersonal skills was important to the managers of this organization.

The formal annual evaluations were based primarily on physical (nonfinancial) measures such as customer service, employee satisfactions, job performance, and ability in terms of team work.

SITE D SUMMARY

Site D was in the aeronautics industry. This organization was quality-oriented. Management valued employees as resources, empowered its work force, had a customer focus, and focused on continuous improvement. Job performance, teamwork, training, formal communication, leadership/management, and interpersonal skills were important to the managers of this organization. The yearly evaluations focused on nonfinancial measures of performance, with changes in performance measures originating from the top of the organization.

The managers interviewed in this organization were focused on keeping the organization at the top of its industry through quality initiatives. The managers strived for continuous improvement in quality and continuously measured improvements. The management of the organization involved its suppliers in the quality program by receiving information from suppliers on exception testing and performance ability of products.

The quality the managers of the organization strived for was part of an effort to serve the customer better. The managers relied on information from the customers about product quality to provide the product customers desired and to meet the customer's needs. The managers said they worked constantly to make their goals compatible with those of the customer.

The managers of the organization said that meeting the goals of the customer was accomplished in this organization by

relying heavily on the employees. The managers said they believed their human resources were their most important resource. Therefore, the managers of the organization paid particular attention to morale, and continually looked for new ways to teach and motivate the staff.

The managers said they were working on becoming facilitators, removing roadblocks for their staffs and making the employees teachers, not checkers. These initiatives were part of the empowerment focus the managers had. The managers said they saw their jobs as letting their employees know what was needed to be done and providing the employees with what they needed to do the job.

Continuous improvement in quality was just one aspect of the continuous improvement focus of the managers of the organization. The managers said they were also continuously improving measures of cost, safety, timeliness of delivery, and flow reduction. These improvements were supported by the teamwork in the organization, employees worked with peers and with all levels of the organization.

Since interacting with other levels in the organization was important for both managers and subordinates, the management of the organization emphasized interpersonal skills. All levels were being trained in interpersonal skills. Other training for managers and employees included topics in the areas of cross-functional teams, quality, problem solving, and leadership.

Measures in the performance measurement system of this organization were primarily physical (nonfinancial) for management and employees. Changes in these performance measures were primarily from the top down. There were physical measures of customer satisfaction, quality, continuous improvement, leadership, ability to work with people, and job performance.

SITE E SUMMARY

Site E was in the hospitality industry. This organization was customer-focused. The management emphasized providing a quality product, relied on both formal and informal communication, and valued employees as resources. The management primarily emphasized financial measures of performance, which were dictated from the top-down. Interpersonal skills, working in teams, job performance, and training in leadership and management domains were also important to the managers of the organization. The managers had a long-term focus.

The managers interviewed in this organization were customer- oriented, and relied heavily on customer feedback to continuously improve the product quality. The managers said that what may change is the ability to make money, but that quality was constant.

In this organization, employee interaction with customers was frequent, so the managers said that they were very aware of the value of employees to them. Because of the value placed on employees, the managers interviewed said they believed very strongly in employee motivation, employee support, respecting employees, employee happiness, and employee trust.

Even though quality was a constant regardless of the economic environment, the managers and employees had to primarily meet financial measures of performance in their

yearly evaluations. Financial measures, which were dictated from the top of the organization, included profit and loss, share of the market, and generating sales. Physical measures of performance included job performance, quality, and people skills. Informal evaluations included feedback from superiors, peers, and customers for managers and employees.

Interpersonal skills were important to the management of this organization in enhancing the informal and formal communication of the organization. Forms of communication included meeting informally with customers, formal staff meetings, and employees stopping by management offices.

Training for management included communication, human relations, and leadership. Training for subordinates was technically-oriented.

The two highest levels of managers interviewed said that community involvement was critical to their own personal success in the organization.

Despite the financial focus on performance measures in the organization, the managers of the organization said that they would do things that would not make money for the organization in the short run. The managers had a long-term focus, and said there was always an issue of profit versus quality of service.

