

COLLABORATION FOR ORGANIZATION SUCCESS: LINKING ORGANIZATION
SUPPORT OF COLLABORATION AND ORGANIZATION EFFECTIVENESS

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What does it take for organizations to support people working together effectively? What does it mean for an organization to be effective? Does successful collaboration lead to more effective organizations? This study explored these questions both theoretically and empirically in an effort to help organizations understand the most important aspects to consider when attempting to achieve collaboration for organization success. The purpose of this study was to fill some of the gaps in the research by taking a broad, holistic approach to exploring the context required to support collaboration at levels of organizations broader than the team and exploring the links between organization support of collaboration and organization effectiveness. In preparation for the current study, the Organization Support of Collaboration model was developed to identify the broad organization design elements that are required to support collaboration. The Organization Effectiveness model was created to provide a holistic view of what it takes for an organization to be considered effective. The present study empirically validated these models and explored the links between them. Data was collected via a web-based questionnaire administered to a broad sample of individuals who work in organizations. Results supported a model of Organization Support of Collaboration with six factors (Connect to the Environment, Craft a Culture of Collaboration, Understand Work Processes, Design Using an Array of Structures, Build Shared Leadership, and Align Support Systems) and a model of Organization Effectiveness with six factors (Performance, Employee Involvement, Flexibility, Customer Satisfaction, New Customer Development, and Treatment of People). Connect to the

Environment predicted five of the six Organization Effectiveness factors, and Craft a Culture of Collaboration predicted four of the six, notably with a connection to Performance. For the predicted relationships between the models, nine hypotheses were supported, six were not supported, and three unexpected significant relationships were found. Implications for practice and future directions are recommended.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

What does it take for organizations to support people working together effectively? What does it mean for an organization to be effective? Does successful collaboration lead to more effective organizations? The current study explores these questions both theoretically and empirically in an effort to help organizations understand the most important aspects to consider when attempting to achieve collaboration for organization success.

This chapter begins with an overview of the study intended to explore the questions surrounding collaboration for organization success. Next is a section on collaborative work system concepts that provides the conceptual groundwork for the study. Then the literature and concepts on what an organization must do to support effective collaboration is reviewed. After that is a review of what it takes for organizations to be effective. Finally, the current study is reviewed in more depth.

Study Overview

While empirical studies of the effects of collaboration are plentiful at the team or group level (e.g., Hackman, 1990; Johnson & Johnson, 2002; Katzenbach & Smith, 1993), little research has been done at broader levels (e.g., site, corporate, larger departments) of the organization. What broader organization-level work has been done has focused on one aspect, such as rewards or performance management, rather than the context for collaboration as a whole. Several manuals for achieving collaboration at broader organization levels have been written (e.g., Lytle, 1998; Mohrman, Cohen, & Mohrman, 1995; Mohrman, Cohen, & Mohrman,

1997). However, for the most part, only anecdotal evidence of the success of designing collaboration at the broader organization levels exists.

The purpose of this study is to fill some of the gaps in the research by taking a broad, holistic approach to exploring the context required to support collaboration at levels of organizations broader than the team and exploring the links between this organization support of collaboration and organization effectiveness. In preparation for the current study, the organization support of collaboration model was developed to identify the broad organization design elements that are required to support collaboration. The organization effectiveness model was created to provide a holistic view of what it takes for an organization to be considered effective. These models are the culmination of a stream of research that includes a team leadership study using interviews of team members and leaders, a study of team-based support systems, an interview study of experts in the area of team-based organizations, literature review, and experience of the author working with organizations implementing collaborative practices.

The present study empirically validates the models of organization support for collaboration and organization effectiveness and explores the link between them. A web-based questionnaire was administered to a broad sample of individuals who work in organizations. The study is divided into three distinct phases (see Figure 1), each one building on the previous phase. Phase 1: Generate Empirical Model takes an introductory, exploratory look at how the empirical data supports the models. Phase 2: Select Best Fit Models uses a confirmatory approach reviewing the models created through theory and through empirical data analysis (in Phase 1) to determine the model of best fit. Finally, Phase 3: Relationship Between Models investigates the existence of relationships between organization support of collaboration and organization effectiveness.

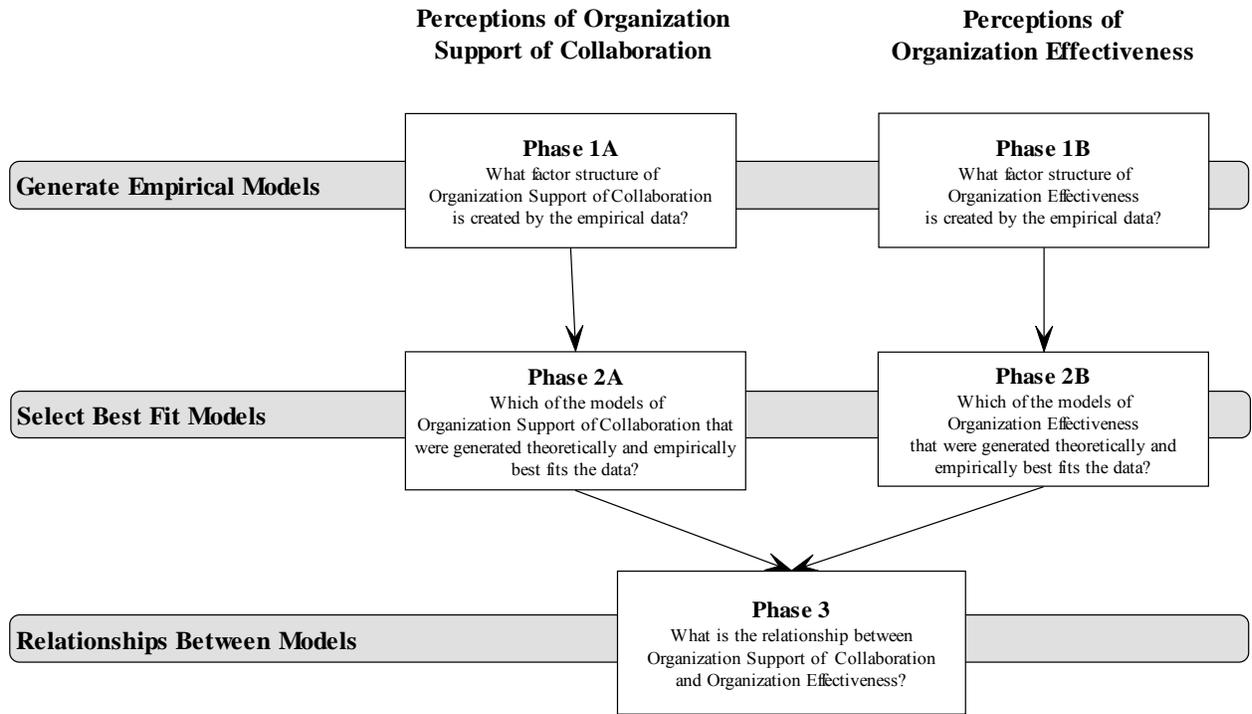


Figure 1. Phases and research questions of the study.

Collaborative Work Systems Concepts

This section lays the foundation for the current study by providing definitions of some basic concepts that will be used throughout this paper.

Formal and Informal Collaboration

Formal and informal collaboration reflect two different angles of encouraging people to work together. Formal and informal collaboration are defined below.

Generally in the fields of organization design and development, the word “collaboration” elicits images of work teams. Work teams are groups of individuals with interdependent work that are held jointly accountable. However, in practice, the word “team” is often improperly used to denote any group of individuals who happen to perform a similar function (such as a single-

functional department), regardless of whether they have interdependent work. Or, the “team” label is placed on interdependent groups but no efforts are made to hold them jointly accountable for their work.

Formal collaboration refers to the working together that results from creating different types of interdependent teams and groups as structures of accountability in the organization. Teams are recognized as teams by the organization, members often create their own rules through some form of chartering, and members are held jointly accountable for accomplishing their work. Formal collaborative structures include temporary or permanent teams, single or multi-function teams, co-located or distributed teams, and cross-functional or function-specific teams. These structures are defined later in this paper.

