PROJECT SUCCESS: A CULTURAL FRAMEWORK

KORIN KENDRA, General Motors Corporation, World Headquarters, 100 Renaissance Center, Detroit MI 48265

LAURA J. TAPLIN, Benedictine University, P.O. Box 12, Caledon, ON Canada L0N 1C0

ABSTRACT
This paper presents results of a qualitative study of the adoption of Project Management (PM) practices in an Information Technology (IT) division of a large manufacturing company. Structured interviews were used to gather data from a cross section of IT divisional leaders in the company to test and confirm a project management system developed from a literature review of project success factors that have contributed to projects' being on time, on budget, and of high quality. Data analysis using organization development (OD) grounded theory (Strauss & Corbin, 1990) identified common themes and cultural values that exist among the eight participants. Results of this study include the development of a cultural framework to improve organization project performance (project success model) based on organization system design methods constructed from sociotechnical system theory (Taylor & Felton, 1993) and open system theory (Emery & Purser, 1996). In addition, the study confirmed the proposed open system design for the successful adoption of project management practices comprised of a project manager, project teams, performance measurement systems, and supporting management practices. An important conclusion from this research was that IT organizations that adopt the confirmed project success model must develop a project management culture based on shared cultural values of the organization's members that support adoption of project management. An implication of this study to the fields of organization development and project management is the confirmation of a project management system that IT organizations, OD practitioners, and project managers can employ to support the adoption of project management practices at both the organizational and project levels.

Keywords: organization culture; project success; cultural values; open systems; grounded theory

©2004 by the Project Management Institute
Vol. 35, No. 1, pp. 30-45, ISSN 0748-9728/03

Introduction
Within the information technology (IT) industry, the fact that information systems (IS) projects fail most of the time is acknowledged, but not well understood. A recent Standish Group survey (2000) reported an overall project failure rate of 72 percent. Of the remaining 28 percent of IS projects that reportedly were successful, the study found that 97 percent of those projects had the advantage of an assigned project manager, that 58 percent used a defined measurement system, and that 46 percent used a project management (PM) methodology. The Standish Group study (2000) concluded that the primary reason for declining project success rates between 1997 and 2000 was insufficiently collaborative working relationships (i.e., lack of trust among team members who share responsibility for project success) (Herzog, 2001). This conclusion highlights the need to investigate the interrelationships among project manager, project team, methodology (processes), and measurement systems that lead to success, in order to better understand the importance of collaborative working relationships to IS project success. (Standish, 2000).

This paper addresses the question raised by the Standish Group's conclusion (2000) through a qualitative study of the relationship between organizational members (project managers and teams) who work on project activities, and the processes they use to perform project work. The literature on IS PM success factors was reviewed to develop a four-dimensional (2x2) success model based on sociotechnical system design concepts (Eijament, 1993; Pasmore, 1988). The success model encompasses micro- and macro-organizational design elements, representing social and technical aspects of PM, and defines the social and technical factors at the micro (individual) and macro (group) levels of PM. The success model was then applied to a large manufacturing organization's information technology (IT) division to explicate contributing cultural values. The paper concludes by presenting a PM values framework that has been developed to assist IT organizations in advancing to the next level of PM maturity, thereby improving their IS project success rates.

Project Management Success Factors
A review of the literature on project management practices (processes) in the IT industry identified numerous success factors that contribute to projects being on time, within budget, and of good quality. Due to the volume of research regard-
<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>SUCCESS FACTORS</th>
<th>AUTHORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro-social</td>
<td>Project manager skills and competencies:</td>
<td>Bander, 1986; Jiang, Klein and Mergulis, 1998; Melymuka, 2000; Pinto</td>
</tr>
<tr>
<td>Macro-social</td>
<td>Organizational structures at the project level:</td>
<td>Bloom, 1989; Brousseau, 1987; Johnson and Fredian, 1986; Koehler, 1987; Shenhar, 1998</td>
</tr>
<tr>
<td></td>
<td>Matrixed and projectized</td>
<td>Shenhar, 2001; PMI, 2000; Wysocki, Beck, and Crane, 2000</td>
</tr>
<tr>
<td></td>
<td>Cross-Functional team participants: business client, senior management,</td>
<td>Cash and Fox, 1992; Christian, 1993; Dinsmore, 1997; Jiang, Kliens, and Means, 2000; Kloppenborg and Plath, 1991; Orlikowski and Robey, 1991; Parmar, 1987; Pinto and Slevin, 1989; Rosenbaum, 1990</td>
</tr>
<tr>
<td></td>
<td>information technology developers, and a skilled project manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collaborative (participative) work environment</td>
<td>Herzog, 2001; Standish, 2000</td>
</tr>
</tbody>
</table>

Table 1. Two Levels (Micro and Macro) of the Social Design Elements of the Four Dimensional Model for Project Management Success by Individual Success Factor and Contributing Author.

Social Dimensions of Project Success
The social dimensions of project success are specific to the individual organizational members (people) who perform project-related work. These individuals include a project manager and project team members. Success factors presented in Table 1 are associated with the social dimensions of organization design, and include the micro-social element of project manager skills and competencies, and the macro-social element of project organizational design structures.