SITE F SUMMARY

Site F was in the automotive electronics industry. This organization was quality-oriented. The management valued its employees, empowered its work force, and had a customer focus. The managers emphasized teamwork, continuous improvement, market performance, and training in leadership/management domains. The managers of the organization had both long and short-term goals. Performance of employees was important and was measured through yearly evaluations which focused on a mix of financial and physical measures, with the emphasis dependent on the economy. Compensation was primarily salary, with a bonus tied to unit performance.

The managers interviewed in this organization were a team-oriented group, which believed that a multi-function contribution base, consensus decision-making, and getting the organization more horizontal than vertical, were important for achieving continuous improvement to better provide their customers with quality products.

Managers in this organization focused on continuous improvement in processes, since products did not change because of customer requirements. The areas of continuous improvement included shorter lead times, improvements in percentage yields, decrease in throughput times, smart scheduling to minimize change overs, and quality goals.

The continuous improvement in quality focused on hitting a predetermined quality standard of zero defects; the managers

said they would not settle for less as a goal. To achieve the quality standard of zero defects, the managers measured returns on piece parts per million, improvements in percentage yield, and first-pass yield.

The quality thrust of the managers of the organization was the result of a drive from within management several years ago to shift to a customer sensitivity. The managers interviewed said that the organization would not be able to survive with out meeting customer requirements.

Whereas the managers focused on customer needs to keep in the game for the long haul, the managers were short-term oriented in that they focused on meeting short-run goals such as market leadership, competitive pressure, and market penetration.

Market penetration, operating profit percentage, return on investment, and return on assets were some of the financial performance measures that were emphasized by the managers of this organization. At the time of the interviews, financial measures were key, because of the economy, with the managers looking at efficiency rather than effectiveness. Physical performance measures also included meeting customer lead times, constant innovation, contribution to change, and quality.

The importance of employees was recognized by the managers in this organization. The empowerment philosophy of the managers of the organization emphasized that managers and

employees were responsible for taking what they had and making it work, as well as formulating and executing strategies to resolve critical issues. So in order to obtain the greatest contribution base from employees, the managers said that it was important to develop the people in their organization. Managers and employees were developed through training in quality control, just-in-time, communication, and leadership.

Although promotions for managers and employees were determined in part by performance against yearly objectives, they were also determined by potential contribution to the organization. Promising people, who have the ability to be broader than their current jobs, were reviewed and tracked as they worked their way through the organization.

Compensation was primarily salary-based, with a bonus tied to unit performance.

SITE I SUMMARY

Site I was in the transportation equipment industry. This organization was quality-oriented. The managers emphasized continuous improvement, productivity, valued their employees, and had a customer focus. Market share, job performance, formal and informal communication, and supplier relationship were important to the managers of this organization. Yearly evaluations for both managers and employees emphasized nonfinancial measures of performance, with changes in the measures originating in the top of the organization.

The managers interviewed in the organization said that quality was a critical success factor. Quality was measured in piece parts per million, frequency of repair, rates of return, and number of parts ordered for repair. Continuous improvement in these areas was also vital to the managers.

Other areas of continuous improvement the managers focused on were improving relations with suppliers, inventory reduction, welding, cost reduction, and product liability. The managers said they used their shop floor as a strategic weapon for continuous improvement.

The managers said that a critical success factor to continuous improvement was the employees of the organization. They said that it was important to have a good work force on the floor, and that their real secret was to have talented people working on things that were vital to the customer. The managers said that they were working hard on making everything

subservient to customer needs, and that the key to success was understanding what the customer needs.

The yearly evaluations for managers and employees focused on physical (nonfinancial) measures of performance. Physical measures included productivity, quality, customer service, and new product and process development. Performance measure originated at the top of the organization. Promotions for managers and employees were determined by measuring effectiveness in past positions, current positions, and potential in future positions.

The managers said that also critical to managers and employees was the ability to communicate effectively, formally and informally.