A common myth is that formal collaboration only occurs through one type of work team. This misconception results in the overuse of one type of team, and organizations using teams tend to “force” this one type on every work situation. Formal collaboration encompasses different types of both group and individual structures that can be applied to fit the nature of different types of work. At the group level, teams can be single-functional or multi-functional, short or long term, part of the accountability system of the organization or parallel to it, and at the worker level, management level, or both. Individuals can support collaboration by contracting to teams for their specialized services, or by acting as collaborative sponsors or facilitators to champion or coach teams (Beyerlein & Harris, 2004).

Formal is not the only form of collaboration; informal collaboration is crucial as well. Informal collaboration refers to the cooperative processes that occur naturally when individuals share similar interests and problems. Learning often occurs informally through conversations at the water cooler, at social events, or in the hallways between workspaces. Traditional

management practices suggest that such downtime is indicative of laziness and is unproductive, so it should be stopped. However, research (Brown & Gray, 1995) suggests that this informal collaboration leads to learning and sharing of information that enhances productivity. Therefore, organizations would be wise to enhance informal collaboration rather than setting up obstacles to stop it.

Informal collaboration is the working together that ensues from organizational norms, values, and practices supporting the natural tendency for humans to want to work together on common issues. Organizations often unintentionally put barriers in the way of informal collaboration by instituting policies and procedures that disrupt it. For example, employees talking in the halls are seen as wasting time when they may be solving problems. To support informal collaboration, not only are these informal conversations allowed, but also they are encouraged through the creation of shared meeting spaces where more informal conversations could take place. Informal collaborative structures include communities of practice, learning communities, and the “water cooler.” These structures are defined later in this paper.

What Is a Collaborative Work System?

A collaborative work system (CWS) is an organizational unit that emerges any time that collaboration takes place, whether it is formal or informal, or occurs intentionally or unintentionally. Intentional focus on CWS requires the conscious and deliberate arrangement of organizational systems aimed at enabling collaboration and limiting impediments to collaborative work. All work groups have elements of collaboration, but intentional focus on CWS increases and improves collaborative capability (Beyerlein, Freedman, McGee, & Moran, 2002; Beyerlein & Harris, 2004).

CWSs come in many shapes and sizes. At the team/group level, CWS types include formal structures such as work teams, project teams, integration teams, and management teams; and informal structures such as learning networks and communities of practice (Beyerlein & Harris, 2004). A list and descriptions of CWS at the team/group level can be seen later in this chapter.

The current study focuses on collaboration at the broader levels of the organization such as sites, corporations, or even large departments spanning across multiple sites. CWS types at the broader organization level include: traditional bureaucracy, organization using teams, spontaneous cooperation organization, team-based organization, and collaborative organization (Beyerlein & Harris, 2004). See Table 1 for a description of these types.

Table 1

Organization Type Descriptions (Beyerlein & Harris, 2004; used with permission from Pfeiffer)

Type	Description
Traditional organization	<ul style="list-style-type: none"> • No teams at any level • Little to no opportunity for people to get together informally to work on problems • Focus of systems (e.g., rewards and compensation, performance management) is on the individual • High level of hierarchy in reporting structure • Decision making is very slow because have to go up and down the chain of command (to my boss, his boss, her boss, etc.)
Spontaneous collaboration organization	<ul style="list-style-type: none"> • Little to no teams used at any level • Lots of opportunity for people to get together informally to work on problems (for example, common spaces like lounges are created and employees are encouraged to meet there to discuss issues) • Focus of systems (e.g., rewards and compensation, performance management) is on the individual, but has components to reinforce people working together informally to solve problems • Medium to low level of hierarchy in reporting structure • Decision making is relatively fast because often can go directly to the person who needs to make the decision
Organization using teams	<ul style="list-style-type: none"> • Some teams used, but only at the worker level • Little to no opportunity for people to get together informally to work on problems • Focus of systems (e.g., rewards and compensation, performance management) is on the individual • Medium to high level of hierarchy in reporting structure • Decision making is slow because have to go up and down the chain of command (to my boss, his boss, her boss, etc.)
Team-based organization	<ul style="list-style-type: none"> • Everyone is on a team at all levels of the organization • Little to no opportunity for people to get together informally (outside of official team meetings) to work on problems • Focus of systems (e.g., rewards and compensation, performance management) is on individuals and teams • Low level of hierarchy in reporting structure (very flat) • Decision making is relatively fast because often can go directly to the team who needs to make the decision
Collaborative organization	<ul style="list-style-type: none"> • A combination of both teams and individuals is used at all levels of the organization (some people are on teams, others are individual supporters) • Lots of opportunity for people to get together informally to work on problems (for example, common spaces like lounges are created and employees are encouraged to meet there to discuss issues) • Focus of systems (e.g., rewards and compensation, performance management) is on individual, team, and organization, depending on the needs of the situation • Low level of hierarchy in reporting structure (very flat) • Decision making is relatively fast because often can go directly to the person who needs to make the decision

Why Focus on Collaborative Work Systems?

Collaboration occurs naturally, but organizations tend to create barriers. Knocking down functional barriers and allowing workers to talk directly to relevant parties and make their own decisions (when possible) enhances natural collaborative processes, and results in better and

faster decisions. The goal of intentional focus on CWS is individuals and groups effectively working together to achieve strategic goals (Beyerlein & Harris, 2004).

Focusing on collaborative work systems helps organizations to create a competitive advantage. Organizations have to work collaboratively, and do it well, to succeed in today's environment. Concentration on CWS helps to create a context for collaborative success. Teams and other collaborative structures have a much better chance of success if the organization is designed to support collaboration. Focusing on CWS means improving not only collaboration within groups, but between groups. This lateral integration promotes significant performance payoffs between teams and decreased failure of isolated teams (Mohrman, Cohen, & Mohrman, Jr., 1995). Finally, intentional focus on CWS facilitates a better connection to the organization's environment and provides flexibility to meet the needs of the environment (including customers), which improves the success and longevity of the organization (Beyerlein & Harris, 2004).

Organization Support of Collaboration

The following sections review the essential components of Collaborative Work Systems at the site level. The claims below are based on a review of literature and projects at the Center for the Study of Work Teams including: 610 interviews with team members and leaders, 28 conferences on teams for 16,000 participants from 350 organizations over 13 years, field work with the steering committees in CWS's, redesign work in several companies, and interviews of 21 recognized experts. The result is thus an integration of findings from the Center's work, the experts, and the several scholars who have published in the area (Harris & Beyerlein, 2003b).

The last two decades ushered in a much more complex business environment, causing two trends in organizations: a need for speed and flexibility, and increased use of teams to help achieve that. Focusing on creating teams alone provided limited success. Recently, focus shifted

to the context around teams and collaboration. In a study of 25 knowledge work teams in four companies, the “team context appeared to be the overwhelming determinant of whether a team functioned effectively in accomplishing its goals” (Mohrman, Cohen, and Mohrman, 1995, p. 34).

When teams are formed without heed to the organizational context, they tend to become isolated and cut off from the rest of the organization. The isolated team becomes akin to a disease in the body; the larger organization acts as an immune system (Pinchot, 1985) doing whatever it can to expel the disease. “When teams are introduced as an isolated practice, they fail. My gut feeling is most are introduced in isolation. ... And time and time again teams fall short on their promise because companies don’t know how to make them work together with other teams” (Dumaine, 1994, p. 92). (Harris & Beyerlein, 2003b).

The next sections share details about the elements of the organization and what they look like when aligned to collaboration. The first section describes an interview study of experts in team-based organizations that was the precursor to the present study. The interview study resulted in a list of organization components and the alignment model of the organization that evolved into the Critical Success Factors of Collaborative Work Systems model used in the present study. The next sections review the literature on each of the elements of the Critical Success Factor model, including: alignment, the work, the environment, culture, structure, systems, role of workers, and role of leaders. Finally, the model used in the current study (Critical Success Factors of Collaborative Work Systems) is summarized.