Project Manager Skills and Competencies
The micro-social dimensions of project success, defined at the individual project manager level, are the skills and competencies employed by project managers who lead projects. Leadership behavioral characteristics (Bander, 1986; Melymuka, 2000; Pinto and Slevin, 1988 [June]; Rosenbaum, 1990; Zimmerer and Yasin, 1998) have defined individual competencies. Several other project management studies have identified skills and behavioral attributes of successful project managers (Jiang, Klein and Mergulis, 1998; Verma, 1995, 1996, 1997). Subject areas specified for project managers include planning, managing tasks, leading project teams, interfacing with users in the organization, general information technology,
<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>SUCCESS FACTORS</th>
<th>AUTHORS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time, Cost and Quality (information technology system performance—testing, operations)</td>
<td>Ami, 2000; Baccarini, 1999; Buchok, 2000; Freeman and Beale, 1992; Lidow, 1999; Naden, 2000; Stewart, 2001; Shenhar, Levy, and Dvir, 1997; Wateridge, 1998</td>
</tr>
<tr>
<td></td>
<td>Business objectives: Goal setting</td>
<td>Liu and Walker, 1998; Lynn and Reilly, 2000</td>
</tr>
<tr>
<td></td>
<td>Team Performance</td>
<td>Gardiner and Stewart, 2000; Freeman and Beale, 1992</td>
</tr>
<tr>
<td></td>
<td>Financial Performance: present value (NPV), discounted cash flow (DCF)</td>
<td>Gardiner and Stewart, 2000; Freeman and Beale, 1992</td>
</tr>
<tr>
<td></td>
<td>User Satisfaction</td>
<td>Wateridge, 1998</td>
</tr>
<tr>
<td>Macro-technical</td>
<td>Supporting management practices: grouping of structured business processes or frameworks</td>
<td>Fabris, 1997; Medcof, and Hauschildt, Keim, 2000; Jacobs, 1997; Jiang and Klein, and Means 2000; Naden, 2000; Nicholas, 1989; Pinto and Slevin, 1989; PMI, 2000; Somers, 1999</td>
</tr>
<tr>
<td></td>
<td>General project management processes used to plan, control and execute a project</td>
<td>SEI, 2002</td>
</tr>
<tr>
<td></td>
<td>SEI CMM Process areas</td>
<td>Wateridge, 2000</td>
</tr>
<tr>
<td></td>
<td>Configuration management of deliverables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Software development frameworks to manage activities related to information technology application (system) development</td>
<td>Parmar, 1987</td>
</tr>
<tr>
<td></td>
<td>Strategic management processes to establish prioritization of information technology projects</td>
<td>Adler and Shenhar, 1990; Somers, 1999</td>
</tr>
<tr>
<td></td>
<td>Vendor Management: manage activities performed by outside information technology service providers</td>
<td>Chaudhuri and Hardy, 2001</td>
</tr>
</tbody>
</table>

Table 2. Two Levels (Micro and Macro) of the Technical Design Elements of the Four Dimensional Model for Project Management Success by Individual Success Factor and Contributing Author.
Project Management Design
Elements By Organization Level

<table>
<thead>
<tr>
<th>Element type</th>
<th>Micro</th>
<th>Macro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>Project manager skills and competencies</td>
<td>Organizational structures at the project level</td>
</tr>
<tr>
<td>Technical</td>
<td>Performance measurement systems</td>
<td>Supporting management practices</td>
</tr>
</tbody>
</table>

Table 3. The project management social and technical organization design elements that form the four dimensions of Project Success Model for information technology organizations.

business and human behavior (Bloom, 1989; Brousseau, 1987; Johnson and Fredian, 1986; Koehler, 1987). The breadth and depth of a project manager’s project skills is dependent on the type of information technology work performed (Shenhar, 2001). According to Shenhar:

Leaders (project managers) of high-tech or super high-tech projects must possess exceptional technical skills, as well as the capability to assess potential value and risk in new, or not yet developed technology. Similarly, while assembly projects do not require extensive managerial skills, managers of system efforts need a wealth of administrative and organizational capabilities (p. 412).

In addition, a study conducted by Jiang (2001) of information system project managers found that managerial performance is a significant predictor of project performance.

Project Organization Design
The macro-social dimension of project success is specific to the project organization design (groups of organization members). PMI has developed a standard project management methodology that is published and distributed as A Guide to the Project Management Body of Knowledge (PMBOK Guide) (PMI, 2000). It outlines a framework to help organizations successfully manage one-time change efforts (projects). Common project organization structures discussed in the PMBOK Guide include matrixed and projectized. The first structure is a weak-matrix organization, where the project manager has limited authority in the organization, and works directly with functional managers to share resources to achieve project success. The second structure is strong-matrixed, where the project manager has authority and resources to manage the project. Matrixed structures are the most common project organization design. Their advantages include leveraging individual expertise from the organization across multiple projects, enhancing project communications, and building team morale (Wysocki, R., Beck, R., and Crane, D, 2000). Shenhar (2001) discovered that organizational structures are dependent on project type. For instance, in small assembly type projects, a functional organizational structure would be most effective.

Additionally, a review of past research in project management team structures yielded a list of key participants who are needed on an IS project team to ensure success of the project. The list includes: (1) a business client with expertise in the functional area impacted by the project (Jiang, Kliens, and Means, 2000; Kloppenborg and Plath, 1991; Parmar, 1987; Pinto and Slevin, 1989); (2) a senior management representative who acts as executive sponsor/champion, due to his or her influence and level of authority in the organization (Barker, 1999; Benjaminsen, 2000; Cash and Fox, 1992; Devaney, 1991; Johnson and Fredian, 1986; Pinto and Slevin, 1987, 1988 [June], 1989; Rosenbaum, 1990) and involvement in setting corporate direction (Dinsmore, 1997); and (3) a skilled project manager (Cash and Fox, 1992; Christian, 1993; Pinto et al., 1987, 1988 [June], 1989). Once the participants have been selected for the project, the next step is to establish a collaborative (participative) work environment (Herzog, 2001). A collaborative team is one that “is dependent on trust as a form of capital investment for the attainment of goals and objectives” (Herzog, 2001, p. 28).