SITE J SUMMARY

Site J was in the consumer chemical products industry. This organization was a relatively flat, team-oriented organization. Management had empowered its work force. Leadership, customer focus, continuous improvement, and employee training at all levels were critical success factors. The yearly evaluations focused on both financial and nonfinancial measures of performance.

The managers interviewed in this organization were a very positive, team-oriented group. The team orientation was a result of a flattening of the organization, which increased the authority and decision-making power of the managers.

The managers said they were empowered by the organization's structure and also were trained in empowering their employees through "letting go" and "learning to trust" their employees. The team atmosphere that had developed, partially due to empowerment at all levels, created enthusiasm in the managers and employees of the organization.

Another team aspect of this organization was the inclusion of team-based measurements, as well as individual measurements in the yearly individual evaluations. Yearly evaluations were a mix of physical and financial measures, and included quality, responsiveness, on-time production, cost improvements, yields, inventory turns and waste levels.

The team culture that permeated this organization originated in the top level of management interviewed. The

top manager interviewed believed that leadership was the key criteria for successful performance.

Other elements that were keys to the success of this organization were customer service and continuous improvement. The managers of the organization said the efforts of the managers and employees were focused on providing customer satisfaction.

The managers and employees of the organization strived to continually improve their performance. The managers encouraged innovativeness and creativity at all levels to further continuous improvement. Challenges to make improvements were used as a rallying point.

Employee training was a critical element of improvement. Every employee in the organization participated in basic technical training, empowerment, trust and creativity training.

Promotions in the organization were based on seniority first, and other qualifications, second.

NOTE: This summary was originally written by Professor C.J. McNair, and edited by this researcher.

SITE K SUMMARY

Site K was in the specialty semi-conductor industry. This organization was an informal organization which relied heavily on informal, as well as formal communication. The managers valued employees as resources, empowered its work force, and emphasized managerial competence of its employees, which was the primary focus of training for managers and employees. The managers had a very strong customer focus, devoted their attention to continually improving and producing a quality product, and took advantage of technology to introduce new products and improve various processes of the organization. Productivity, cycle time, relationship with suppliers, and market-related issues were important to the managers of this organization. The managers had a long-term focus. The yearly evaluations focused on nonfinancial measures, with changes in performance measure coming primarily from the top of the organization. Compensation included salary plus bonus tied to unit performance.

The managers interviewed in this organization were very customer-focused, viewed customers as partners, and said that being responsive to customer needs through feedback were critical to success.

Some pressure to change performance measures came from customers, although most changes in performance measure originated at the top of the organization. Performance measures in this organization were primarily physical

(nonfinancial) for managers and employees, although profit, and performance-to budget were also used for the levels of management interviewed, and their employees. The physical measures included quality, yield, number of new products introduced, efficiency, management ability and cycle time.

The performance measure of quality related directly to management's focus on quality as a critical success factor. Care for detail, yield, number of returns, reliability, and meeting technical specifications were all important aspects of quality to the managers. The managers and employees worked with state-of-the-art technologies, so they paid special attention on assuring quality and reliability. The managers and employees applied and relied on technology to produce quality products for its customers, but also used technology to improve all aspects of its operation.

The technology used by the managers and employees of this organization was the corner-stone of continuous process improvement vital to product improvement and innovation. Technology was also important to the focus management placed on continually introducing new products to keep competitive in the market place and stay in the game for the long-haul.

The long-term focus of the managers caused the organization to be sensitive to competition and pressure from the market. The managers felt that if a new product arrived from a competitor sooner than they expected, it would have a large impact on their performance. Therefore, cycle time

improvement in areas such as purchasing requests and time-to-market for new products were important to the organization.

The managers of this organization realized that the initiatives this organization was undertaking in quality, technology, and continuous improvement could not be accomplished without the valuable resource of its employees. The managers empowered their employees and expected them to be autonomous, to be facilitators, and to solve problems on their own. Because the managers of the organization relied so heavily on their employees, they paid particular attention to maintaining the proper social ambiance and climate on the shop floor and making sure everyone feel good about their job. The managers interviewed said that if everyone felt good about their job, no one would be longing after someone else's job, and the managers and employees would be more productive.

