

The Human Side Of Manufacturing Improvement

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"We've talked a good game for decades, but it has only been in the last few years of my career that we have translated the belief that people are critical to our success into a management philosophy and practice that leverages the full potential of our people.... Technologies must be there to succeed, but without a motivated, educated, and committed work force, long-term success will be a struggle."

— Observation of a veteran plant manager, steel processing operation

As a player in the world manufacturing arena, the United States has made great strides to increase its competitiveness during the past decade. Trends in productivity, quality, cycle time reduction, product development, and service are all on the upswing. Domestic manufacturers have boosted U.S. competitiveness by exploiting a host of technology and system enhancement strategies that have included process redesign, enhanced inventory control systems, integrated planning and information systems, and cellular manufacturing processes. The use of automation and robotics, cycle time reduction processes, and integrated product design and assembly practices have exploded in popularity and use. These multifaceted efforts have allowed U.S. manufacturers the opportunity to wield innovative technology as a strategic weapon in the marketplace with great success.

At the same time, many progressive manufacturing firms have been developing more effective management systems and human resource management practices to support these technological initiatives. Growing evidence strongly suggests that without the effective management of people, the full potential benefits of technology cannot be completely realized. Manufacturing technology without a properly trained and motivated work

force is a potentially poor investment if workers cannot maximize the potential benefits through optimal usage.

Moreover, manufacturers are scrambling to develop organizational responses to a series of troubling U.S. human

resource trends. First, the overall cost of domestic labor is climbing, especially in conjunction with total compensation costs. Second, the U.S. work force is rapidly aging—a particular concern to manufacturing firms whose processes are heavily dependent on physical labor. Third, the U.S. increasingly lacks the educated, skilled, and trained workers needed to operate advanced manufacturing technologies. Fourth, the costs associated with employee turnover, absenteeism, tardiness, and substance abuse have never been higher. Such costs adversely affect a company's ability to maintain stability and, ultimately, to compete in an increasingly volatile manufacturing arena.

Because of the current human resource challenges facing manufacturers in particular, their need to leverage their work force better is paramount. If they are to create and sustain competitive advantage in the marketplace, they can no longer rely solely on technological superiority. Manufacturing workers must be properly trained, motivated, and led to allow their organizations to make productivity improvements. Stated more simply, "What are progressive manufacturers doing to allow their work force to lead the productivity improvement process?"

The purpose of this study was to explore the issue from the perspective of seasoned manufacturing managers, and to learn from their organizational experiences how to enhance productivity through people in production environments. The trends identified in this research may serve as

Productivity through people is the name of the game and the subject of this study.

benchmarks for manufacturing managers and executives who are continually seeking out opportunities for competitive advantage.

EXPLORING THE HUMAN SIDE OF IMPROVEMENT

To explore the "human side" of manufacturing improvement, we recently conducted an extensive study of 60 different U.S. manufacturing plants that included in-depth interviews with more than 300 seasoned managers. These firms operated in a wide variety of industries, including steel, automotive, plastic, glass, office furniture, and electronics, and used several process, batch, and assembly line technologies. Work forces ranged from 150 to 3,000 employees, with the average facility employing more than 400 people. Thirty-two firms were unionized and 28 were not. To be included in this study, a company had to meet two primary selection criteria: it had to be achieving its corporate profitability goals, and its operational performance measurements had to be on an upward trend.

Interviews conducted with top, middle, and first-line managers asked a critical question: "In what specific practices is your organization currently engaged to make your work force more productive?" Responses across managers at each facility were compared to identify the *key* practices that represented the current "focus" of the firm's effort to enhance work force productivity. Responses across all 60 facilities were then analyzed by content and frequencies/percentages were tabulated. **Table 1** contains the top 15 practices described by the managers. The corresponding percentages represent the number of plants

currently focusing on each particular practice out of our sample size of 60 facilities.

Key Work Force Challenges To Productivity And The HR Practices That Enhance Them

The opening quote of this article represents a strong theme that emerged from this qualitative research effort. The manager made it clear that there has always been a lot of talk around organizations to the effect that "People are our most important asset," and "Without our people we'd be dead." Yet his comment is telling, because only in recent years have management practices actually begun to "walk the walk." This awareness and admission were commonplace in our interviews with the manufacturing managers, as were several other themes.