Interview Study

Before shifting to a broader focus of collaborative work systems, the topic of Team-Based Organizations (TBOs) was the focal point of foundational research. To gain a real-time,

more practically oriented view of TBO, Harris and Beyerlein (2003a) created a qualitative study of professionals in the area (the TBO Interview Study). From March to July 2001, phone interviews were conducted with 20 participants, who each had a minimum of five years of experience with TBOs, and a mean of 13 years experience. The next sections first examine a list of organizational components validated by the interview study, and then present an alignment model of the organization created from the results of the interview study. Finally, the post-interview study development of the alignment model is discussed.

List of organizational components. A list of components developed over years of observation and research was validated through the interview study (Harris & Beyerlein, 2003a; Harris & Steed, 2001). The components list includes primarily support systems, but was expanded to include items such as culture and strategy as well. The interview participants confirmed this as a comprehensive list of organizational components that must be aligned to support collaboration. Interview participants added a few additional components. The organizational components can be seen in Table 2.

Table 2

*List of Organization Components from Interview Study
(Harris & Beyerlein, 2003a; Harris & Steed, 2001).*

Original Components	Components Added by Participants
Reward and recognition systems	Accounting systems
Goal setting system	Union-management relationships
Performance measurement system	Planned people movement
Performance appraisal system	External sensors and channeling
Team design system	Continuous improvement
Communication and information systems	Adaptation component
Culture	Citizenship
Training system	Larger community
Knowledge management system	Orientation
Strategy	Business acumen
Leadership system	Career planning and management
Between-teams integration systems	Personal development
Resource allocation system	
Physical workspace	
Renewal system	
Selection system	
Work process design	

To test the idea that changing these components to align to teams led to the success of the team-based organizing effort, interview participants were asked to give examples of their efforts, and rate the level of change that occurred in each of the original components. These ratings were compiled into an overall change score. This overall change score was then related to the overall success of the change effort. The resulting correlation ($r = .74, p < .01$) supports the idea that these

components must be changed to support teams in order for successful team-based organizing to occur (Harris & Beyerlein, 2003a).

These component ratings were then individually related to the rating of the overall success of the change effort. The correlations were the most statistically significant ($p < .01$) for team design system ($r = .85$), training system ($r = .67$), leadership ($r = .68$), and renewal system ($r = .69$). Correlations were slightly less statistically significant ($p < .05$) for performance measurement system ($r = .52$), Culture ($r = .53$), between-teams integration systems ($r = .58$), and resource allocation system ($r = .56$). While the sample size was small ($n=20$) and simplistic statistics were used in analysis, these results shed light on possible areas of emphasis in the TBO transition.

Interview participants were also asked to give their opinions on the top three most important components to change for the ultimate success of a TBO. The majority of participants named leadership (70%) and culture (50%) as the most crucial TBO components. Team design (30%), communication and information systems (23%), goal setting system (22%), and work process design (20%) were the next most often named components (Harris & Beyerlein, 2003a).

Comparing the two sets of results provides evidence for the most crucial components. The results of this interview study support that leadership and culture are perhaps the most important organization components to be aligned to collaboration for the TBO change effort to succeed (Harris & Beyerlein, 2003a).

Alignment model of the organization. One of the questions asked in the interview study was, “what is a team-based organization?” Answers to this question were categorized and analyzed to develop themes. Figure 2 shows the conceptual model created as a result of the analysis. This is a model for any organization using any type of work. The puzzle pieces of the

model represent alignment, as each piece must align with the others to create an effective whole. Organizations can be aligned to any concept or value, but the alignment model demonstrates that congruent design is the goal. In a TBO, “team” is the concept that the pieces of the organization align to – teams carry out the majority of work, and the rest of the organization pieces are aligned to support the teams (Harris & Beyerlein, 2003b).

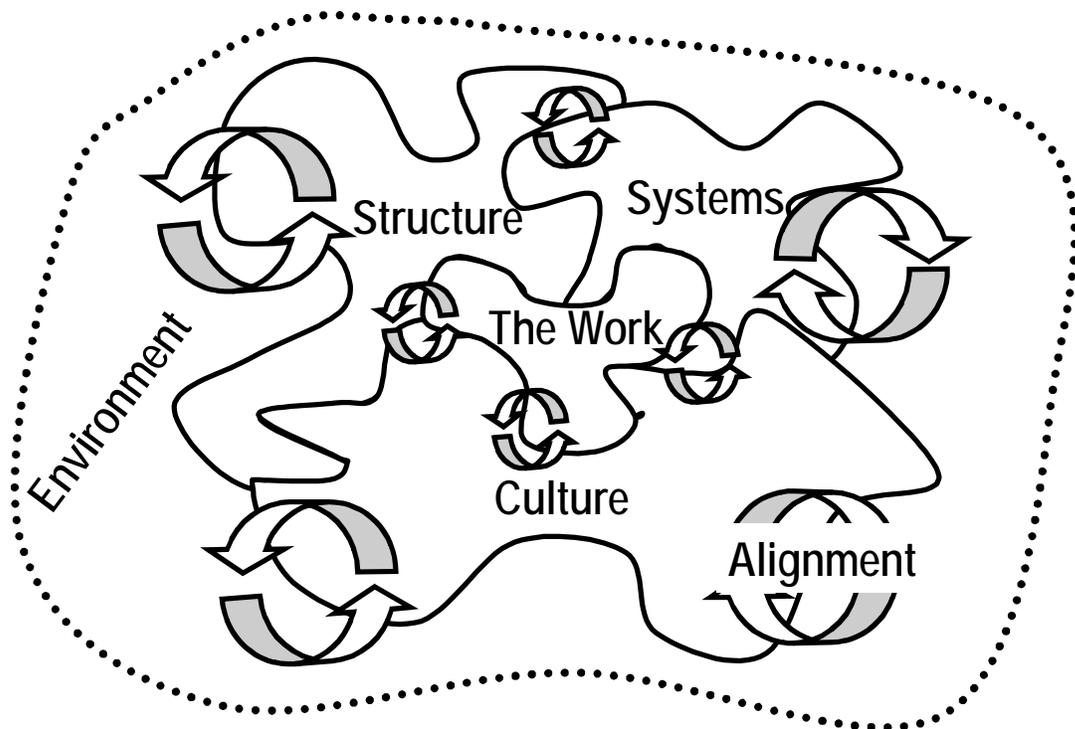


Figure 2. Alignment model of the organization (Harris & Steed, 2001).

The work and the environment represent the semi-fixed parts of the alignment model. They can be influenced somewhat by the organization, but they are largely independent of the actions of the organization. For example, organizations may be able to influence regulators in

their environment, but they do not have total control over them. The work encompasses the task that needs to be completed. Placing work in the center of the model emphasizes the point that the purpose of organizations is to complete their business, whatever that may be. Change initiatives that lose the focus on the work often fail because they lose focus on improving the business. The environment includes the forces outside of the organization – the customers, suppliers, regulators, technologies, and so on. What is the environment is a matter of perspective; at the site level, the corporate office and other sites in the corporation would be considered part of the environment.

The organizational pieces – culture, structure, and systems – must create a bridge of alignment between the work and the environment (Harris & Beyerlein, 2003b). Organizational structure includes the way people are formally organized to carry out the work. Organizational systems are the infrastructure created to support the work and the people doing the work in the organization. Organizational culture is the norms, values, and assumptions that underlie the way work really gets done.

Alignment is the “glue” that holds the organization together – without it, the individual pieces float around aimlessly and no true direction is established. Harris and Beyerlein (2003b) suggest that all the pieces of the alignment model, including the work, the environment, and organizational culture, structure, and systems, must be aligned for optimal organizational performance. This holds true in a TBO just as it does in any organization.

Post-interview study development of model. After the interview study, the alignment model (see Figure 2) was further refined as a result of the development of a practical workbook designed to help those leading the change to a more collaborative organization (see Beyerlein & Harris, 2004). The original alignment model focused on the context of the organization but

neglected the roles of leaders and employees in the organization. Therefore, role of the leader and role of the employee was added. The next sections review literature on the original pieces of the alignment model (alignment, environment, work, culture, systems, and structure) and the new elements (role of leader, role of employee).