Because the managers of this organization expected their employees to be autonomous, to be facilitators, and to solve problems on their own, they did not want employees who were just technically-oriented. For both the managers interviewed and their subordinates, criteria for promotion was based on leadership/management abilities. The focus of training for both the managers and their subordinates was in leadership/management areas. The leadership/management training included meeting management, economics, teamwork, management of technology, and communication.

Communication in this organization was primarily informal,

although some programmed meetings took place. The managers interviewed all said that they were "hands-on" individual who received their information by touring the plant, spending a lot of time with machine operators, and participating in a lot of ad hoc work groups. The managers interviewed said they wrote things down only when they felt it was needed. Possessing good interpersonal skills was therefore important to the managers of the organization and their subordinates.

The managers interviewed argued that the teamwork atmosphere created by the informal nature of the organization contributed to the excellent information flow in the organization. The managers said that they worked in a spirit of cooperation, and that there was no "political" fighting, no cliques, no fortresses.

Despite the teamwork atmosphere of the organization, the yearly evaluations were based on individual objectives for each manager and employee, and were negotiated with each employee's respective boss. Meeting the evaluation objectives and performance in missions received were the primary promotion criteria for both the managers interviewed and their subordinates. The salary of each manager and subordinate was also totally individualized, with bonuses for managers and employees tied to unit performance.

One aspect of unit performance that was important to managers in this organization was productivity. The managers viewed productivity as a critical success factor and relied

heavily on benchmarking overhead productivity and productivity ratios.

Another aspect the managers focused on was their relationship with suppliers. The managers were operating in partnership with most of their suppliers and felt they needed to take into consideration the needs of suppliers. The managers said that the personal relationships with suppliers were good for mutual confidence.

SITE L SUMMARY

Site L was in the semi-conductor industry. This was a matrix organization. Management communicated primarily through meetings. Management focused heavily on customer service, quality, and continuous improvement, all of which were included in the yearly evaluations, which were primarily focused on nonfinancial measures. The managers had a long-term focus, but were very aware of the rapid changes in technology. Technical training was important for employees to develop their full potential. The managers were concerned with market related issues, relationships with suppliers, and valued employees who were competent and who suggested solutions to problems at the same time they identified problems.

The managers interviewed in this organization were an interactive group, who worked well together in the matrix structure of the organization. The managers saw the employees of the organization as members of a team that complemented each other in accomplishing the organization's primary goals of customer satisfaction/service and quality.

Customer satisfaction was the number one objective of the organization. The management and employees strived to be responsive to the customer to enable the customer to be first-to-market. The managers met frequently with internal and external customers to identify what the customer needed and to convince the customer that intended quality was being achieved

in delivered products.

In order to provide customers with a quality product, the management and employees worked on improving defect density, material quality, finished product reliability and average quality, process yield, and even bench marked on quality issues. The managers interviewed said the organization had standards everywhere about quality.

Improving on quality measures was just one aspect of this organization's focus on continuous improvement. Product innovation was also important to the management of this organization. To facilitate continuous improvement, the top level of management created "poles of excellence" - different divisions of the organization worked independently on improving the same area. The management of the organization had also developed programs of improvement, jointly, with suppliers.

In order to provide their customers with a continuously improved, quality product, and in order to remain at the forefront of global competition, management relied heavily on the latest technology. Given the quick turnover of machines, the management relied heavily on partnerships with the suppliers of machinery, to help guarantee the correct mix of machines.

Despite the short-term focus on technology, the managers had a long-term focus. The long-term focus was exemplified by the managers being market sensitive, paying attention to

information about the health of their competitors, focusing on competitive pressures, and being receptive to what the market demands explicitly, or what was required to satisfy the market.

The competency expected of employees involved developing managers and employees through training to develop their potential. Training for managers was primarily in management areas of economics, finance, teamwork, quality, problem solving, time management, and presentation skills. Training for employees was mainly in techniques for their job - techniques required to better know their machines. Management recognized that employees were held the competence of the organization.