Technical Dimensions of Project Success
The technical dimensions of project success (systems and processes) are the business practices employed by individual organizational members to support project-related work. The technical success factors in Table 2 are associated with the establishment of a measurement system (metrics) (Hartman and Ashrafi, 2002), which are used to evaluate organizational performance at the micro-technical level, as well as the management practices (organizational business processes) employed throughout the project life cycle at the macro-technical level.

Performance Measurement Systems
The micro-technical dimension success factor is specific to the establishment of a performance measurement system, and is comprised of individual metrics to monitor performance at the project and organization levels. At the project level, measurement systems are used by the project manager to evaluate project performance against the project schedule, budget, objectives,
requirements and software quality. The measurement system adopted by the project manager determines measurement system metrics. Project measurement systems that have been used in information technology development projects include metrics to monitor:

- Project time—duration and amount of effort
- Cost and budget variances
- Quality—software application defects
- Earned-value analysis—predict future cost and time variances (Abba, 1997; Fleming and Kopelman, 1996)
- Logical framework based on business objectives (Baccarini, 1999)
- Project and/or team size—number of team members (Standish, 2000)
- Team performance (Liu and Walker, 1998; Lynn and Reilly, 2000)
- Net present value (NPV) (Gardiner and Stewart, 2000)
- Discounted cash flow (DCF) (Freeman and Beale, 1991)
- Performance tracking by milestone (Somers, 1999)
- Organizational business objectives (e.g., goal-oriented, dashboard, duck alignment, balanced scorecard, financial performance [such as profit and loss]) (Ami, 2000; Buchok, 2000; Freeman and Beale, 1991; Lidow, 1999; Naden, 2000; Stewart, 2001)
- Four-dimensional model (Shenhar, Levy, and Dvir, 1997)
- System Engineering Institute Capability Maturity Model (SEI CMM) (SEI, 2001). The SEI CMM is a set of processes and procedures that assist development teams in progressing upward through five levels of quality and achievement, and is unique to the information technology industry. Additionally, Wateridge (1998) conducted a study of IT processes that contributed to project success and found that the six most important criteria for evaluating project success included: meeting user requirements, achieving stated purpose, meeting time scales, meeting budget, resulting in happy users, and meeting quality.

Supporting Management Processes

The macro-technical dimension refers to the supporting management practices (grouping of structured business processes or frameworks) employed within organizations to support project-related work. Management practices encompass processes from the PMBOK® Guide (PMI, 2000), as well as other supporting management processes that are specific to information technology projects. PMBOK® Guide knowledge areas specific to information technology system processes relate to three project measures: time, cost and quality of the software (Fabris, 1997; PMI, 2000; SEI, 2001; Somers, 1999). Management processes outside of the PMBOK® Guide, and specific to information technology, include: configuration management to manage different versions of project deliverables (Wateridge, 1999, 2000); software development frameworks—activities related to IT application (system) development (Parmar, 1987; Seddon, 1997); strategic management processes to determine the prioritization of IT projects (Adler and Shenhar, 1990; Somers, 1999); and IT vendor management (Chaudhuri and Hardy, 2001).

Other studies have noted general project management processes as success factors including human resource management, risk management, planning, scheduling, monitoring, control, budgeting, initiating, executing, and closing (Fabris, 1997; Medcalf, Hauschildt, and Keim, 2000; Jiang et al., 2000; Naden, 2000; Nicholas, 1989; Pinto and Slevin, 1989; PMI, 2000; Somers, 1999).

Four Dimensions of Project Success

The four dimensions of project success, shown in Table 3, read counterclockwise starting at top left with project manager competencies, followed by performance measurement systems, business processes, and project organization structures. Each of the four-dimensional design elements are independent—a change made to one design element does not affect the other elements. However, in sociotechnical systems, the elements are interdependent. A sociotechnical organizational design "integrates its explanatory function (how the specific architecture of structure determines the opportunities for coordination, adaptation and innovation) with its design function (how alternative architectures change such opportunities and in which direction)" (Eijniitten, 1993, p. 177). This suggests that the structure of system design elements (social and technical) enables interaction between the elements (networked structures).

Graham and Englund (1997) developed an organizational environment model for project success that is similar to the project success model developed here. Their project-based organizational model has 10 process steps (strategies) to adopt project management based on technical organization design factors. Graham and Englund recognized through their research that the 10 process steps do not act independently when they stated:

A word of caution: the processes we are assembling will not stay together without glue, and the glue has two vital ingredients: authenticity and integrity. Authenticity means that upper managers really mean what they say. Integrity means that they really do what they say they will do, and for reasons they stated to begin with... authenticity and integrity link the head and the heart, the words and the action; they separate belief from disbelief, and often make the difference between success and failure (p. 4).

Thus, Graham and Englund identified two individual values that define the linkages between their ten project-based process steps. The collection of individual values in an organization is the foundation of a project culture that is post-bureaucratic. In their view, organizations may need to change their culture to be project-based if they are to be successful with project management.

Project Cultures

Cummings and Worley view organizational culture as part of the overall organizational design. They define culture as "[a means to] promote coordi-
nation of a variety of tasks, serve as a method for socializing and developing people, and establish methods for moving information around the organization’ (Cummings and Worley, 1997, p. 93). Figure 1 depicts a way of viewing an organization's project culture, represented by a set of values that form linkages among the four dimensions of project success. Project manager competencies, performance measurement systems, business processes, and project organization structures within an organization define the individual value links that construct a project management culture.

