

Management and Productivity

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In today's political environment, the push for increased productivity, responsiveness, and accountability affects an organization's ability to effectively achieve its objectives. Different issues will emerge over time, and they must be addressed. Because perhaps no areas of management are changing more rapidly than in public and service sector productivity, flexibility in addressing new issues as they arise is critical to providing transportation organizations with the most current approaches.

The Transportation Research Board (TRB) Committee on Management and Productivity (A1A02) is concerned with short-range (1- to 5-year) operational processes that enable transportation organizations to improve performance. This committee explores, analyzes, synthesizes, and disseminates information about leading management concepts and practices related to performance enhancement. It has identified four key areas that will define the ability of transportation organizations to meet future challenges:

- Management techniques and practices,
- Human resource issues,
- Performance assessment and analysis tools, and
- Customer focus.

Our commitment is to improve the state of the practice in these focus areas.

STATE OF THE ART

Management Techniques and Practices

Never before have transportation agencies and other public entities operated in such a changing climate. Rapid, accelerating change has departments responding to internal and external pressures, technological innovations, and political and institutional concerns in unique and creative ways. Historically, the institutional context for implementing departments' programs was relatively standardized. Today, these organizations find that traditional management techniques no longer lead to effective, efficient delivery of services, nor do they promote the public accountability necessary in today's political environment.

Some of the management techniques emerging or becoming increasingly important in response to the need for change include

- Development of partnerships and cooperative arrangements,
- Privatization and outsourcing,
- Process engineering,
- New contracting methods,
- Downsizing and reorganization,
- Outreach and surveys,
- Customer-based performance measurement, and
- Quality management [quality assurance/quality control (QA/QC)].

Many organizations, particularly in the public sector, are embracing these philosophies. The benefits of changing how transportation agencies do business and relate to the public (that is, to their customers) have not yet become apparent to many. Traditionally, the primary emphases of transportation agencies are

- Getting projects out the door;
 - Seeking to boost revenue through traditional financing mechanisms;
 - Modifying internal processes to increase efficiency and effectiveness;
 - Competing rather than cooperating;
 - Hiring new employees rather than retaining current ones;
 - Focusing on discrete modal projects and needs rather than intermodal solutions;
 - Assuming what the customer wants and reluctantly, if at all, involving them in the planning process, setting priorities, and selecting projects—privatizing only what they are required to; and
- Unsuccessfully grappling with their role in freight, intermodalism, and information movement.

Human Resource Issues

The human resources (HR) profession is moving from a role of maintaining the status quo in organizations to being a partner in change by helping organizations make the best use of their human resources.

High turnover in positions such as engineering and information technology and the loss of experienced employees as a result of retirement incentives have forced transportation organizations to take a closer look at how they use their employees' talents. The need for more employees to carry out the large amount of work funded by the Transportation Equity Act of 1998 legislation has intensified the problem. Organizations are starting to recognize the high cost of turnover and mitigate the conditions that cause it.

The state-of-the-art focus is integrating HR with the organization's mission. Some of the changes entail

- Partnering HR with line management,
- Shifting the focus from the audit to the customer,
- Viewing HR as part of the management team,

- Designing flexible training modes to fit the employee needs, and
- Focusing training on performance support.

Transportation organizations are identifying critical skills and rewarding behaviors that support the organization's mission. In cooperation with HR professionals, managers are performing detailed assessments to determine existing and future need for skills. They also are developing competency models to determine which employee work behaviors are most successful in their organizations. Line managers, familiar with the work requirements, are taking an active role in selecting employees. The days of HR doing all the hiring are quickly vanishing.

Managers are working with HR professionals to develop recruitment strategies, benefits, and working condition packages that make employment attractive. Trends in employment practices are toward individualizing pay and working conditions to the extent possible and creating opportunities to both challenge and retain intelligent, competent employees.

People skills are becoming more valuable in technical and managerial positions. Managers and employees must

- Be flexible in dealing with rapidly changing technology,
- Work effectively with employee diversity, and
- Accommodate alternative working conditions (e.g., telecommuting).