First, no one firm was engaged in all the practices identified, although there was a strong degree of consensus about their usefulness (as indicated by the relatively high frequencies across firms). Second, very few firms were willing to claim that they had mastered any of these specific practices; rather, they were all initiatives that represented "works in progress." Third, managers described an ongoing struggle to institutionalize these practices and make them part of their facilities' operating culture, rather than allowing the efforts to be viewed as "just another program" or "fad of the month." Fourth, the practices that were the most successful had a common, underlying theme: the requirement for the organization to be very focused and disciplined in implementing and maintaining these improvement efforts. Managers described the challenge of keeping their eyes focused on the work force (a focus easily lost in the heat of the production battle) and having the discipline to stick with these various improvement initiatives. Finally, the practices these organizations identified were, in most cases, a specific response to a current challenge the firm had to address to improve productivity and remain competitive.

The challenges facing these managers and the specific practices identified are described below. Specific quotes from managers are included where illustrative.

▲ **CHALLENGE #1:** *To get workers to think like business people and to give them information on organizational variables that they can influence with their actions.*

▲ **RESPONSE #1:** *Systematic Sharing of Operating Data With Work Force (87%)*

The top vehicle for enhancing productivity, according to most managers in our study, was the practice of sharing operating data with the work

Table 1
The Human Side Of Manufacturing Management:
Key People Practices (n = 60 facilities)

| KEY PRACTICE | FREQUENCY |
|---|-----------|
| 1. Systematic sharing of operating data with work force | 87% (52) |
| 2. Employee problem-solving teams | 85% (51) |
| 3. Increased customer contact/focus/feedback | 82% (49) |
| 4. Employee empowerment/job redesign | 78% (47) |
| 5. Ongoing management development efforts | 65% (39) |
| 6. Continuous training/cross-training practices | 63% (38) |
| 7. Work teams | 62% (37) |
| 8. Ongoing measurement/feedback mechanisms | 60% (36) |
| 9. Progressive/value-added supervision | 58% (35) |
| 10. Aligned action with meaningful metrics | 50% (30) |
| 11. Developing an effective management team | 40% (24) |
| 12. Upgrading human resource management practices | 33% (20) |
| 13. Increasing staff-line cooperation/cohesiveness | 30% (18) |
| 14. Labor-management cooperative programs | 28% (17) |
| 15. Incentive systems | 27% (16) |

force on an ongoing basis. This included production quantities, quality levels, and productivity results. Such data directly affected organizational sales, customer feedback, overall operating results, and even profits. Information was most often shared using pre-shift meetings, bulletin board postings (including electronic bulletin boards), and company newsletters or handouts. As one manager explained, "It is critical to get the work force to think like business people.... To do that they need explanations of what means what and ongoing organization performance feedback on key variables....[T]his can't be a hit or miss thing." The key pattern was that these organizations trusted their employees enough to share information with them that helped focus their efforts on improvement.

▲ *CHALLENGE #2: To get the people closest to operational problems actively involved in the ownership/solution of ongoing organizational problems.*

▲ *RESPONSE #2: Employee Problem Solving Teams (85%)*

Managers used a variety of employee problem solving teams (departmental quality circles, cross-functional/departmental teams, and task forces), with varying levels of sophistication and perceived success. Typically "on the clock" with rare exceptions, these teams frequently addressed such problems as productivity, quality concerns, ergonomics, training, material handling, customer complaints, scheduling, and overall performance "barrier busting." Although some managers complained that problem-solving teams were at times "overused," the consensus was that effective teams get results. One manager indicated how effective use might evolve over time:

We started small with quality circles but have grown them into a wide variety of active employee problem-solving teams that have had very large results around here.... That happened because those closest to the problem were allowed to attack it and were actually listened to and supported to make real changes.

▲ *CHALLENGE #3: To create a work force that thoroughly understands customer needs and expectations and feels a sense of obligation in meeting and exceeding customer demands.*

▲ *RESPONSE #3: Increased Customer Contact/Focus/Feedback (82%)*

Many of the practices mentioned were designed to move the work force "closer to the customer."

Contact included having customers visit the facilities, having workers visit customers, greater sales force presence on the production floor, and direct communication between customers and production floor workers via phone, fax, and e-mail. Companies attempted to create greater customer focus by providing heavy exposure to company sales personnel, using clearly developed, customer-driven production plans and specifications, and placing a heavy emphasis on customer expectations for products. Feedback from customers was frequently provided to workers at various facilities using positive letters, customer complaints, and results of customer satisfaction surveys. Production workers often had the capability and authority to communicate directly with their customers without working through traditional organizational hierarchies. One manager summarized his views on how a "customer mindset" is crucial to improving work force productivity:

Getting a work force directly involved with the customer is a very smart thing to do....[T]hey need to truly realize the cost of not satisfying a customer's need or how the customers use our product. ...We want our workers to see a work-order as a request from a real person rather than just a piece of paper.... Workers need to develop a customer satisfaction mindset.