Organizational Cultures
According to Hall (1989):

Culture is what gives man his identify no matter where he is born — his culture is formed by his communication framework: words, actions, postures, gestures, tones of voice, facial expressions, the way he handles time, space, and materials, and the way he works, plays, makes love, and defends himself (p. 42).

Table 4 presents a chronology of differing perspectives from previous studies that were used in this study to develop a project success value(s) framework. The perspectives range from an individual values-based culture to one of subcultures—defined by a set of communal values, which change over time. Such a group-oriented perspective exhibits itself as an organizational phenomenon. According to Martin (1992):

As individuals come into contact with organizations, they come into contact with dress norms, stories people tell about what goes on, the organization's formal rules and procedures, its informal codes of behavior, rituals, tasks, pay systems, jargon, and jokes only understood by insiders, and so on. These elements are some of the manifestations of organizational culture. When cultural members interpret the meanings of these manifestations, their perceptions, memories, beliefs, experiences, and values will vary, so interpretations will differ—even of the same phenomenon. The patterns or configurations of these interpretations, and the ways they are enacted, constitute culture (p. 3).

Cultures arise within organizations based on members' own past experiences. Members who have shared in the organization's past successes develop assumptions about how the organization performs work to meet objectives. Hofstede (1997) defines organizational culture as:

...holistic, referring to a whole which is more that the sum of its parts, historically determined reflecting the history of the organization, related to the things anthropologists study like rituals and symbols, socially constructed, created and preserved by the group of people who together form the organization, soft, and difficult to change... (pp. 179–180).

He goes on to say that both organizational and national cultures exist and that the difference between national and organizational cultures is due to the differences in symbols, heroes, rituals, and values that are a part of one's work life.

Baba, Falkenburg and Hill (1996) studied technology management in American culture, and the role that culture plays in business process redesign
<table>
<thead>
<tr>
<th>PERSPECTIVES</th>
<th>TYPE(S)</th>
<th>AUTHORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate culture is defined by the values, heroes, rites and rituals, and</td>
<td>Tough-guy, macho culture, work hard/play hard culture, bet-your-company, and process culture</td>
<td>Deal and Kennedy (1982)</td>
</tr>
<tr>
<td>the communication networks.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The framework is based on 39 indicators of organizational effectiveness.</td>
<td>Clan, advocacy, hierarchy, market</td>
<td>Quinn and Cameron (1983)</td>
</tr>
<tr>
<td>The vertical dimensions differentiate organizational flexibility and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>discretion from stability and control. The horizontal dimension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>differentiates based on an organization orientation of internal harmony</td>
<td></td>
<td></td>
</tr>
<tr>
<td>from external rivalry.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culture resides in one’s subconscious and is formed from past experiences</td>
<td>Organization</td>
<td>Hall (1989)</td>
</tr>
<tr>
<td>from one’s upbringing, education system, language, environment, previous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>actions, and personal memories.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals’ interpretations of manifestations. The patterns or</td>
<td>Organization</td>
<td>Martin (1992)</td>
</tr>
<tr>
<td>configurations of these interpretations, and the ways they are enacted,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>constitute culture.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprised of multiple subcultures that are derived from individual</td>
<td>Operator, engineering, executive</td>
<td>Schein (1996)</td>
</tr>
<tr>
<td>experiences and educational backgrounds, and are developed by an</td>
<td></td>
<td></td>
</tr>
<tr>
<td>individual’s occupational community (professions).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A system of shared assumptions, ideas, beliefs, and related patterns of</td>
<td>National, corporate, and work culture</td>
<td>Baba, Falkenburg, and</td>
</tr>
<tr>
<td>behavior learned by people over time.</td>
<td></td>
<td>Hill (1996)</td>
</tr>
<tr>
<td>Holistic based on history, rituals and symbols, socially constructed and</td>
<td>Organization and national cultures</td>
<td>Hofstede (1997)</td>
</tr>
<tr>
<td>preserved by the group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part of the overall organization design that is comprised of four design</td>
<td>Organization</td>
<td>Cummings and Worley</td>
</tr>
<tr>
<td>factors: core activity system, structural system, measurement system,</td>
<td></td>
<td>(1997)</td>
</tr>
<tr>
<td>and human resource system to enable information flow throughout the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>organization.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization cultures that exist in technology companies based on the</td>
<td>Paternalistic, highly individualized, teams</td>
<td>Frohman (1998)</td>
</tr>
<tr>
<td>relationships that exist between management and employees.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four types of culture derived from management ideologies that form an</td>
<td>Power-oriented, role-oriented, achievement-oriented, and support-</td>
<td>Harrison and Stokes (1997)</td>
</tr>
<tr>
<td>organization culture profile</td>
<td>oriented</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Differing Perspectives of Organization Cultures and Subcultures Types by Author

in adopting new technologies. They defined culture as “an historically grounded system of shared assumptions, ideas, beliefs, and related patterns of behavior learned by a group of people over time, resulting from their collective experiences” (p. 44). They went on to say that three interrelated forms of culture—national, corporate and work culture—exist in corporations that use information technology. National culture is based on the behaviors of people in a specific region. Corporate cultures are subcultures within a nation derived from corporate founders and experiences. Work cultures are defined by a particular discipline (e.g., project management).