Alignment

Alignment is the foundation for successful collaboration. The dictionary defines alignment as “the process of adjusting parts so that they are in proper relative position.” In the organization, "alignment is the degree to which an organization's strategy, design, and culture are cooperating to achieve the same desired goals" (Semler, 1997, p. 23,). When all the parts are cooperating instead of conflicting, people in the organization receive consistent messages about what they are supposed to do. This removes barriers to collaboration, enhances performance, and focuses human capital.(Harris & Beyerlein, 2003a). Alignment theorists suggest that the more the various components of the organization are aligned, the better performance will be (Nadler & Tushman, 1989; Semler, 1997).

Alignment is characterized by four factors: (1) congruence--extent to which systems are compatible, in accord, consistent, and parallel with each other; (2) synchronization--extent to which progress or initiatives within the system are sequenced appropriately; (3) direction--extent to which systems support the organization's overall goals, vision, values, mission, and strategies; (4) accessibility--effort required by teams to obtain the support, including overcoming hurdles and translating information from one language to another (Van Aken, 1997).

If an organization chooses to organize around the concept of collaboration as a means to achieving business results, then all components of the organization should be aligned to support

collaboration. A review of components of the organization and how they can be aligned to support collaboration follows.

The Work

The ultimate objective of the organization is to accomplish its task – whether the work is production, service, or new product development. The work encompasses the tasks to be completed in order for the business to thrive. Work processes break down those tasks into sequential steps. For example, in an airline organization, the work consists of flying passengers from one city to another. Some processes may include selling tickets to customers, preparing the airplane for the journey, the trip itself, and finishing the journey at the destination. And, of course, there are many subprocesses to these processes (Beyerlein & Harris, 2004). An effective CWS initiative enhances the completion of work and anchors all components of the initiative with an understanding of the work.

Despite the fact that most corporations view and reward work individually, work is almost always collaborative in some way (Brown & Duguid, 1991). The next points characterize work in a collaborative setting: interdependent work, whole piece of work, and work requires input from multiple types of expertise. Then some additional points about the work are made: redesigning the work; role of customers, suppliers, and regulators; and the relationship between the work and structure.

Interdependent work. Collaborative work systems require work that is appropriate for collaboration, that is, interdependent tasks that require more than one person to complete them. In a CWS, teams should be created around tasks that are appropriate to teams. Appropriate team tasks require interdependence (Mohrman, Cohen, & Mohrman, 1995; Saavedra, Earley, & Van Dyne, 1993). This interdependence requires the integration of the knowledge and work of

different individuals. Simple, single-function tasks, such as turning a screw to complete a roller skate, would be less appropriate for a team than assembly and inspection of an entire roller skate. In teams, members depend on each other to achieve work goals (Harris & Beyerlein, 2003b). Successful teaming requires a significant investment of resources, so it should not be used when it is not essential.

Whole piece of work. In a team-based organization, the whole organization is designed to create units comprised of the various skills and experiences necessary to do a whole piece of the business (Mohrman, Cohen, & Mohrman, 1995). These units are then given responsibility and accountability for their part of the business. When the overall task is too complex for a single team (e.g., building an airplane), then the work of the team represents a complete piece of the larger project, e.g., the paint team handling the entire exterior of the plane rather than breaking it into tail section, wings, or fuselage for separate work groups, resulting in the work having less segmentation (Goodman, Devadas, & Hughson, 1988; Lawler, 1990).

Collaborative structures often are organized around whole pieces of work such as processes, products, or customers to maximize the use of cross-functional teams that bring diverse experience and expertise together. For example, a team could be responsible for an entire assembly line, rather than the traditional approach where each individual does his part, and throws it to the next person, without regard for the final product (Beyerlein & Harris, 2004). An important result of cross-functional teams looking at a whole piece of work is that the individuals begin to see themselves as customers and suppliers, a mentality that cascades throughout the internal and external supply chains (Harris & Beyerlein, 2003b).

Work requires input from multiple types of expertise. Collaboration is needed when the work process requires input from multiple types of expertise. As a prerequisite for designing

structure, work should be analyzed to determine the types of expertise required to perform the work. Types of expertise needed to routinely perform the work are required in the work process almost daily. Key supporters either only affect the work in special situations or only occasionally are involved with the work (Beyerlein & Harris, 2004).

Redesigning the work. While the characteristics of the work in most situations are fairly set, the task can be reframed through work process redesign (Dalton, 1998). A work process map is a technique for visually representing work processes at a high level. It does not have to be the detailed engineering-driven version of work process mapping that many use as part of a quality improvement process. Figure 3 shows a simplified example of a work process map. The hypothetical widget production begins in marketing when the customer order is received. Over time, the process is handed off to various functions in the organization. Finally, the widgets are sent to the customer at the end of the process (Beyerlein & Harris, 2004).

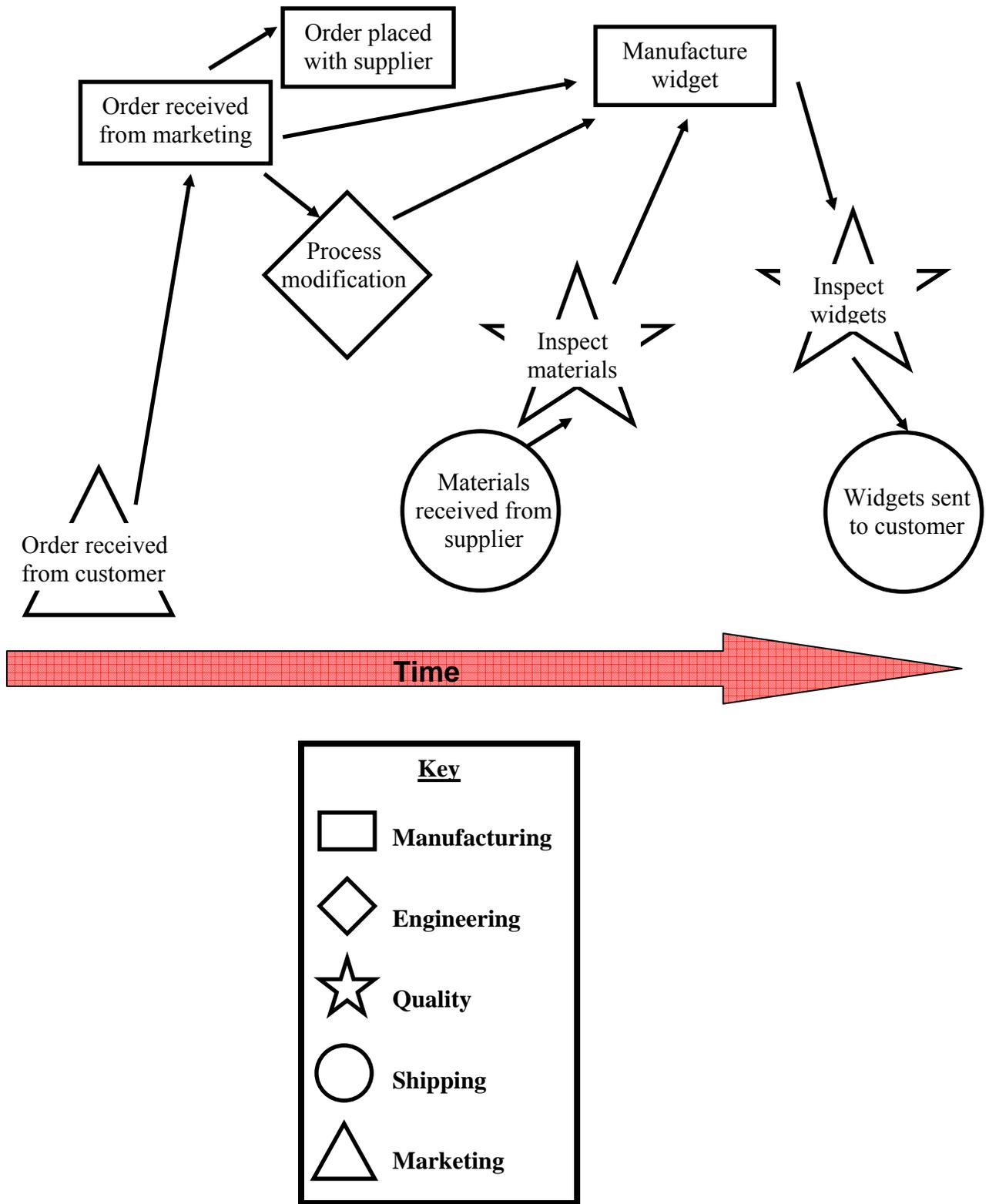


Figure 3. Work process map example (Beyerlein & Harris, 2004; used with permission from Pfeiffer).