▲ *CHALLENGE #4: To better motivate workers by creating an opportunity for them to perform a greater variety of tasks with more authority while simultaneously reducing supervisory control and overhead.*

▲ *RESPONSE #4: Employee Empowerment Job Redesign (78%)*

A dominant effort was present in these manufacturing plants to get employees more involved with planning, scheduling, and controlling the decision-making processes in their operations. This effort to empower employees often manifested itself in job redesign that moved away from the traditional practice of the specialization of labor. Workers typically had more varied tasks and were allowed to make decisions and participate in activities that were traditionally under the purview of management. In some firms, empowerment was an evolutionary process taking place over time. As one manager put it,

It has been an ongoing struggle but we have granted a lot of authority to people out on the line in recent years, to make a lot of their own decisions.... Their jobs have expanded and include an awful lot

of duties that used to be done by management people....I believe it is a lot less redundant for them out there than it used to be because their jobs have really changed for the better.

In other plants, such empowerment was occurring as a complete work redesign or process reengineering effort. Clearly, workers are being granted greater autonomy, authority, responsibility, and variety in the duties they perform in their operations to enhance productivity.

▲ *CHALLENGE #5: To create an organizational environment that encourages continuous improvement in managerial performance.*

▲ *RESPONSE #5: Ongoing Management Development Efforts (65%)*

Struggling to move away from the traditional authority-based approach to plant management, these organizations were making a concerted effort to upgrade and retool existing management talent. This involved several approaches, despite encountering some resistance to change. Said one manager:

One of the biggest challenges we face is to help our management people develop a new skill set to support our overall improvement efforts. We have spent a lot of time and money to teach our people that there are a lot of tools besides warning letters and discipline to get workers to be more productive....Developing our management staff is an ongoing challenge and priority.

Management development areas included such topics as coaching, effective communication, conflict resolution, team building, process mapping, technical manufacturing issues, leadership, human resource management issues, work methods, computer training, and stress management. Training classes were frequently provided in-house, although managers were also supported or reimbursed if they

chose to gain additional training outside the firm. Management cross-training activities across departments and special assignments were commonplace. Mentoring programs were also in place at a number of plants. Formal performance appraisals and corresponding discussions of management development were widespread, albeit

with varying degrees of success. In addition, many facilities had book, journal, and video libraries to provide managers with a reference source for ideas on current and progressive management practices.

▲ *CHALLENGE #6: To enhance work force performance and flexibility by equipping workers with the skill, knowledge, and ability they need to perform their jobs effectively and safely.*

▲ *RESPONSE #6: Continuous Training/Cross-Training Practices (63%)*

Work force training among the firms received a great deal of attention. It was, in fact, a primary vehicle for enhancing work performance. Training was conducted in many forms and covered a wide range of both technical and nontechnical topics. Issues such as employee orientation, statistical process control, proper work methods, problem-solving skills, telephone usage and etiquette, computer use, machine maintenance, safety, team-leader relationships, and health and stress management represent only a small portion of the instruction these firms provided.

Depending on the topic, both on-the-job and classroom training were used to instruct workers. The practice of cross-training among workers was growing. Mentoring and coaching programs were often in place to reinforce desired training behaviors and encourage application of knowledge. In the unionized facilities, labor representatives frequently had a great deal of input into the company training practices and procedures.

The priority most of these firms continuously placed on worker training and education was represented by this manager's comments:

While training is very expensive and can be abused, our work force has greatly improved because of ongoing training efforts....We used to just throw technology at the workers and managers and let them sort it out, but that was a very bad practice in the long run....Now we train and cross-train like an athletic team so we can compete and not get hurt.

▲ *CHALLENGE #7: To develop an operating structure that maximizes worker cooperation and ownership while minimizing the need for direct supervision.*

▲ *RESPONSE #7: Work Teams (62%)*

More than half of the manufacturing plants in this study were using some form of autonomous or self-directed work teams. These were often traditional work groups or departments whose duties

"Work force training was a primary vehicle for enhancing work performance."

had been restructured so they were not dependent on the control of an immediate supervisor. Work teams were used in production processes, warehousing operations, maintenance, and custodial departments, as well as in front office operations. One manager described the effectiveness and popularity of work in teams in areas conducive to them:

At first we tried work teams in a very cavalier fashion because of pressure from corporate, and they struggled, but we learned from the experience....They don't work in every part of our operation, but a properly organized and trained work team can run big numbers and we use them where there is a good fit with our needs....Our people really seem to like the teams.