**Subculture Types**

Schein expanded the notion of organizational culture into multiple subcultures. Subcultures derive from individual experiences, educational backgrounds, molded by an individual’s occupational community (e.g., professions like project management). According to Schein (1996):

Cultures manifest at three levels: the level of deep tacit assumptions that are the essence of the culture, the level of espoused values that often reflect what a group wishes ideally to be and the way it wants to present itself publicly, and the day-to-day behavior that represents a complex compromise among the espoused values, the deeper assumptions, and the immediate requirements of the situation (p. 11).
Frohman (1998) identified three types of organizational cultures that exist in technology companies: paternalistic, individualized, and team. In a paternalistic culture, senior management takes on a parenting role, causing employees to avoid responsibility, wait for direction from management, and exercise minimal authority. Highly individualized organizational cultures have few boundaries, and members are free to make their own decisions with little regard for others in the organization. In a team culture, everyone is a member of a team, and there is a high degree of conformity due to established group norms that govern how work is performed. All three cultures limit the organization's ability to innovate. Frohman believes that to achieve innovation at all levels, the individuals' energy and ideas need to be focused on achieving challenging organizational goals, using teams as the vehicle.

Corporate Culture
For Deal and Kennedy (1982), the values, heroes, rites and rituals, and communication networks that exist within an organization define its corporate culture. They emphasize that the existence of a strong corporate culture enables people to expect what an organization wants from them and how they are to perform (behave) to get their work done. They posit four general categories of corporate culture based on values, heroes, rites, and rituals. Culture resides in one's unconscious, formed from individuals past experiences, from one's upbringing, education system, language, environment, previous actions, and personal memories (Hall, 1989), and developed through individual interpretations of its manifestations (Martin, 1992).

Organizational culture is comprised of multiple subcultures (Schein, 1996), and is a community focused on human relations formed by sociability and solidarity levels (Coffee and Jones, 1996), with shared assumptions, ideas, beliefs, and related patterns of behavior learned by people over time (Baba et al., 1996). Culture is a holistic system (Hofstede, 1997) based on history, rituals and symbols, socially constructed and preserved by the group. Culture is part of the overall organizational design (Cummings and Worley, 1997) to enable widespread information flow. Relationships that exist between management and employees form technology companies' cultures (Frohman, 1998). The common theme that unifies these differing perspectives on culture is that cultures influence who, what, and how to perform work in an organization.

A Study of Project Culture
The literature review in this study of success factors helped construct the model depicted in Figure 1. The success factors are a sociotechnical system design that represents the social and technical elements of project management. Incorporation of organizational culture into the project success model represents the existing cultural values about project management that form linkages between design elements. The larger organizational culture, depicted as the outer circle in the model, represents the corporate culture that lives within the organization.

A qualitative research approach using a series of structured interviews was employed in this case study. Qualitative research uses constructivist theory to define one's "reality" that is formed through dialogue, and expresses an individual's personal values and beliefs, as reflected in one's stories, manifestations, and past experiences (Weick, 1979). Participants in this research are from a large North American manufacturing company's IT organization. Eight IT executives from the company participated in this study. Structured interviews gathered qualitative data about the participants' personal experiences managing IT projects. The decision to interview IT executives stems from their roles in setting corporate strategy for their organization (Dinsmore, 1997). Structured interview questions collected information on organizational culture, the utilization of project management, and the relationships that exist between the four dimensions of project success and project culture.

Research Questions:
1. What organizational values exist regarding project management among IT organization members?
2. What linkages exist between organizational culture, project manager competencies, project management methods (processes), performance management systems, and project success?

Organization's History in the Adoption of Project Management
In 1999, the manufacturing company began working on adopting new management practices to provide information technology services to their business customers. Between September 1999 and today, the organization implemented a formal project management methodology across its different IT Division business units. In addition, the organization took other steps (change initiatives) to improve project performance (i.e., on time, within budget, of high quality). The change initiatives that were part of the adoption process included the development of a new project management methodology, acquisition of skilled project managers, training to develop project management competencies, organizational restructuring (programs) to support several projects for one business unit, and utilization of supporting management processes.

At the end of 2001, the organization assessed project performance across all IT projects completed (closed) in the past 12 months. Based on the results of the assessment, the organization identified new steps—change initiatives—needed to continue to improve project performance. The change initiatives focused on continued growth in project management capabilities, including initiatives to improve project manager competency levels through further investment in training and certification; new performance measures at the individual, project and supplier level; restructuring of the project management office to support the SEI CMM framework; and revisions to the supplier management process that support the organization's business operations model.
Data Collection

Interview protocol explored the organizational design elements—social and technical structures in the proposed success model developed in this study. The inquiry focused on the organization's culture, project manager competencies, organizational structure design, performance measurement systems, and the supporting business processes employed in the change efforts to adopt project management.

Research participants shared their personal experiences through stories focused on organizational culture, project manager skills and competencies, organizational structures, performance management systems, and other supporting business processes that contributed to the adoption of project management methods. Interviews were conducted at the end of 2001, and reflected the past, current, and future change efforts to adopt project management.

Data Coding and Analysis

Data collected through this case study was analyzed qualitatively using a grounded theory approach (Strauss and Corbin, 1990) and inferential coding to identify the common themes and cultural values that form linkages between project manager competencies, performance measurement systems, process, and structures. The research findings identified five common themes that related to the adoption of project management. Relationships that exist between the social and technical structures—the four dimensions of project success—provided the map for exploration into the system design, PM methodology, and organization's culture type.

Theme #1: Project management competencies exist at the project manager level in the organizational structure.

In this organization, the project manager is a leader who works with the sponsoring organization, project team, and IT development groups to identify deliverables and tasks needed to meet project objectives. During the interviews, participants told stories about the most effective project manager they had worked with in their career. Various excerpts include:

“For an IT perspective he has to understand IT technology. There is just no two ways about it.”

“If you don’t have people skills, and you don’t understand the business model, I don’t care how good a person you are, [you won’t be successful].”