Selection strategies incorporate assessments for behaviors and skills that are more likely to deal effectively with these ever-changing demands.

New emphases have changed the skills required of HR professionals. Their roles are evolving from guardians of the status quo, rigidly adhering to standardization, into something more like internal consultants. HR professionals will understand the business of their organizations, use their expertise to help the business make the best use of employees' talents, and help select employees who fit the organization's mission. These tasks require a partnership between HR and line management, minimizing the traditional HR role of ensuring compliance auditing procedures. The HR function is focusing on improving performance cost-effectively. Sometimes this function is manifest as training, sometimes not. Trainers and other HR professionals are required to show how they contribute to the accomplishment of the organization's mission.

Outcomes of this new focus include the following:

- Employers are more responsive to employee needs;
- Employees are better matched to the employer's mission;
- HR is recognized as an important element in maintaining a successful business; and
- Training is seen as a performance improvement tool, not an end in itself.

Performance Assessment and Analysis Tools

Advances in information technology and ready access to data have affected organizations positively. These developments enable organizations to improve productivity and to better

target existing resources by using an array of performance assessment and analysis tools. Some of these tools include

- Performance measurement systems,
- Activity-based costing and management systems,
- Results- and customer-oriented assessments of an infrastructure,
- Organizational self-assessments,
- Internal and external benchmarking processes,
- Broad-based and segmented customer surveys,
- Budgets based on performance or level of service,
- Asset-costing and asset-management systems, and
- Knowledge management.

The government sector is putting significant effort into improving the efficiency and effectiveness of service delivery by using these management tools. This move is a significant departure from the task that government agencies were set up for: stable administration of funding streams. Management improvements can be seen as the alignment of three perspectives: purpose, process, and people.

The purpose perspective aims to clarify program expectations from an outcome or results orientation. Organizations have begun to structure their approaches to defining program expectations around quality assurance and condition assessment methods. Whereas traditional expectations and treatment strategies were based on economic or technical considerations, organizations are beginning to fold customer and market interests into service design and treatment strategies. Quality assurance and condition assessment systems enable the organization to use either pass or fail or level-of-service measures to determine their success in meeting service expectations. Some organizations are linking service-based outcome assessments to their costing systems to determine service costs, thus enabling them to budget on a level-of-service basis.

The process perspective looks at how the organization goes about getting things done. Organizations are institutionalizing their costing systems based on performance measurements and activities. This can improve their understanding of how managers balance demands to lower unit costs, improve process efficiency, and reduce support costs with the competing demands to maintain and improve the transportation infrastructure, public satisfaction with services, and organizational learning and growth. In conjunction with best-practices programs, these measurement systems are being used for internal benchmarking. Some organizations are taking initial steps toward tracking the costs of infrastructure assets and relating them to specific conditions. The goal is to set up a holistic system for managing infrastructure assets—that is, a system that looks at the “big picture” and treats the infrastructure as a whole and not as individual parts. Organizational self-assessment tools, such as the Malcolm Baldrige Quality Award and criteria established at the state level, are being used to identify the most significant performance gaps.

From the people perspective, organizations are beginning to structure how knowledge is created, developed, learned, shared, codified, and improved. Much of this effort is beginning to coalesce under the rubric of knowledge management. This area includes systematized sharing of knowledge, experience, and abilities through human interventions

(such as best-practices programs) and technological interventions (such as organizational intranets).

Customer Focus

During the late 1990s, state departments of transportation (DOTs) began to pursue programs aimed at understanding who their customers were and what those customers needed and expected. This direction was driven by several factors:

- Building on total quality initiatives,
- Responding to legislative and other stakeholder groups,
- Meeting the requirements of Intermodal Surface Transportation Efficiency Act,
- Encouraging public acceptance of outsourcing, and
- Seeking the best ways to apportion scarce resources.

The private sector traditionally defined its customer segments and tailored products and services to them. Understanding customer segments and continual feedback also have provided DOTs essential information in making resource trade-off decisions when all customer groups could not be satisfied with available resources.