We found that work teams were often structured around very specific organizational processes or products, and workers were set up to operate with a minimum of management direction and control. The groups pursued specific goals, operated in a highly interdependent environment, had clearly defined roles, and generally chose a peer as team leader. Several plants had their entire operations structured around teams; others used them more sparingly based on a particular organizational need or opportunity.

▲ *CHALLENGE #8: To create an environment in which people know how well they are performing and to provide information that triggers corrective action when performance needs improvement.*

▲ *RESPONSE #8: Ongoing Measurement and Feedback Mechanisms (60%)*

A notable practice in many of these plants was measuring critical performance variables on an ongoing basis and feeding the information back to the work force in understandable terms. While 87 percent of these plants shared operating data with their work forces, 62 percent used continuous measurement and feedback devices to increase worker productivity.

Traditionally, manufacturing measurements have focused only on production and output, sometimes to an extreme. Progressive manufacturing firms continually measured and monitored a broad range of critical performance indicators that went well beyond simple output numbers. These included quality levels, lead time performance, inventory levels, productivity, and costs, among others. Information was then provided to both workers and managers as ongoing feedback on their performance against company goals and standards. For these efforts to be effective, mea-

surements had to be both accurate and meaningful and the feedback had to be balanced rather than simply negative or critical. As one manager indicated,

You get what you measure, so you better measure the right things and get that feedback into the hands of your work force....We try hard to provide ongoing measurement and feedback, not to beat our people, but so that they can know how they are doing and can respond appropriately.

▲ *CHALLENGE #9: To employ front-line, supervisory practices that effectively lead the work force toward improvement, rather than simply controlling behavior.*

▲ *RESPONSE #9: Progressive, Value-Added Supervision (58%)*

We discovered that the role of supervision in these manufacturing facilities had evolved from the traditional one of supervisor (as controller and disciplinarian) to one of more effectively supporting employee empowerment, the use of teams, and labor-management cooperative efforts. One manager described his views on the challenge to change experienced by the front-line supervisors in his plant:

Our front-line people used to be babysitters for the work force, which in hindsight was not good business....We've tried hard to get our supervisors to let go of the babysitting role as our work force develops and provide a more value-added service to the company—which has been a real challenge.

Many of the firms described supervisory roles that placed a high value on planning, troubleshooting, scheduling, coaching, training, process improvement, problem-solving, and creating teamwork. In addition, the supervisor's role as an "enlightened" disciplinarian was given a great deal of play in these interviews. It was frequently described as a litmus test for the degree to which supervisors were able to provide leadership for work force development. Overall, these firms realized that the quality of their operations de-

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pending considerably on their front-line managers' ability to balance operating and technical concerns with effectively managing the human side of the operation.

▲ **CHALLENGE #10:** *To keep workers at all levels properly aligned with operational needs and focused on achieving meaningful goals.*

▲ **RESPONSE #10:** *Aligned Action with Meaningful Metrics (50%)*

Managers repeatedly spoke of the necessity of having everyone in the organization effectively performing needed duties and pursuing meaningful outcomes and goals. For this "focused behavior" to take place, managers agreed that processes must be understood by everyone, that jobs need to be clearly defined, that goals and metrics need to be both real and achievable, and that workers must be "aligned" with the current demands of the operation. Said one manager:

To keep people productive you need focus in both what they are doing and pursuing, and that is a real challenge because things are changing so fast around here....This is particularly true when you change processes, technologies, and products on the floor, which is happening all the time....Keeping the work force aligned to plant needs is key, and providing appropriate goals and metrics is huge.

This process of alignment required intensive, ongoing communication between the front office and the factory floor, as well as between labor and management, between managers, and among departments and shifts. People at all levels were encouraged to focus on achieving goals that increased efficiency, enhanced quality, controlled costs, encouraged worker attendance, and, ultimately, served the customer better.

The many organizational programs used to achieve employee focus and meaningful metrics were described, in the words of one plant manager, as "alignment efforts...designed to make sure we know what we really want, indicate what people need to do to get there, and ensure that we have the patience and discipline to communicate these needs to our people on an ongoing basis." The companies made it clear that without focus and alignment, it is easy to lose

sight of serving the customer and meeting company goals.