Measures in the performance measurement system of this organization were primarily nonfinancial for management and employees, although performing to budget was the minimum performance level expected for managers and employees. Physical measures of performance included quality, customer satisfaction/service, mastery of corrective actions, creativity and innovation. Changes in the performance measurements came from the top and from the bottom of the organization, and from the customer.

The yearly evaluations for managers and employees focused on meeting objectives, but the managers also relied heavily on informal feedback from hierarchy, peers, subordinates and customers as indicators of performance.

SITE O SUMMARY

Site O was in the aeronautics industry. This organization was a relatively flat, team-oriented organization. Managers valued employees as resources, empowered its work force, and invested heavily in training to develop the employees. The yearly evaluations focused on nonfinancial measures such as continuous improvement, quality, customer service, performance and productivity. The managers had a long-term focus. Formal and informal communication, improvements in cycle time, and enabling technology were important to managers in this organization.

The managers interviewed in this organization were a very positive, team-oriented group which believed that the team involvement process was the strength of the operation. The positive atmosphere was exuded by the managers. Their positive approach was exemplified by their view that they did not have problems to solve, they had opportunities to exploit.

In order to capitalize on these opportunities, management had started to rely on self-directed work teams, which included employees from all levels of the organization. The self-directed work teams had delved into a variety of areas, including changes in performance measures. Although changes in performance measures had started to be developed by the teams, the managers interviewed said that some of the measures still came from the top-down. The organization was relatively flat, with no more than two levels of management between the

site manager and the hourly employee.

Employees were highly valued in this organization, with an emphasis on treating all employees with respect and recognizing the importance of developing employees in order to tap human capability. The managers of the organization said they believed in empowering their work force. The managers acted as facilitators creating opportunities for employees to improve their own abilities and their working environment. The managers said they felt that how well they treated their staff was reflected in how well the staff treat the customer.

As stated earlier, the managers and employees viewed a problem as an opportunity to exploit. The managers and employees embraced the concept of continuous improvement, and saw another strength of the organization as the ability to handle and support change. The managers operated under the expectation that if they had done something once at a higher level of performance, they could continue doing it at that level, and they must use that new reference as their point of departure for further continuous improvement. The managers were focused on how to get to a higher plane of performance.

The focus the managers had on reaching a higher plane of performance tied in with their recognition that producing a quality product is the only way an organization is going to survive in today's competitive environment. The managers in this organization measured quality based on customer acceptance rate and product performance in the field. At one

point in time, the management of the organization had gotten complacent because of having a high quality product, but received the message from the customers that the customers were not satisfied with the quality, so the managers focused on quality improvement.

The managers interviewed said that having a customer focus, and meeting customer commitments and expectations are their keys to success. The importance of the customer focus is illustrated by the existence of an award which is presented to an employee based on ratings by customers. The award helps the employees understand what level of excellence is necessary to satisfy customer needs. Close liaisons with customers ensures feedback to meet customer standards.

Liaisons with customers, formal and informal, was just one aspect of communication that was important to the managers of this organization. Although the managers engaged in a lot of formal communication through regularly scheduled meetings, they also relied on informal communication. The managers tended to be "hands-on" type people, who received their information by walking around, spending time on the shop floor, and through "listening sessions" with employees. Possessing good interpersonal skills was important to the managers of this organization.

This organization had an extensive training program for both management and employees. Seven percent of the organization's wages were spent on training. The organization

had remedial reading and writing courses, but also, everyone was trained in team dynamics, problem solving, time management, and quality. The organization also had training for new supervisors, an advanced course for supervisors, a middle management course, an advanced middle management course, and an advanced Performance Management Program. Included in these programs was training in human relations, team leadership, finance, demand flow management, quality management, and public speaking. The managers interviewed in this organization argued that skills that managers and employees develop as a result of their training help them in their job performance and improved the productivity of the organization. Promotions in this organization were related to managers and employees meeting and exceeding the objectives included as part of their annual performance appraisal. Informal feedback from customers and peers was also used as an indicator of performance for all levels.