“Communication is huge, the follow-up is huge, um [sic], the energy, the enthusiasm and optimism for what is going on within the project. … Encouragement for fact-based decision-making and that kind of thing. You know, I could rattle off all the PMI things, … That is just the basics. You’ve got to have that and be living that life.”

“Effective project managers can foresee problems, [are] good listeners, keep [their] eyes open to problems, [are] open minded, good motivators, team leaders, part of the team, engender feeling, empower [the] team, and [are] good decision-makers. They celebrate success, are good coaches, and set a good example.”

“Probably to classify it with one word it would be a bulldog. They have to have a trait of commitment. They have to be able to juggle many things at one time: they have to be patient, because things do not happen instantaneously. They have to be someone that cares.”

“I think that in this culture living those [PM] principles takes courage.”

Participants talked about the skills that project managers employ to get people in the organization engaged in a project. Organization members expressed their values about project manager competencies as individual leadership skills, interpersonal communications, building relationships, professional project management, and information technology.

Theme 2: Project success requires the employment of management processes from project management, system development, supplier management, and business planning to be successful.

In addition to the PMBOK® Guide’s (PMI, 2000) key process areas, other management practices are used in conjunction with project management (methods) that are unique to information technology. These unique processes include configuration management, system development frameworks, and the CMMI recommendations by maturity level. Different members from the organization studied have recognized the benefits of having a project management methodology, and the need to integrate project management practices with other business processes that support IT project initiatives:

“… by using a common [PM] methodology, I think it has really helped [here] from a project management standpoint. And I think that our auditing to ensure we are following the process has been very valuable. [It supports the organizational objectives].”

“Business planning process … Because what she is doing is forcing everyone in that forum to put a much bigger hat on, and view it beyond just their area of responsibility.”

A role that the project manager plays is that of vendor management (Chaudhuri and Hardy, 2001), the process used to manage outsourced project deliverables completed by outside suppliers (IT service providers). According to one participant:

“The other spin here, because of our outreach model, is the need to have, at least from a skills and culture perspective, a linkage back to
our supplier community and our supplier management process."

The Director of Sales reflected on how the organization had performed in the outsourced business model, and the need for the organization to understand project management and other supporting business processes:

"I think we didn’t have the background or understanding of project management, to the degree we needed... I think we have moved a long way from there to where we are now."

The SEI CMM maturity model measures different levels of competency in the six process areas. To achieve a high level of maturity, the organization needs to build a knowledge base around the six process areas. A planned activity in the organization studied is training targeted to teach project teams about CMM to establish a knowledge base—shared understanding of SEI CMM process areas. The Production Control and Logistics Program Managers outlined the plan:

"Take the components of CMM, we are trying to take the components and foster the capabilities and improve the capabilities in the key process areas. Once we go through the awareness stage, we want to get into each individual project and, based on where they are in the project life cycle, we want to provide them, the team, the support on those key process areas."

The organization has adopted business processes from project management, SEI CMM process areas, and supplier management, in an effort to perform work within the organization's business operations model. Organization members are "process oriented"—they recognize the importance of having formal business process frameworks to perform project-related work.

Theme 3: Organizational structures at the project team level are key to project success. The project structure is important to the success of the project because it determines the project manager level of authority, skills and competencies of the team, and dynamics of the group.

Research participants had different views on structuring projects and organizations to support project management. Most participants agree that the business customer needs to be part of the cross-functional team working with the project manager to meet the project objectives. This is common practice in the Production Control and Logistics Program Manager's area, where the business unit directors work with the program manager in allocating resources to projects.

"Culturally it involved all the stakeholders, we had the business drive it, IT guys being part of it. Kept the scope narrow. Pulled a cross-functional team together and isolated them in one location. All the good stuff."

"Project managers need to have the ability to pull together a cross-functional team into a true team that supports each other as opposed to people that just work with each other; people that have a sense of esprit de corps [about] the project and [about] the agreed-to goals of the project."

Even so, some participants felt that the organization structure needed to be matrixed to optimize project management capabilities across the different IT Division units:

"Matrix structure, in my experience, can be very, very, powerful. And a lot of it boils down again to the people who are at the top of each of the different segments of the organizations and if they can play together."

Others felt that the structure did not influence project performance. They saw it as dependent upon individuals in the organization crossing boundaries between business units to be successful. Individuals amongst the project manager, team members, and stakeholders on the project needed to have a clear understanding of their assigned roles and responsibilities:

"It is the people in the organization that make projects successful."

"...collaboration with the business, teamwork, and a culture that promotes open communications..."

Theme 4: Performance measurement system (PMS) metrics are defined at the individual, project and organizational level to evaluate project success.

A successful project is one in which business objectives are achieved: the company becomes self-sufficient in the use of the technologies, business processes and performance metrics, and implementation is achieved in a reasonable amount of time and at a cost that makes sense, given the magnitude of the business benefit. Individuals recognized the benefits of a measurement system in helping achieve this at the individual, project, and organizational levels:

"Performance management systems are key. You need to have a system that measures profitability, personal metrics, project metrics on time, cost and quality, measures first time to repair, call center metrics on response time, project milestones, and process measures."

"...captured what we thought their strategic objectives are, then we transferred those objectives and definitions of those objectives into measures and then targets, and then actual performance to the targets."

"[Performance measurements are] oriented at getting everybody's oars in the water at the same time."

The Program Manager felt strongly about the need to measure time, cost, and quality because of the organization's compensation plan:

"I think there are three important measures for a project. One is
quality, another is cost, and the other is timing... because my reward and compensation is based on meeting these three."