▲ **CHALLENGE #11:** *To create unified and cohesive management that provides consistent and uniform plant leadership.*

▲ **RESPONSE #11:** *Developing an Effective Management Team (40%)*

One of the challenges faced by all the firms was developing and maintaining teamwork among plant management. Although the problem was discussed in nearly every facility, only 24 of them identified current activities aimed at building management cohesiveness. Managers agreed that without teamwork in the management ranks, a host of problems can emerge: "communication breakdowns," "unhealthy competition," "personal agendas and politics," "conflict between shifts and departments," and "turfsmanship," among others. The plant manager's leadership style (and mode of operation), as well as the facility's operating structure, were frequently identified as being critical factors influencing the level of teamwork among management personnel.

Practices identified for achieving management teamwork included an emphasis on common goals, weekly staff meetings, management retreats, regular team-building sessions, management problem-solving teams, performance reviews that made management teamwork a priority, 360-degree and peer performance reviews, and regular, informal meetings away from the plant (usually at a local cafe or watering hole).

The absence of management teamwork was most notable between line and staff departments and across shifts. Managers made it clear that without focused efforts to encourage cooperation, "teamwork in the management ranks does not just happen." Without management teamwork, workers can easily become cynical and less than receptive to any company improvement efforts—a sentiment aptly expressed by this manager: "If your plant management people are not a team and working as a unit then your productivity on the floor will suffer. It's just that simple.... Without cohesive leadership and cooperation at the top, things in the plant can get ugly or worse."

▲ **CHALLENGE #12:** *To use HR practices as a vehicle to recruit, select, and retain high-quality workers and to resolve employee HR issues that detract from the core operation.*

▲ **RESPONSE #12:** *Upgrading HRM Practices (33%)*

Whereas many of the firms in this study discussed the importance of effective human re-

"Without focus and alignment, it is easy to lose sight of serving the customer and meeting company goals."

source management practices, only 20 identified specific, coordinated, programmatic efforts to upgrade and improve their operations' HRM function. These initiatives frequently focused on developing more effective recruiting and selection procedures to secure what was perceived to be a dwindling pool of high-quality workers.

At the same time, such issues as effective employee orientation, benefits education, workers' compensation reduction programs, improved performance appraisals, employee safety, and employee assistance programs were all mentioned as HR initiatives that could enhance work force stability and productivity. Procedures designed to make it easier to pick up paychecks, file medical insurance claims, schedule vacations, and complete tuition assistance reimbursement forms were just a few examples of "user friendly" HR efforts. Responsibility for spearheading these improvement initiatives were frequently the domain of the HR function, but many firms were making effective HR practices the responsibility of all plant management personnel. This manager clearly sees the importance of a trained, knowledgeable HR department:

I strongly believe that in the past few years our HR people have really helped us a lot around here, especially in helping us find qualified people and in helping people with benefits and safety, among other things... [HR people] are real problem-solvers so we can concentrate on getting our product out the door.

▲ *CHALLENGE #13: To maximize the unity of purpose among staff-line relationships.*

▲ *RESPONSE #13: Increasing Staff-Line Cooperation and Cohesiveness (30%)*

As many of the firms in this study immersed themselves in process redesign, reengineering, total quality management, and continuous improvement efforts, a "gap" often emerged between staff and line departments. This gap could be described as a "canyon between the sales and operations people," "a wall between inventory and production," or "a universe between maintenance and everybody else." It is not surprising that such gaps were frequently discussed and observed by managers in this study:

Productivity can truly be hurt if you've got tension between your line and staff departments.... We've had wars between sales and production that hurt everybody and we are only now starting to realign staff-line procedures and personnel to get everyone on the same page.

Surprisingly, only 18 firms identified specific efforts to close these gaps. Attempts at developing an effective management team would likely be one way to help close many of them. Other vehicles mentioned by managers included regular staff-line alignment meetings, the use of matrix or team structures to place staff and line personnel in the same operating unit, cross-training, feedback surveys designed to assess the degree to which staff and line departments were working together, cross-functional problem solving teams, job alignment activities to establish procedures to make staff and line jobs more compatible, and the removal of competing goals and missions.

Managers also maintained that the tensions between staff and line functions are regularly created and driven by corporate policies, structures, and practices that are controlled at corporate headquarters. Corporate personnel, then, must be willing to listen to the needs of plant operations if many of these gaps are to be closed.