Some situations may warrant redesign of the work to become more suitable for collaboration. While the characteristics of the work in most situations are fairly set, the task can be reframed through work process redesign. If work is not amenable to collaboration, then perhaps it should be. Not all work is teamwork, but some work that looks like individual work can be redesigned to be teamwork and can be better as a result. For example, scheduling maintenance on equipment may traditionally be done solely by an individual, but may be enhanced through use of a team where operators of the equipment being serviced, those performing the maintenance, and operators of equipment before and after that equipment in the overall process come together to give input on the best way to schedule that maintenance to allow for minimal disruption of the work. Or collaboration could occur through off-line teams or informally working together (Beyerlein & Harris, 2004).

Role of customers, suppliers, and regulators. An important aspect of understanding the work is to be familiar with customer, supplier, and regulator requirements and how they relate to work processes. Customers are internal or external people who receive outputs (products and/or services) of the work process. Suppliers are internal or external people who provide inputs (raw materials or information) to the work process. Regulators are federal, state, and local regulatory agencies that affect aspects of the work process. Unions could be considered regulators as well. The best way to identify customer, supplier, and regulator requirements is to ask them (Beyerlein & Harris, 2004).

Relationship between the work and structure. Understanding the work is especially important in determining the appropriate structure to carry out that work. It is critical to match the type of work to the appropriate mechanism for carrying out the work, whether it is a team, individual, or some other structure (Beyerlein & Harris, 2004). Not everyone in a collaborative

organization has to be in a team, and team members usually spend a significant proportion of their time working individually.

The Environment

The environment of the organization includes the surrounding conditions, influences, or forces that shape organizational growth and development. Examples range from customers and suppliers to the industry and economy. By attending to the environment and responding reactively or proactively, the organization becomes adaptive and is better suited to survive in today's fast-changing world. Building in mechanisms for scanning the environment and acting upon that information helps to make adaptability a habit (Beyerlein & Harris, 2004).

Trends in today's environment include globalization, a fast pace of change, increased complexity, permeable organizational boundaries, and rapid technology change. A central principle of organizational design is matching the logic of organization to the environment and to the work or task to be accomplished (Dijksterhuis & Van den Bosch, 1999). Traditional command-and-control organizations were appropriate for their time, when the environment was simpler and more stable, the work more segmented, and employees less educated. However, command-and-control is structurally maladaptive, given today's environment. At present, the environment calls for organizations that are flat, fast, and flexible, (c.f., Crawford & Brungardt, 1999). To fit this complex environment, organizations must "complexify" (Tenkasi, 1997). The complexity of the environment should be matched by the complexity of the organization's design. Building collaboration into the organization is one method of decentralizing knowledge and decision-making to promote flat, fast, and flexible organizations (Harris & Beyerlein, 2003b).

The environment exists both within the organization and outside the organization. What is considered the environment depends on perspective. To a team, other teams and individuals, the manager, the department, site, and corporate office are parts of the environment in addition to the environment outside the organization. Since this study focuses on the site level of the organization, this review focuses on the elements of the environment from the perspective of the site. See Table 3 for a list of environmental elements at the site level (Beyerlein & Harris, 2004).

Table 3

*Elements of the Organization's Environment
(Beyerlein & Harris, 2004; used with permission from Pfeiffer)*

Element	Description
Customers	The users of the site's products or services
Suppliers	People who provide inputs (materials ranging from equipment to physical materials to information) for the site to create products or services.
Government regulators	Federal, state, and local regulatory agencies that affect aspects of the work.
Unions	Any unions who oversee labor-management relations.
Corporate office	Individuals or groups within the corporation to whom site reports.
Other sites in the corporation	Other sites in organization that may have to work with this site.
Community	Families of employees, and community citizenship.
Shareholders	The shareholders or owners of corporation or site.
Political climate	The overall viewpoint of the people in political power that may affect aspects of the business through laws, financial regulations, ability to obtain government contracts, etc.
Economy	The system or range of economic activity in the world, country, or community. The economy affects things such as the job market, the business a site is able to bring in, and resulting growth or decline of the organization.
Competitors	Other corporations who are in competition for the work in the industry.
Partner organizations	Organizations with whom site or corporation has strategic alliances, shared contracts, or any other form of partnership.
The industry	Advances in expertise affecting the organization's field or industry, including new techniques, processes, and technology.

The current environment demands adaptability. Adaptable organizations are flexible organizations with reorganization ability. Adaptability requires both awareness of the environment and the capability to change internally to meet the challenges of the environment. This need for constant environmental awareness calls for continuous links to the environment.

CWS builds in adaptability by creating a few broad rules (Beyerlein, Freedman, McGee, & Moran, 2002; Brown & Eisenhardt, 1998) then facilitating self-design by the teams. Teams are in touch with customers and suppliers and can make rapid adjustments when changes occur in the market place. The bottom level is the most adaptable level within the organization (Baskin, 2001). Stifling the bottom through rigid control reduces adaptability, whereas supporting it increases adaptability. Part of remaining adaptable includes connecting beyond the traditional walls of the organization to multiple organizations. The number, quality and malleability of those connections add up to the viability of the organization (Harris & Beyerlein, 2003b).

Connecting to the environment provides information about the environment. Having the information is just the first step – acting upon that information allows the organization to become adaptable. The organization must be aware of its environment and able to respond both proactively and reactively in order to survive and thrive in today's fast-changing world. Adaptability means the organization is more agile and flexible. Any major change initiative (especially the CWS initiative) within an organization must have adaptability as one of its primary goals (Beyerlein & Harris, 2004).

Adapting effectively depends on collaborating several ways: getting information from the environment, sharing information so all are informed, working together to create solutions to new demands from the environment, and working together informally to maximize the speed and flexibility necessary for fast response to the environment. Collaborative capability ought to make adaptation more effective (Beyerlein & Harris, 2004).

A significant intelligence function is required – scanning and making sense of the environment and understanding the competition and the customer. An important part of this is promoting open lines of communication between employees, customers, and suppliers. In

general, a healthy system has numerous and effective connections to suppliers and to customers (both internal and external). The more active and positive connections the system has to others in the environment, the more viable it is. Organizations that invest in building a healthy web of relationships will be more informed, prepared, and agile; ready to quickly respond to challenges and opportunities coming from the environment (Beyerlein & Harris, 2004).

Collecting information about the environment is worthless unless it is distributed to the right people and acted upon. The more distribution and implementation processes that can be built into the system, the more likely it is that the habit of linking to the environment will be formed. Processes can be implemented to make sure the information is reviewed and necessary actions taken. This may take the form of periodic environmental scanning meetings with action items assigned, an individual assigned to take on the role of environmental scanner, or whatever other options are appropriate (Beyerlein & Harris, 2004).

Connecting to the environment is traditionally the responsibility of top management, with little involvement from lower levels. In a successful CWS, all levels connect to the environment and contribute information about the environment in a way that makes tracking, using, and archiving by the organization reasonably easy. Involving everyone in the process of understanding and adapting to the environment requires people working together to develop creative and adaptive solutions. As more people “pool” their knowledge of the environment, chances for developing new opportunities for the organization should occur (Beyerlein & Harris, 2004).

Culture

Most scholars view organizational culture as a pattern of shared organizational values, basic underlying assumptions, and informal norms that guide the way work is accomplished in

an organization (e.g., Schein, 1996; Ott, 1989). This approach assumes that a shared cognitive framework creates a social glue that holds people together in an organization. Hofstede and Neuijen (1990) argue that such a view may be more appropriate for thinking about national cultures. They emphasize shared practices as the glue in work organizations that enables coordination of activity. They state that “most authors will probably agree on the following characteristics of the organizational/corporate culture construct: it is (1) holistic, (2) historically determined, (3) related to anthropological concepts, (4) socially constructed, (5) soft, and (6) difficult to change” (Harris & Beyerlein, 2003b).