As part of the change initiatives, the organization expanded the performance measurement systems to include new metrics relating to their business-operating model. These new metrics track vendor performance relative to the delivery of their products and services.

"What are they [vendors] accountable for? [W]hat are these, the critical success factors, deliverables that they are responsible for?, and for suppliers, it goes farther to [whether] there are financial penalties for not doing so if we are executing correctly [following the PM methodology]."

Performance measurement systems designed to measure project success aid the individual project manager, team members, project deliverables, suppliers, and the organization level to meet objectives outlined in the enterprise business plan. In addition, the compensation and reward systems aligned with the project measurements reinforce the importance of established metrics; otherwise, the data will have little tangible consequence. The project management values for the performance measurement systems are determined by the types of measures that are defined at the individual, project and organization levels, and are used to evaluate the individual stakeholders—project managers, program managers, and executive managers—success.

Theme 5: Organizational culture (individual values and beliefs) determines the importance of project manager competencies, performance measurements (project metrics), business processes that are employed to perform project work, and project organization structures (team members) to project success.

The organization's mission statement consists of a set of core values that represent what the company stands for and defines the expectations for the organization members. Core values include customer enthusiasm—develop products and services that create enthusiastic customers; integrity—stand for honesty and trust in everything we do; teamwork—win by thinking and acting together as one company; innovation—challenge conventional thinking, explore new technology, and implement new ideas faster; continuous improvement—set ambitious goals; and individual respect and responsibility—respect others and act responsibly to meet our common goals.

The stories shared by the different participants expressed their internal support of the corporate values. Differences did exist between the individual organizational members in one business unit compared to another unit (horizontally), and between different hierarchical levels within the units (vertically), due to unique life experiences of the individuals involved. The respondents expressed personal values when they reflected on how they made decisions, what they deemed important, and how they led their people. When asked to share stories about organizational cultures that had been successful with project management, they identified cultural values that support project management success and warned against ones that had led to failure:

"Organizations that appreciate the rigor of knowing very clearly what we [IT] are trying to address and then supporting all the processes that go along with it."

"They realize there is so much value in having a regimented process you can repeat over time and get good at..."

"... I think somehow encased in culture is, are we all speaking the same language, and are we all trying to accomplish the same thing?"

"It is beyond a personal perception, the organization is also believing that culture is a key factor to project success..."

"If you had 378,000 people working off the same database, meaning they had all the information, ...we are operating off the same thing, ...we would be hands-down the greatest corporation ever seen on the face of this earth."

Findings

Analyses of the stories shared by the participants confirm that a project management culture exists. Organizational members shared information about the adoption of project management practices and the organizational change efforts that focused on project manager competencies, deployment supporting management processes, organizational project structures (cross-functional teams), and performance measurements at the individual and project levels. The organization studied here confirms the project success model and the need to have a culture that supports project activities.

Evidence of the project culture exemplifies the participants' positive attitudes towards the employment of project management practices and improved performance of the organization. The respondents recognized the need to work within a project management framework (or model) that consisted of competent project managers, cross-functional project team structures, with supporting business processes and performance measures. Values associated with the adoption of project management emanated from the individual project managers and project teams, supporting management processes and performance measurements, and the need for a common project management language. Project management sociotechnical design elements are linked together through a shared set of project management cultural values. According to Eijnatten (1993):

Although you cannot manage a human resource, you can indeed shape environments that mobi-
lize human resources. Human environments are configurations of structured interactive relationships, the specific structure, which may foster or impede the potential development of human resources. Just as the normative concept of democracy can only develop within the framework of structural conditions in a social system, creative organizational cultures can only develop within specific structural contexts. (p. 181)

In the confirmed model, the four dimensions of project success represent an organizational design that enables the adoption of project management in information technology organizations. The four dimensions are interdependent and linked by project management cultural values that relate to the other dimensions—success factors (Hartman and Ashfari, 2002). For instance, the dimension representing project manager competencies relates to the skills, behaviors, and knowledge employed by the project manager to achieve project success. The individual project manager’s skills and competencies span both the social and technical dimensions in dealing
with project team members (macro-social) and executing the project activities (macro-technical). Whereas the project organization design dimension focused on the macro-social aspects of the organization, design structure centered around a matrix structure that is comprised of cross-functional teams. Resource assignment (allocation of project team members) is also influenced by the overall organizational structure and resource management processes (macro-technical) that govern processes for assigning resources to projects. Another linkage example is the relationship that exists between the performance measurement systems (micro-technical) used to monitor organization performance and processes, including measures at the individual, project, and organizational levels, based on the project structure (macro-social) and other management process (macro-technical) employed within the organization. Further, other business processes align with the performance measurement systems (micro-technical), the management of the project resources (macro-social), and the monitoring of the project manager’s performance (macro-social).

Individuals’ values about project management varied from participant to participant within the same unit and across different business units. For instance, one organization unit member valued project performance measures at the individual level (compensation and reward) while another member from the same unit valued measures at the project level (time, cost, and quality). Even though differences existed between the different participants, there were some shared values and beliefs about project management between the members. For instance, everyone agreed on the social and technical aspects of project management at a macro level. They agreed on the structure of cross-functional project teams (macro-social) where team members represent IT, the business customer, and the supplier. They also agreed on the need to employ multiple business processes (macro-technical) that support project-related activities, including project management, system development, business planning, and supplier management. Differences that existed among the various participants’ values and beliefs were at the micro levels (project manager competencies and performance measures). Individual participants identified different skills and capabilities for project managers and different metrics to monitor project performance. This means that, to be an effective project manager in the organization, the individual is expected to have skills and competencies in the areas of project management, personal and interpersonal communications, leadership, and business operations. The same is true for performance measures—project success measures need to be at multiple levels—individual, project, organization, and supplier. Taking a closer look, the similarities and differences that existed among the research participants provide insight into the type of organizational cultures that existed across business units and hierarchy levels.