▲ *CHALLENGE #14: To develop a labor-management culture based on trust, and to refocus labor-management relations on business and performance issues.*

▲ *RESPONSE #14: Labor-Management Cooperative Programs (28%)*

Half of the unionized facilities (17 of 34) in this study had initiated labor-management cooperative programs. And although real differences did not emerge in terms of the way unionized and nonunionized facilities attempted to make their work forces more productive, union contracts often created an additional communication barrier that had to be addressed. In addition to employee problem-solving and work teams, a number of formal labor-management councils had been created to discuss ways to improve and bolster workplace cooperation without undermining the sovereignty of the labor contract. "A lot of our improvement efforts have been supported by our EI [Employee Involvement] Council, which has really helped in bridging the gap between labor and management," said one manager. "They [the Council/employees] realize that productivity is not a dirty word, that without it we are dead. ... This effort builds trust!"

Better means of labor-management cooperation, common areas of concern, organizational

"Many firms were making effective HR practices the responsibility of all plant management personnel."

viability, industry competitiveness, training issues, and improving disciplinary procedures were all addressed in an effort to lower the wall between labor and management in many of the firms. Such efforts were considered critical for opening up the communications and trust necessary to sustain other productivity and performance-enhancing initiatives. They also provided an arena for labor and management to come together to discuss progressive performance issues, rather than contractual issues, which is in accordance with the National Labor Relations Board's most recent rulings of limits for these groups.

▲ **CHALLENGE #15:** *To reinforce desired employee behavior in a tangible way that creates desirable organizational outcomes.*

▲ **RESPONSE #15:** *Organizational Incentive Systems (27%)*

Among the important yet infrequently mentioned initiatives for enhancing work force productivity was the practice of organizational incentive systems. A number of firms used a variety of systems to shape work force behavior and reinforce performance improvement efforts. To reward long-term performance, companies used financial incentives, including gainsharing, profit sharing, shift production bonuses, safety and attendance awards, and prizes (gift certificates, movie tickets, clothing and appliances, and so on), along with other sophisticated reward systems. One manager

indicated how strong the impact of "ownership" was on productivity improvement in her firm:

People always ask me if our people are more productive since we implemented a profit sharing plan five years ago. I tell them...it's the difference between renting and owning a home....Your people act differently when it's their house and they have a piece of the action.

In other cases, company programs that had taken on a life of their own or were created at the local level were used as motivational tools by plant management to reward short-term performance. These included such incentives as movie tickets, pizza for a high-performing shift, and T-shirts for a productive period. Overall, these systems were established to reinforce desired behavior and performance at both the individual and organizational level and were believed to correlate strongly with improved performance.

IMPLICATIONS FOR MANAGEMENT

In reviewing the depth and breadth of these organizational practices across the 60 firms in this study, a number of important observations are in order. First, progressive manufacturing firms work diligently to maintain their technical competitive advantage. Without up-to-date technology, long-term success and survival in the manufacturing sector is in question. However, these high-performing companies realize that technology alone will not allow them to sustain this competitive edge without a skilled, motivated, and committed management team and work force. The practices identified here were undertaken to "institutionalize as a way of organizational life" an operating culture that would sustain productivity improvement efforts over the long haul. In other words, these companies experienced an ongoing struggle to maintain the effectiveness of these practices and prevent them from becoming "fads" and "flavor-of-the-week" efforts so common in many organizations.

Figure 1
Work Force Performance Model

| <i>Performance Outcomes</i> | <i>Ability</i> | <i>Motivation</i> | <i>Support</i> |
|--|--------------------------------|--------------------------------|-------------------------|
| Customer satisfaction | Effective selection procedures | Customer orientation/mindset | Ongoing problem solving |
| Efficiency | Proper orientation | Understanding operational data | Effective supervision |
| Quality | Continuous training | Empowerment | Ongoing coaching |
| Cost effectiveness | Cross-training | Effective job design | Employee teamwork |
| Good morale/cooperation | Proper person/job match | Focused goals/alignment | Staff-line cooperation |
| Work force stability/flexibility | | Ongoing measurement/feedback | Effective HRM practices |
| Safety | | Incentive systems | Management teamwork |
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Second, there is a long-standing belief that human performance is a function of *ability x motivation x support*. The practices identified in this research demonstrate that progressive manufacturing managers try to develop an improvement strategy that addresses all three of these critical performance issues in the way they structure and run their operations on a daily basis.