Culture is the unwritten way work really gets done, and does not necessarily align with formal policies and procedures (Beyerlein & Harris, 2004). Culture can be used in a practical way through the use of values. Values are the beliefs of a person or group in which they have an investment; a principle, standard, or quality considered worthwhile or desirable. For example, “trust in workers to get the job done” is an organizational value. Understanding the current values of the organization, envisioning the ideal values, and using the ideal values as signposts for changes in the organization bring about indirect culture change (Beyerlein & Harris, 2004).

Culture is one of the most important organizational components to be changed for successful collaborative work systems. Unfortunately, it is also perhaps the most difficult component to change, requiring years of effort for real change to occur (Beyerlein & Harris, 2004). Culture cannot be changed directly; instead, changing other more-concrete parts of the organization such as systems and structures promotes culture change indirectly.

Some reasons to change culture include successful collaboration and direction setting. Traditional organization culture emphasizes individuals and competition, not collaboration and cooperation. When culture is truly collaborative, collaboration emerges spontaneously, and does

not always require formal team structure and charter. When culture is aligned with the business strategy, everyone’s values, norms, and assumptions support it rather than conflict. Also, everyone knows the strategy, so they have similar criteria when making decisions (Beyerlein & Harris, 2004).

In a collaborative culture, people want to work together. To highlight aspects of collaborative culture, an extreme contrast is shown in Table 4. In a “blame” culture, people work against each other. These extremes are shown to make a point, but there really is a continuum in between where most organizations fall (Beyerlein & Harris, 2004).

Table 4

Blame vs. Collaborative Culture (Beyerlein & Harris, 2004; used with permission from Pfeiffer)

Blame	Collaborative
Time and energy spent looking for scapegoats	Time and energy spent looking for partners
Little time spent solving problems	Spontaneous problem solving
Collaboration is forced, not natural	Collaboration is efficient and habitual
When a problem arises, impulse is to shift blame, avoid the problem, or point fingers	When a problem arises, impulse is to solve it in a group of appropriate individuals
Committed to working against each other	Committed to cooperation and collaboration
No clue how to pull a group together to work on something, and no desire to do so	Understand how to pull a group together to work on something

For collaborative work systems to be most effective, the organization’s values, assumptions, and norms should support collaboration and cooperation. Some characteristics of a collaborative culture are listed in Table 5.

Table 5

Characteristics of Collaborative Culture
(Beyerlein & Harris, 2004; used with permission from Pfeiffer)

Characteristics of Collaborative Culture	
A “cooperation” mindset, where collaboration is efficient and habitual	Decisions made collaboratively, when appropriate
Respect for expertise instead of position	Partnership instead of dictatorship
Continuous improvement	Employees are involved in decision-making
Shared responsibility	A focus on relationship building
Decision making, responsibility, and authority are placed where the work is actually done	A natural tendency to select collaborative methods for reaching solutions
Not a “me” but a “we” mindset	Formal and informal collaboration promoted
Commitment of all employees to the success of the organization	Support for natural, informal processes of learning and communication
Employees fully engaged mentally, physically, and emotionally in their work	Different functions and departments work together without disruptive conflict
Open atmosphere of trust and respect	People of different races, genders, and religions work together in harmony

The term organization culture represents the overall feeling about the way things are done in an organization. However, there are lots of different subcultures within an organization. A subculture is a group within the organization that has distinctive patterns of behavior and beliefs. Some types of subcultures include: Management, Labor, Engineering, Production, Marketing, Quality Assurance, Union employees, Nonunion employees, and Different races, nationalities, and religions (Beyerlein & Harris, 2004). Schein (1996) suggests that the differences in culture between management, engineering, and production are so large that it is as if they are living in different countries. Alignment across these boundaries can be achieved through participation in the CWS initiative. Creating a change leadership team with a vertical slice of the organization as

a membership criterion provides the opportunity for input from all the subgroups, so shared understanding can unite them across their current boundaries (Beyerlein & Harris, 2004).

An entrepreneur is a person who organizes, operates, and assumes the risk for a business venture. Successful entrepreneurs are highly self-motivated, personally involved, assertive, opportunistic, optimistic, responsive, and responsible. In a CWS, where the organization structure is flatter and empowerment of all employees is greater, a spirit of entrepreneurship is important. The goal is to create a culture where all work groups perform as if they own their own business. The focus is quality, cost, and results, and on anything to meet customer needs (Beyerlein & Harris, 2004).

The culture in a CWS is very different than in a traditional organization. The assumptions of the CWS culture explored below include: decision making where the work is done, teams make decisions when appropriate, engagement of employees leads to increased commitment, support informal collaboration, continuous improvement, and people take responsibility for solving problems.

Decision making where the work is done. Because the employees actually doing the work have the most expertise about that work, it makes sense to push decision making down to these workers. In a traditional organization, the decision is passed upward to someone who may not have the relevant expertise to make the decision. As a result of decision-making being pushed down to lower levels, work is coordinated and controlled at local levels as well. Day-to-day operational decisions are made lower in the organization. Responsibility, authority, and autonomy are pushed to the team level to support decision-making (Harris & Beyerlein, 2003b; Harris & Steed, 2001).

Teams make decisions when appropriate. When crucial decisions require multiple types of expertise, the team makes the decisions. However, a delicate balance exists between individual decision-making and willingness to involve others. Excess in either direction creates dysfunction. If all decisions become team decisions, then decision-making becomes an arduous, frustrating, and time-consuming process. If too many decisions become individual decisions, then the trust and cohesiveness of the team dissipates and quality of decisions suffers where multiple perspectives would have helped. Also, sometimes decisions must be escalated to a higher level in the organization. It is important for team members to work together to determine which types of decisions are team decisions, and which are not (Harris & Beyerlein, 2003b).

Engagement of employees leads to increased commitment. A foundational principle of effective CWSs is the engagement of all employees in the work process. Employees also must be engaged in the design and change process. People are engaged well beyond traditional workplace norms. Employees are invited into decision-making and ownership of outcomes. The increased engagement leads to greater ownership and commitment. It also mitigates the negative impact of stress (Maslach & Leiter, 1997). Because of the increased participation, everyone has a shared stake in the output. The responsibility for the health of the organization is shared much more evenly across the organization. It is not just top management's job to figure it out.

Support informal collaboration. Design teams and steering committees tend to focus on formally supporting collaboration. However, many ways of supporting collaboration exist informally. Collaboration is a natural process. It is observable in workplaces at all times. People huddling around the water cooler and sharing lunch are often collaborating. Informal networks serve many purposes. Xerox field technicians used informal gatherings such as lunch time to share tacit knowledge and improve field performance. The key is to stay out of the way of the

informal collaboration that occurs, and to support it by creating the space for connection in terms of time, place, resources, and norms. Informal collaboration is even more crucial in CWSs because of the relationship building that helps develop trust needed to work in the flatter, more relationship-oriented environment.

Continuous improvement. Most organizations pursuing CWS are concurrently, or have previously, pursued a continuous improvement initiative such as Total Quality Management. With or without the formal initiative, continuous improvement is crucial to CWS success. Since CWS is a journey, not an end, to survive in the fast-changing environment, continuous improvement is critical. Operationally, this means that people are trained in and have time dedicated to work on continuous improvement.

People take responsibility for solving problems. In a traditional environment, when a problem occurs, the tendency is to “pass the buck” or look the other way to avoid blame. In a CWS, teams have shared responsibility and accountability for a whole piece of work, and therefore take responsibility for problems. TBO is a more mature work system, where people take responsibility rather than waiting for the manager to do it (Harris & Steed, 2001).

Structure

Organizational structure represents the way people are organized to carry out the work. An organization chart traditionally depicts this, though the organization chart does not always adequately reflect how things are really done. The formal reporting relationships of the organization often determine with whom people communicate. Structure creates barriers between one reporting group and another. For the sake of everyday functioning, these barriers are necessary because boundaries create identity and mark whole pieces of work. If designed

incorrectly, people may have to go up and down chains of command to make decisions and may not have direct access to people who are crucial links in their work (Beyerlein & Harris, 2004).