NEEDS FOR THE FUTURE

Management Techniques and Practices

One area that needs exploration is *changing public sector roles*. Historically, agencies have responded directly to the public by providing technical solutions. This response will no longer be sufficient. Agencies need to become comprehensive transportation operators or managers who offer transparent service delivery. Achieving this goal will require the development of innovative financing methods, such as the use of advanced construction and state infrastructure banks and increased use of private market mechanisms and “government corporations” that would allow public agencies to compete with or complement private sector interests. It also will require transportation organizations to create partnerships. Such cooperative efforts include relationships with nontransportation entities, multistate and multiregional coalitions, arrangements with local governments or private entities for project development, and other creative partnering schemes.

A second area of management practices that requires attention is *new program delivery mechanisms*. Innovative contracting methods present one area to explore. They may include incentive-based awards, competitive turnkey contracting, and increased outsourcing of both core and routine functions. Increased privatization, commercialization, and managed competition will be considered and where cost-effective, applied, and will involve a high degree of risk sharing and private project development. Finally, enhancing intermodal focus and improving incident management will influence service delivery and resource prioritization decisions.

A third area to be considered is *organizational reconfiguration*. Many agencies are already working through downsizing or rightsizing exercises that may fundamentally change ways of delivering services and even which services will be provided. These kinds of efforts will continue but probably will be tailored to the organization’s needs and customer

priorities. The effects (both positive and negative) of centralization and decentralization on the organization and service delivery must be explored. Methods of “flattening” the organization may increase productivity but also decrease internal opportunities and contribute to turnover and loss of expertise. Developing cross-functional teams or providing sufficient resources to encourage organizational cross-training and job rotation may offer some relief in dealing with the shrinking talent pool. Because turnover will remain an important issue, methods for recruiting and retaining staff will be critical to the success of the organization. Performance-based pay will become increasingly popular in many states, and the effects of program development and implementation should be considered.

A fourth area of management practice that will become more visible is *process improvement*. It will involve primarily “reengineering” and realignment of resources to reflect priorities more clearly. Quality management also will be extremely important to organizations in the future. Quality assurance and quality control initiatives can be emphasized, but most organizations implement them in an unsystematic, reactive way that may not bring about the anticipated improvements. More research and study must be given to develop better approaches to improving quality. Applying the same method to all improvement initiatives is not prudent, but most organizations do not have the techniques to tailor approaches to organizational needs.

The fifth area of importance is *setting priorities*. Organizations will increasingly be forced to set priorities in the coming era of fiscal responsibility and scarcity of resources. For agencies to be effective, they must have in place well-defined missions, goals, and objectives; sophisticated strategic planning tools; and outcome-oriented processes for prioritizing investment decisions based on customer input. States will need assistance in these three areas to be responsive to their customers and establish rational, defensible priorities.

Other research will be needed to address related issues such as benchmarking; linkages among state plans, state transportation improvement programs, and budgets; the effects of modal integration and intermodal choices on priorities; the importance of freight movement; and the importance of moving information in addition to goods and people. Finally, to adequately set sound priorities and to ensure that investment decisions are as effective and efficient as possible, much greater attention must be paid to the role of “asset management” in decision making. This focus will help transportation agencies address such related topics as investment trade-off analysis, life-cycle design and costing, and “true-cost” evaluations.

Human Resource Issues

Each transportation organization will tie employment strategies to its mission and will devote more effort to the effective use of its human resources. HR professionals will work closely with management and will

- Know and focus their services on the organization’s core business;
- Identify and track employee skills that match the organization’s mission, then attract and retain employees with those skills;
- Track turnover and eliminate conditions that result in the loss of needed skills;
- Facilitate work assignment on the basis of a match between the employee’s skills and the organization’s needs;

- Develop competency models and compensation systems to support needed skills;
 - Implement more effective learning methods directed toward improving performance;
- and
- Partner with educational institutions to train untapped sources of employees.