Measures in the performance measurement system of this organization were primarily physical (nonfinancial) for management and employees, although financial skills, and performance to budget were also used for the levels of management interviewed and their employees. The physical measures included customer acceptance rate, product delivery performance, skill at developing personnel, and ability to manage change.

One aspect of continuous improvement the managers of this

organization focused on was cycle time. Cycle time was a major area targeted for improvement in the areas of design, reducing the product development process, reducing the production process, and certification and testing.

Another aspect of continuous improvement focused on by the managers interviewed was improvements in technology. The managers defined a competitive product as one that had advanced technology, an acceptable risk, and was within the cost limits; the managers focused on enabling technology for long life and low cost.

Producing products with long life was compatible with the long-term focus the managers had. The managers dealt primarily with long-term contracts, and developed plans for improvement that cover three and four year time spans.

PHYSICAL/FINANCIAL MEASURES

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV SITE MGR	P/F	P	P/F		P/F				P/F		
MANAGER SITE	P/F	P	P/F	P	P/F	P/F	P/F	P	P/F	P/F	P/F
CONTROLLER			P/F	P/F	P/F	P/F		P	P/F	P/F	P/F
QUALITY	P		P	P/F	P/F		P/F	P	P	P	P/F
PURCH/MAINT/ PRODUCT DESIGN/OTHER		P/F	P/F	P/F	P/F	P/F	P/F	P	P/F		P/F

APPENDIX C

CHANGES IN PERFORMANCE MEASURES TOP-DOWN (X)/TEAMWORK (O)

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE		O	X						X		
SITE MANAGER			X	X					X	X	X
CONTROLLER			X	X	X			X	X	X	X
QUALITY			X	X	X			X		X	
PURCH/MAINT/ PRODUCT DESIGN/OTHER				X			X	X	X		X

EVALUATIONS

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE		X	X						X		
SITE MGR			X	X		X	X	X	X	X	X
CONTROLLER			X	X	X	X		X	X	X	X
QUALITY					X			X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER			X	X	X	X	X	X	X		X

IMPORTANCE OF EMPLOYEES

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X		X		X						
SITE MGR	X	X	X	X	X	X	X		X	X	X
CONTROLLER			X	X	X	X		X	X	X	X
QUALITY			X	X	X		X	X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X	X	X	X	X	X	X	X	X		X

QUALITY

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV SITE MGR	X	X	X		X				X		
SITE MGR	X			X	X	X	X		X	X	X
CONTROLLER			X	X	X				X	X	X
QUALITY	X		X	X	X	X	X	X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X	X	X	X	X	X	X	X	X		X

CUSTOMER FOCUS

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV SITE MGR	X		X		X				X		
SITE MANAGER	X		X	X	X	X		X	X	X	X
CONTROLLER	X		X	X	X	X			X	X	X
QUALITY	X		X	X	X		X	X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X		X	X	X	X	X	X	X		X

CONTINUOUS IMPROVEMENT

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X	X	X		X				X		
SITE MANAGER	X	X	X	X		X	X	X	X	X	X
CONTROLLER	X			X		X		X	X	X	X
QUALITY	X		X	X		X	X	X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X	X	X	X		X	X	X	X		X

TEAMWORK

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X		X								
SITE MANAGER	X		X		X	X		X	X	X	X
CONTROLLER			X	X	X	X		X	X	X	X
QUALITY	X			X				X		X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X		X	X		X	X	X	X		X

COMMUNITY INVOLVEMENT

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X		X		X				X		
SITE MANAGER	X				X						
CONTROLLER											X
QUALITY				X							
PURCH/MAINT/ PRODUCT DESIGN/OTHER							X				

PEOPLE SKILLS

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X		X						X		
SITE MANAGER	X		X	X	X				X		
CONTROLLER				X	X						X
QUALITY				X	X				X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X		X		X	X			X		X

SUPPLIER RELATIONSHIP

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE									X		
SITE MANAGER	X			X						X	X
CONTROLLER											
QUALITY				X			X			X	
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X						X		X		