In **Figure 1** we have attempted to illustrate how the progressive plants in this study strive to address each component of the human performance equation in what we call the Manufacturing Work Force Performance Model. Most manufacturers are quite proficient at identifying desired performance outcomes. They typically want customer satisfaction, efficiency, quality, cost effectiveness, morale and cooperation, work force stability, and safety, among other things. To achieve these desired outcomes, a sound and functional foundation of technology must be in place. Work force productivity practices can build on this technical and systems foundation. However, it is also on this technical foundation that management faces the challenges in creating an environment and culture in which productivity improvement evolves through the abilities and motivation of people.

In this study, companies enhanced the work force *ability* component by using effective selection and orientation procedures, conducting ongoing training, and attempting to align workers with jobs. Technology without a talented work force is a wasted opportunity.

To enhance work force *motivation*, these firms attempted to create a customer satisfaction mindset among their workers, share operational data to create trust and ownership, empower workers to allow greater autonomy and control, design more stimulating jobs, provide specific performance metrics and targets, maintain ongoing measurement and feedback systems to shape work force behavior, and use incentive systems to motivate workers. Technology without a motivated work force is a lost opportunity.

In the *support* component, progressive firms created ongoing problem-solving teams, provided effective supervision and coaching, fostered management, work force, and staff team-

work and cooperation, and employed a host of effective human resource practices. Technology without effective support breeds work force frustration, alienation, and withdrawal.

Without technology, ability, motivation, and support, any organization is destined to fail. Manufacturing managers and executives, however, may wonder on which of the three areas they should primarily focus their attention and resources. In other words, "Where will we get the biggest bang for the buck?"

We have known for many years that the real key to creating a sustained competitive advantage with a company's work force is the quality and supportiveness of the leadership. The *support* activities of managers are crucial to the success of even the most well-trained and motivated work force. If managers are not perceived as credible and supportive of their employees, any and all of the practices identified in our study could easily end up breeding cynicism, frustration, and even a loss of productivity.

To that end, we believe that articulating a manager's "Support Paradigm" is really the place to begin understanding why some firms are mediocre at improving productivity and others are excellent at sustaining a continuous improvement culture. The implication for managers is to realize that to move toward "excellence," a change in how they view the human side of manufacturing is really the first step.

In **Figure 2** we describe three ways managers typically view their work force: as a "cost," as

Figure 2
Management "Support" Paradigms

| | <i>HR as a "Cost"</i> | <i>HR as a "Tool"</i> | <i>HR as a "Partner"</i> |
|--|--|--|--|
| <i>Ability Focus</i> | Effective selection procedures Job/person match Effective employee orientation | Content and design of jobs Cross-training Upgrading skill sets | Building customer relationships Developing problem-solving skills Developing teamwork skills |
| <i>Motivation Focus</i> | Money and extrinsic incentives Technical improvement Quantitative productivity goals | Feedback and measurement Interpersonal relationships Quality performance goals | Autonomy and empowerment Total continuous improvement Development goals |
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a “tool,” and as a “partner.” These paradigms are critical because they determine, to a great extent, a manager’s willingness to experiment with and support the various practices that can enhance work force productivity.

Three Perspectives Of Management Support

Traditionally, managers have viewed labor as a *cost* to be controlled, reduced, and closely managed. Such a perspective focuses on “purchasing” human resources that are technically proficient and capable of obtaining productivity goals in proportion to the dollars spent to acquire them. It requires valid and accurate selection of employees with the right abilities and skills; focused productivity goals; and monetary rewards for high productivity offered as incentives.

The problem with this view, however, is that in situations of scarce resources a manager generally chooses strategies that attempt to reduce the labor cost. This can translate into a loss of knowledge, skills, and abilities—often in those whose performance is the highest. The result of this perspective can be seen in the rash of downsizing and other supposed cost-saving moves of late. In the words of one plant manager, “If you look at labor simply as a cost, you can cut your cost and actually be cutting your own throat.”

Slightly more progressive and supportive managers see employees as *tools*. Though still believing that employees’ capabilities are purchased at some cost to the company, these managers also see that purchase as an investment that can be leveraged to provide additional capabilities to the firm. The result is often a focus on expanding the tasks and jobs that any one employee can perform, usually through cross-training, job rotation, or other means.

Associated with this view is the notion that employees can self-regulate their level and quality of performance if metrics, data, and feedback are provided to them—much like cybernetic, self-adjusting systems. The down side is that employees’ skills, like tools or capital, depreciate over time. Without renewal or replacement, they deteriorate to the point of obsolescence. This is often associated with the view that “You can’t teach an old dog new tricks,” which is very detrimental both to the organization’s desire for improvement and competitiveness and to the employees’ skill development and motivation.