Organizations will identify core business activities, recruit employees to strengthen those functions, and retain employees with critical skills. Less-critical activities will be outsourced when it is impractical to retain people who have the needed skills. Positions traditionally filled by civil engineers or other workers in high demand will be closely examined to determine whether those skills are required; if not, the job descriptions will be amended to fit the jobs.

HR professionals will continue to play a major role in transportation organizations, but their function will be mission-bound, not rule-bound. They will continue to work with management to target, recruit, and retain employees with specific and transferable skills.

Skill profiles will replace fixed position descriptions for employees, who will be assigned to work according to their fit with work at hand. Pay will be determined on the basis of skill and performance. Employees who are willing to be flexible and learn new skills will be in high demand.

Cross-functional teams, made up of employees from many departments, deal with particular projects or customer-directed needs. Team structures will replace traditional, single-function work structures. People skills and communications skills will be required to cope effectively with increasing workforce diversity and changing work relationships.

The outcomes of these changes will include the following:

- Agile organizations will focus on core business;
 - The “functional silos” of departments working in isolation within organizations will be less prevalent, replaced by cross-functional teams;
 - Employees will understand the “big picture” of operations;
 - Work will become more project-oriented within the mission, rather than functionally driven;
- and
- Employees will work more as free agents, assigned to match the work to their skills;
 - Employment conditions will reward behaviors and skills that are critical to the organization’s mission.

Performance Assessment and Analysis Tools

Significant issues in developing performance management systems include clarifying the key attributes of organizational performance and the service outcome expectations for the transportation infrastructure. These ideas are a significant departure from the administrative control of inputs and public interest models on which government organizations are built. They involve changes in both systems and the culture of organizations.

In building an infrastructure to support systematic performance assessment and analysis of the organization, some significant short-term issues arise. They relate to the organization’s capacity—from both a fiscal and HR perspective—to build the information systems needed to collect data, analyze the data, and integrate or replace aging legacy systems into these modern management systems.

After the internal organizational capacity to analyze and assess performance matures, organizations will face the issue of external benchmarking. This process will require standardizing management models across transportation organizations.

Customer Focus

As state DOTs attempt to understand customers' needs and expectations, many organizations have found themselves faced with the following:

- A lack of expertise in conducting market-segmentation, voice-of-the-customer, and satisfaction analyses;
- No clear plan for the survey process or for the data collected;
- Inconsistent aggregation and use of customer complaint data for performance improvement;
- Difficulty in making the results of customer studies “actionable” at all levels of the organization;
- A need to define some meaningful customer service measures; and
- No adequate methodology to weigh and balance competing customer demands.

The public is accustomed to receiving services with higher and higher degrees of customization. It seeks best value in decision making and, in general, does not support growth in government. Faced with such ever-increasing demands, state DOTs in the next century will develop closer and more responsive relationships with their customer bases.

Supported by market research, customer segmentation will clearly articulate the needs and expectations of changing demographic and societal groups. New affinity groups will emerge, creating “beehives” of associations. These groups and work patterns influenced by technology will necessitate being in constant touch with customer groups to understand their needs.

Satisfaction with DOT services and products and plans will be monitored constantly through various listening posts. Traditional means of surveying constituencies will be surpassed by high-technology interactive means that will provide instant feedback on everything from work areas to maintenance plans. More important, this information will be made available, understandable, and useful to all levels of employees—especially front-line workers. Every employee, as part of his or her agency's balance scorecard measurement process, will know key customer measures—internal and external, hard and soft, as appropriate. Access to real-time information will equip employees to anticipate dips in performance and make midcourse corrections imperceptible to the customer.

Customers will become an integral part of DOT planning for operations, product and service development, and in some cases, delivery. Their involvement will allow them to cross over from customer to partner roles. The future of state DOTs will require customers to be not only end users of products and services but also active participants in the enterprise.

SUMMARY

Flexibility and agility are the watchwords of the transportation business. Transportation organizations must move with the times, and the times are moving quickly. Transportation organizations will focus on proactive processes to improve effectiveness and achieve

outcomes that offer more flexibility in how the job is done. People—not programs—will drive the way transportation organizations do business.

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