COMPENSATION

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X	X							X		
SITE MGR	X					X					
CONTROLLER						X	X				
QUALITY	X								X		
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X					X	X				

EMPOWERMENT

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X			X					X		
MGR SITE	X		X			X		X	X	X	X
CONTROLLER	X		X	X					X	X	X
QUALITY			X				X	X	X	X	X
PURCHASING											
MAINT/PD/ OTHER	X	X		X	X	X	X	X	X		X

TRAINING

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV SITE MGR	X	X	X						X		
SITE MGR	X		X	X	X	X			X	X	X
CONTROLLER			X	X	X	X			X	X	X
QUALITY	X		X	X	X	X		X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X		X	X	X	X	X	X	X		X

CYCLE TIME

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV SITE MGR	X								X		
SITE MGR	X							X	X		X
CONTROLLER	X					X		X		X	
QUALITY	X							X			X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X			X					X		X

MARKET RELATED

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X				X						
SITE MANAGER						X			X	X	
CONTROLLER	X								X	X	
QUALITY							X			X	
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X		X			X	X		X		

TIME FRAME

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X								X		
SITE MGR			X			X				X	X
CONTROLLER					X					X	X
QUALITY					X						
PURCH/MAINT/ PRODUCT DESIGN/OTHER			X			X	X		X	X	X

TECHNOLOGY

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV SITE MGR	X		X						X		
SITE MANAGER	X		X							X	
CONTROLLER					X	X		X	X	X	X
QUALITY										X	
PURCH/MAINT/ PRODUCT DESIGN/OTHER							X		X		X

COMMUNICATION

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV SITE MGR		X			X				X		
SITE MGR	X	X	X	X	X	X	X	X	X	X	X
CONTROLLER			X	X	X			X	X	X	X
QUALITY	X		X	X	X		X	X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X		X	X	X		X		X		X

LEADERSHIP/MANAGEMENT

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV SITE MGR									X		
SITE MANAGER	X	X		X	X			X	X	X	X
CONTROLLER			X			X			X	X	X
QUALITY				X	X	X	X	X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER				X		X	X	X	X		X

APPENDIX D

CHARACTERISTICS ACTUALLY REWARDED

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
TEAMWORK			X	X	X			X	X	X	X
TRAINING	X			X		X					
MARKET RELATED					X	X	X		X		
EMPOWERMENT	X						X	X	X	X	X
IMPORTANCE OF EMPLOYEES		X	X	X	X	X	X	X	X		X
LEADERSHIP/MANAGEMENT	X	X		X			X	X	X	X	X
TECHNOLOGY											
COMMUNICATION		X		X			X			X	X
PEOPLE SKILLS	X		X	X	X	X			X	X	X
TIME FRAME											
CYCLE TIME	X			X				X	X		
CONTINUOUS IMPROVEMENT	X	X	X	X		X	X	X	X	X	X
COMMUNITY INVOLVEMENT					X		X				
CUSTOMER FOCUS	X		X	X	X	X	X	X	X	X	X
SUPPLIER RELATIONSHIP											
QUALITY	X		X	X	X	X	X	X	X	X	X
PRODUCTIVITY/PERFORMANCE	X	X	X	X	X	X	X	X	X	X	X
PHYSICAL/FINANCIAL MEASURES	X	X	X	X	X	X	X	X	X	X	X
EVALUATIONS			X			X		X	X		X

PERFORMANCE/ABILITY TO PRODUCE RESULTS

	CORP A	CORP B	CORP C	CORP D	CORP E	CORP F	CORP I	CORP J	CORP K	CORP L	CORP O
SUPV MGR SITE	X		X						X		
SITE MANAGER	X	X	X	X	X	X	X	X	X	X	X
CONTROLLER	X		X	X	X	X			X	X	X
QUALITY			X	X	X		X	X	X	X	X
PURCH/MAINT/ PRODUCT DESIGN/OTHER	X		X	X	X	X	X	X	X		X

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