The next sections go into detail about collaborative structure. First, a figure demonstrating how structures work together introduces the different types of collaborative structures available to meet the needs of the work and the environment. Then, the three levels of collaborative structure (group, individual, and integration) are defined. Finally, some considerations for structure in a collaborative situation are shared.

An array of collaborative structures. Figure 4 demonstrates how different collaborative structures can be used together within an organization. The figure demonstrates both formal (such as teams) and informal (such as learning networks) structures, at both the individual- and group-level. Integration mechanisms (such as integration teams or liaisons) serve to connect between groups. Ideally, an organization promotes both formal and informal forms of collaborative structure, but the choice is made by each organization. Usually neither is adequately planned or supported. The informal is emergent, often as a “work-around” to deal with barriers inadvertently put up by the organization. Some of the structures overlap, as individuals can be members of multiple structures (Beyerlein & Harris, 2004).

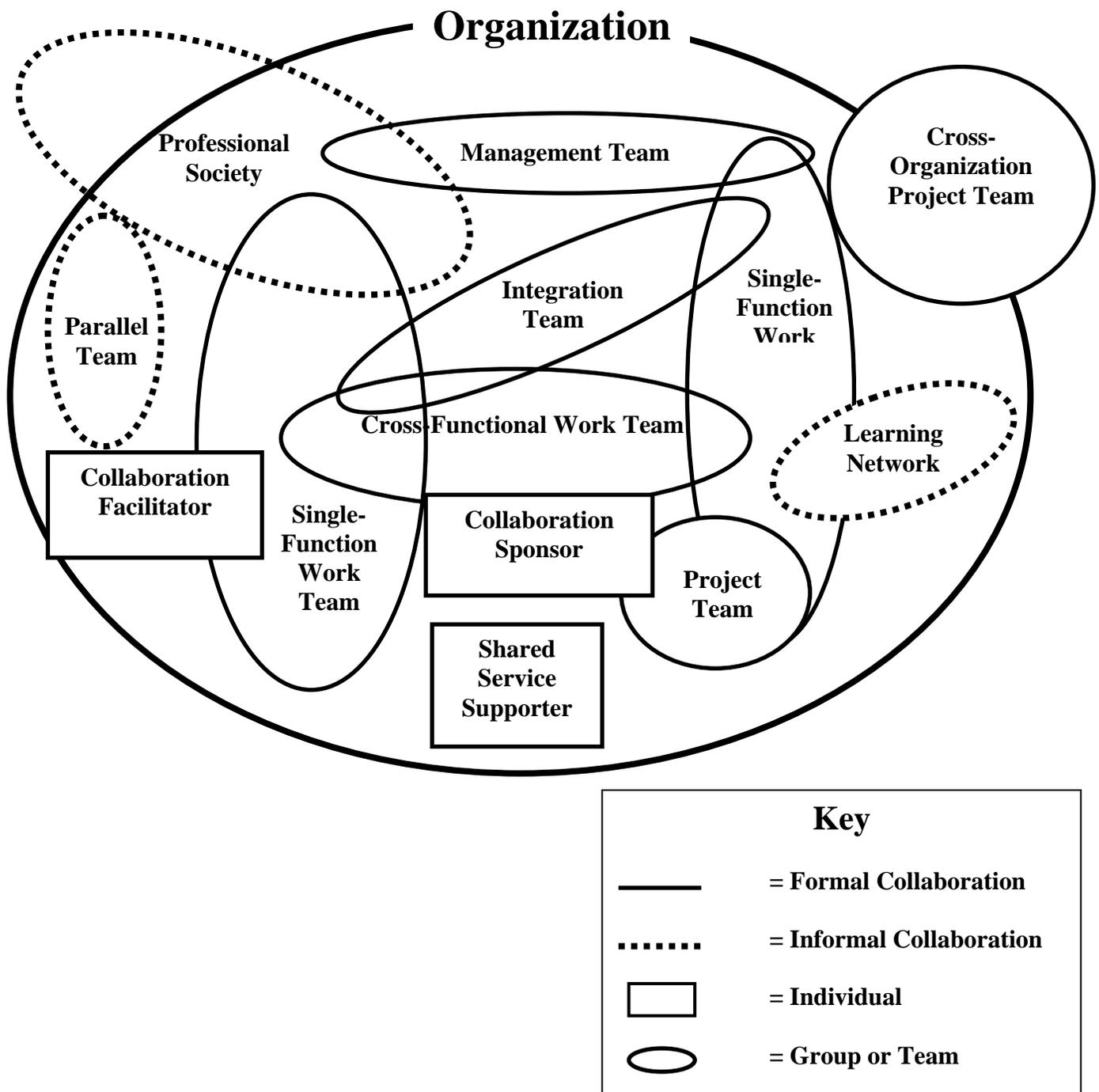


Figure 4. An array of collaborative structures (Beyerlein & Harris, 2004; used with permission from Pfeiffer).

Collaborative structures exist at three levels: groups, individuals, and integration mechanisms. Each level is explained briefly below. Please note that the descriptions in the group category have more detail than those in the individual and integration mechanisms levels. In practice, group level terminology is much better defined and commonly used across organizations, whereas individual level and integration mechanisms are general concepts that are defined and used differently across organizations. The different level of detail in the categories reflects this (Beyerlein & Harris, 2004).

Group-level collaborative structures. Group-level collaborative structures include formal collaborative structures such as teams and work groups, and informal structures such as communities of practice. See Table 6 for a list of group-level structures. Formal and informal structures at the group-level are discussed below.

Table 6

*Formal and Informal Collaborative Structures at the Group Level
(adapted from Beyerlein & Harris, 2004; used with permission from Pfeiffer).*

		Group
Formal Collaboration	Work team	<p>Characteristics: Formal, permanent, long-term, both single and multi-functional, plan their work, develop their own processes to enhance the work</p> <p>A group of employees who have shared goals and are jointly accountable to each other and to organization for a piece of work or service. The members work together to improve operations, handle daily problems, and plan their work.</p>
	Work group	<p>Characteristics: Formal, permanent, long-term, both single and multi-functional, does not plan own work or develop their own processes</p> <p>A group of employees responsible for a piece of work or service but who do not have shared goals and joint accountability. Members may share ideas informally but do not formally come together to plan their work and improve their processes.</p>
	Project team	<p>Characteristics: Formal, temporary, short-term, multi-functional</p> <p>A cross-functional group that is brought together to complete clearly defined tasks, lasting from several months to years, that quickly disbands once the project is complete (e.g., product development teams) Task is usually assigned by management. The team members may not be involved in the whole project and may be called in as needed.</p>
	Management team	<p>Characteristics: Formal, permanent, multi-functional</p> <p>Comprised of management members from multiple functions, each usually concerned with particular issues. Responsible for coordinating, integrating, and providing direction to other teams.</p>
	Parallel team	<p>Characteristics: Informal, temporary, multi-functional, limited authority</p> <p>Comprised of individuals from different areas of the organization, parallel teams are short-term teams with limited authority (usually with recommendation power only) that exist in parallel to existing organizational structure.</p>
Informal Collaboration	Community of practice	<p>Characteristics: Informal, long-term, voluntary membership, no authority</p> <p>Groups of people that share similar goals and interests and, in pursuit of these goals and interests, apply common practices, use the same tools, and express themselves in a common language (example: Xerox copy repair technicians). Story telling is a common method of learning.</p>
	Learning network	<p>Characteristics: Informal, long-term, voluntary membership, no authority</p> <p>Groups of people with similar interests and needs who get together either virtually or face-to-face to share learnings (example: oil rig technicians). Often develop their own knowledge management systems (example: websites, shared databases) to capture and share knowledge.</p>
	Professional society	<p>Characteristics: Informal, long-term, voluntary membership, no authority</p> <p>Groups of people with similar professional interests (example: engineering) who join together to develop professional standards, share their work, and advance their profession.</p>

Formal collaborative structures at the group-level primarily consist of different types of teams. A team is a group of individuals who is interdependent in tasks, shares responsibility for outcomes, has a shared purpose, sees themselves and is seen by others as an intact social entity embedded in one or more social systems (e.g., business unit, corporation), and manages relationships across organizational boundaries (Cohen & Bailey, 1997). Teams can be temporary or permanent, single function or multi-functional, inside one organization or across several, and have co-located or distributed membership. Cohen and Bailey (1997) identified four types of teams in their review of empirical team studies published from 1990 to 1996. Work teams are long term and fairly stable teams that are responsible for producing goods or services. Parallel teams are short-term teams with limited authority (usually with recommendation power only) that exist in parallel to existing organizational structure. Project teams are short-term teams that are created to complete a specific goal or objective, and then the team is disbanded. Project teams usually have cross-functional membership. Finally, management teams are long-term teams of managers that coordinate, integrate, and provide direction to other teams (Harris & Beyerlein, 2003b).