Many different cultures and subcultures exist in organizations (Baba et al., 1996; Cummings and Worley, 1993; Deal et al., 1982; Frohman, 1998; Goffee and Jones, 1996; Hall, 1989; Hofstede, 1997; Martin, 1992; Quinn and Cameron, 1983; Schein, 1996). The organization studied here has a corporate culture, which is defined by a set of core values that represent expected behaviors of the organization members to act as one company, and which values continuous improvement (Kort, 1999). However, the organization has a fragmented culture due to multiple subcultures (Goffee and Jones, 1996) that exist at the different hierarchical levels and within the different business units. Subcultures that exist share characteristics from two management cultures: an operator culture formed by core technologies used in information technology, and an engineering culture that represents the project work that is performed (Schein, 1996). In addition, there are work cultures defined by the different management disciplines employed (Baba et al., 1996), and a process culture that is focused on how to get work done. These differing cultural values form the project management values framework depicted in Figure 2.

Organization members need to work together to understand the cultural values that exist in the organization in order to improve project performance (Kotter and Heskett, 1992) and organizational effectiveness (Denison, 1990). According to Cameron and Quinn (1999):

The dependence of organizational improvement on culture change is due to the fact that when the values, orientations, definitions, and goals stay constant—even when procedures and strategies are altered—organizations return quickly to the status quo. The same is true for individuals. Personality types, personal styles, and behavioral habits rarely change significantly, despite programs to induce change such as diets, exercise regimens, or charm schools. Without an alteration of the fundamental goals, values, and expectations of organizations or individuals, change remains superficial and short-term in duration. (p. 9)

Due to the different subcultures and cultural values that exist between organization levels, it is important that the organization recognize these differing values and work towards the development of a shared set of values about project management with which to build a strong project management culture. The shared set of values relates to the four dimensions of project success shown in Figure 2. In the absence of these shared values, the organization continues to struggle with the adoption process due to cultural differences that exist between project managers, team members, stakeholders, and executive leaders, and the resulting misalignment of project management values.

Conclusion

Schein (1996) claims that a majority of change programs fail due to the
multiple cultures that exist in organizations and the lack of alignment among them when implementing change or adopting new work methods. For organizations to be successful with the adoption of project management, they need to establish a shared set of values and beliefs (a project management culture) that aligns with the social and technical aspects of project management to achieve the organization’s business objectives.

The successful adoption of new management practices, new business processes, and new technologies depends on organizational members. The success of project management relies on the four dimensions of project success: the project manager’s skills and competencies, organization structure, measurement systems, and management practices that represent an organization’s culture. Organizational values provide the linkages between the organization’s members, structure, systems, and processes used in the adoption of project management methods. To be successful, organizations should work within the project success value framework confirmed in this study to develop a project management culture based on shared cultural values of the organization’s members that support adoption of project management, along with restructuring the organization around projects, establishing an enterprisewide work breakdown structure (WBS), and developing a project manager career position and training (Clawson, 1996; Whitten, 1999) to optimize a project culture (Duncan, 2000).

Hall (1989) stresses that culture is part of everyday life through our personal encounters with other people in and outside of our work environments. Furthermore, people’s perceptions form using their five senses: seeing, touching, smelling, tasting, and hearing. Cognitive ability (logic) of the brain and the individual’s past experiences govern how people react (action chains) to what they perceive, and such reaction varies based on different settings (situations) to which individuals are exposed. The importance of learning one’s culture is that “self-awareness and cultural awareness are inseparable, which means that transcending unconscious culture cannot be accomplished without some degree of self-awareness” (p. 212).

The new project management adoption model presented in this paper provides a framework with which organizations can conduct a formal assessment of their current project management capabilities and, thereby, determine action plans (change initiatives) that need to be completed to improve project performance. The assessment evaluates project manager competencies that exist within the organization, determines what business processes are being executed to support the business model, identifies how resources are allocated to projects (structure), and what performance measurements are in place to support the adoption of project management. The assessment process aids organizations in evaluating their project culture and developing action plans to focus on improved project management performance in the areas of project management competencies, performance measurement systems, supporting business processes, and project structures.

References


Ami, L. (2000). Goals-oriented project management. IIE Solutions, 32(9), 39–41


Devaney, M. (1991, February). Risk, commitment, and project aban-


A guide to the project management body of knowledge (PMBOK® guide). Newtown Square, PA: Author.


KORIN KENDRA is a lead project manager in the Information Systems and Services Division of General Motors, and is responsible for the development of software applications in support of the order fulfillment business process areas. She is also an adjunct professor in the College of Management at Lawrence Technological University. She completed her master's degree in industrial engineering and information systems at the University of Michigan and her PhD in organization development at Benedictine University, and is a certified project management professional (PMP). Her current research activities focus on the effects of organization culture and system design principles on the adoption of project management practices in commercial, government, and non-profit organizations.

LAURA JEAN TAPLIN is principal of The Hawthorne Group and provides consulting services in organizational and individual level change and development. Her client projects focus on key leverage points in organizational change initiatives such as leadership and issues of trust, respect, and control. She is also a part-time faculty member in organizational and consulting psychology at the University of Guelph. She completed her master's degree in organization development at Pepperdine University and her PhD in organization development at Benedictine University, and is a certified management consultant (CMC). Her current research interests focus on leadership, social control, and justice within technology and knowledge work contexts.
Copyright of Project Management Journal is the property of Project Management Institute and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.