Finally, the most enlightened managers see the work force as their *partners*. A knowledge of customers and their preferences, along with an orientation toward solving problems and working together on all fronts, are the skill sets these managers hold dear. Employees are resources to be used for developing innovative ways to attract, retain, and develop customers, products,

and services. The true difference, particularly in terms of support and trust, comes in the way human resources are motivated.

Progressive managers understand the value of real autonomy, involvement, teamwork, accountability, and improvement in all facets of an employee’s work life. The most successful firms, therefore, recognize the need for employees with both strong technical and relationship skill sets, but go further in supporting their work forces by engaging employees with them in the problem-solving and developmental aspects of both their jobs and their companies. As one vice president of operations stated, “The real key to work force productivity is not the work force; it is us (management) and the partnership culture we build into our plants.”

On the positive side, the managers in our study agreed that a proper blend of all of these practices could really strengthen work force productivity and effectiveness. In the words of one operations superintendent, “If we build the right kind of organizational culture, the work force will almost always respond in kind...If you build it, they will come.”

Traditionally, when a manufacturing firm wanted to improve performance, it purchased new technology, redesigned systems, and/or simply told the workers to work harder. To achieve a sustained competitive advantage, modern organizations must use a more comprehensive and enlightened approach that attempts to leverage both technology and the work force in unison. Modern manufacturing managers have a wide variety of human performance-enhancing tools they can use to increase work force productivity, as illustrated by the firms in this study.

In this context we would encourage those who control and/or operate manufacturing facilities to review the questions in **Figure 3**. Assess the extent to which your firm is currently taking advantage of the various tools that progressive managers in this study used to augment worker productivity in their organizations. Current levels of competition in the global manufacturing arena suggest that your competitors will be looking for any advantage they can find to use against you. As you develop strategies and expend capital to develop and maintain your technical edge, don’t fail to focus and invest in the human side of manufacturing improvement.

Evaluating the “paradigm” your management team uses to provide support for the ability and motivational focuses will provide insight into why some practices may have stalled out in your firm. Clearly, management support is a crucial part of any improvement effort; the issue we raise here is that the manner in which it is provided is no less important than the support itself. Focusing

Figure 3
Organizational Assessment Of Productivity Through People Factors

| To what extent does our organization... | Not At All | To Some Extent | To A Great Extent | | |
|---|---------------|-------------------|----------------------|---|---|
| 1. Systematically share organizational operating data with workers? | 1 | 2 | 3 | 4 | 5 |
| 2. Make use of effective employee problem-solving teams? | 1 | 2 | 3 | 4 | 5 |
| 3. Increase customer input and contact with workers? | 1 | 2 | 3 | 4 | 5 |
| 4. Design jobs that empower workers to get results? | 1 | 2 | 3 | 4 | 5 |
| 5. Make ongoing management development a priority? | 1 | 2 | 3 | 4 | 5 |
| 6. Provide ongoing employee training and cross-training? | 1 | 2 | 3 | 4 | 5 |
| 7. Use work teams to meet organizational needs? | 1 | 2 | 3 | 4 | 5 |
| 8. Employ ongoing measurement/feedback mechanisms? | 1 | 2 | 3 | 4 | 5 |
| 9. Provide progressive/value-added supervision? | 1 | 2 | 3 | 4 | 5 |
| 10. Align jobs and goals with changing organizational needs? | 1 | 2 | 3 | 4 | 5 |
| 11. Focus on developing teamwork at the management level? | 1 | 2 | 3 | 4 | 5 |
| 12. Use effective human resource management practices? | 1 | 2 | 3 | 4 | 5 |
| 13. Attempt to increase staff/line cooperation and cohesiveness? | 1 | 2 | 3 | 4 | 5 |
| 14. Promote labor-management cooperation? | 1 | 2 | 3 | 4 | 5 |
| 15. Use incentive systems to enhance work force performance? | 1 | 2 | 3 | 4 | 5 |

managers' efforts in supporting activities and practices that provide the "biggest bang for the buck" in productivity improvement will also show employees you are serious and, perhaps most important, reduce the perception that this is just another "management fad."

It would be appropriate to heed the words of one plant manager, who said, "When you look at the costs, both tangible and intangible, associated with your plant's work force, you'd have to be a fool not to look for ways to better leverage their talents and potential because you can bet your competitors are... To not look at the human side of improvement is a very costly mistake." These are thoughts worth remembering and heeding. □

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