Informal collaborative structures at the group-level are structures that are not part of the accountability system of the organization. The concept of communities of practice (CoPs) highlights the importance of informal forms of collaborative structure. The knowledge era calls for a different kind of organizational structure, one that focuses on knowledge as a valuable resource. Brown and Gray (1995) believe that CoPs are the critical building blocks of a knowledge-based company. CoPs enable organizations to learn from their successes and failures, and incorporate these lessons back into the communities. The results are increased organizational flexibility, organizational learning, innovation, and personal benefits.

In the 1980's, anthropologists from the Xerox Palo Alto Research Center (PARC) observed a group of copier technicians to see how they actually did their jobs. The anthropologists saw that the technical representatives made an effort to spend time with each other, informally swapping stories from the field. While a traditional reengineer would have recommended cutting this “hanging around the water cooler” time, the anthropologists realized that these informal conversations were where learning occurred. As it turned out, the copier technicians learned more from each other than from the manual distributed by the organization. Instead of prohibiting them, Xerox decided to expand the informal conversations (Brown & Gray, 1995). These informal learning groups were termed “communities of practice” (CoPs) by Lave and Wenger (1991).

A CoP is “a naturally occurring and evolving collection of people who together engage in particular kinds of activity, and who come to develop and share ways of doing things – ways of talking, beliefs, values, and practices – as a result of their joint involvement in that activity” (Galagan, 1993, p. 33). These groups share similar goals and interests, and, in pursuit of these goals and interests, apply common practices, use the same tools and express themselves in a common language. Ultimately, they create their own culture, complete with similar beliefs and value systems. Part of this culture is being aware of the range of goals and beliefs held, as well as techniques used, by community members at large. The motivation for becoming a member is that it is the best way to learn the practice. The best way to access the knowledge is to interact with the community (Brown & Gray, 1995).

Supporting communities of practice can be done by developing architecture to preserve and enhance the healthy autonomy of communities, while building interconnectedness through which to disseminate the results of separate communities' experiments, via stories and narratives

(Brown & Duguid, 1991). For managers, it is important to legitimize and support the myriad enacting activities perpetuated by its individual members, without being intrusive.

Some of the collaborative processes that CoPs engage in include identifying vision and mission, framing problems, setting goals, arguing and engaging in dialogue, theory-building and testing, storytelling, and the making of contracts and agreements (Drath & Palus, 1994). Many of these collaborative ideas are similar to the disciplines of the learning organization that Senge (1994) espouses, but with more of a focus on the informal occasions in which they occur.

Mohrman, Tenkasi, and Mohrman (1997) found that one of the weaknesses of team-based organizations is lack of deep-discipline knowledge. In the pursuit of becoming teams and learning team behaviors, the depth of functional knowledge is compromised, perhaps due to the disruption of CoPs that were in place before the move to teams. Perhaps tapping into the idea of CoPs could be an answer to retaining and building the functional knowledge again. In pursuit of this idea, McDermott and de Merode (1997), suggest creating double-knit organizations, where both project teams and learning communities (CoPs) work side by side. Project teams could retain the benefits of teams, such as increased communication and cycle time for the product, while the CoPs could help in building deep functional knowledge.

Individual-level collaborative structures. This category includes shared service providers and other individuals who play collaborative roles by supporting or working with different groups, but either have jobs that are not very interdependent with others or have specialized skills that warrant working with many different groups (Beyerlein & Harris, 2004). For more on the individual role of leaders, see “Role of Leaders.” See Table 7 for a list of collaborative structures at the individual level.

Table 7

*Collaborative Structures at the Individual Level
(Beyerlein & Harris, 2004; used with permission from Pfeiffer).*

Individual	
Shared service supporter	Individuals in specialized roles or with rare knowledge become contract workers to teams and groups rather than official members of lots of teams and groups.
Individual contributor	Individual contributors work on tasks with little to no interdependence, so have no reason to be formally connected to any group.
Collaboration sponsor	Individuals with no formal authority over groups or teams they assist who act as a “mentor” to teams or groups by checking on their progress towards developing their own processes, working with them to determine needs, championing them to other parts of the organization, and helping them get resources to develop them as groups or teams.
Collaboration facilitator	Facilitates team processes in order to assist coaches to develop effective teams. This may include facilitation of meetings, conflict resolution, authority transfer, goal development, leadership emergence, and interpersonal cooperation.
Collaboration consultant	Individuals with expertise in collaboration who act as resource to the CLT to help develop the CWS. Resource areas may include organization design, development of support systems, design of assessment of coaching behaviors, continued skill development, debriefing sessions, behavioral observations, and process suggestions.

Integration mechanisms. Integration mechanisms connect interdependent groups (e.g., groups providing different services to the same customers or different parts of the same service) to enhance communication and cooperation and limit cooperation. Integration mechanisms can also connect groups and individuals to the outside environment, and connect the CWS site to other sites and the corporate entity (Beyerlein & Harris, 2004). Integration teams can be created where representatives from several teams work together (Mohrman, Tenkasi, & Mohrman, 2000). See Table 8 for a list and descriptions of integration structures.

Table 8

Integration Collaborative Structures
 (Beyerlein & Harris, 2004; used with permission from Pfeiffer)

Integration	
Starpoints	Team members who take lead responsibility for dealing with their team’s issues relating to a particular aspect (example: quality, safety and health, administrative, training, customer service) for the team. Each team has a person fulfilling a starpoint role for each of the designated areas. Starpoints across teams for the same aspect (example: safety and health) meet to address needs in their area of responsibility.
Boundary workers	Individuals who are members of more than one team or group who are responsible for communicating relevant issues from each team or group to the other team or group.
Integration teams	Representatives from multiple teams or groups who work together to integrate the work of the represented teams or groups. They may be responsible for elements such as prioritizing tasks, identifying problems, or determining how a change in one team or group affects another.
Liaison roles	Member of one group or team who is responsible for acting as an “ambassador” by bringing issues to another group or team.

Considerations for structure in a collaborative situation. This section reviews some caveats for structure in a collaborative situation. Points to consider include: when to collaborate, varying levels of empowerment, relationship of structure and the work, flexible structure, and structures between organizations.

Organizations using CWS often fall into the trap of thinking that every decision must be made collaboratively and that everyone must belong to a formal team. This is unrealistic and often counterproductive. Instead, the organization must create an understanding for when to collaborate and when to work individually. This understanding occurs both at the design level (when a team is appropriate and when an individual is appropriate) and within teams or groups (when does the team make a decision and when is it acceptable for a team member to make a decision) (Beyerlein & Harris, 2004). Often individuals in specialized roles or with rare

knowledge become contract workers to the teams rather than official members of teams. Collaboration comes at a cost of time, effort, and other resources needed to integrate and communicate effectively. Teams represent a complex solution that is too costly when individuals can do the job, but a wise investment when outcomes depend on collaboration (Beyerlein & Harris, 2004).

Different types of tasks may call for different levels of empowerment. Ray and Bronstein (1995) describe a continuum of group structures as follows:

- (a) Type I: Leader centered/leader focused
- (b) Type II: Leader centered/function focused
- (c) Type III: Leader centered/integrated-task focused
- (d) Type IV: Self-led/time and task focused
- (e) Type V: Self-led/task focused

As a team becomes more competent, it is able to take on increasing levels of empowerment. As levels of competency and accompanying empowerment increase, the team becomes more able to make decisions and act on their own, without reliance on a manager or supervisor. (Harris & Beyerlein, 2003b). As teams become more self-managed, they become more responsible for planning and scheduling their work, making decisions about how the work is to be done, and setting their own goals and rewards.

Organizational structure design should be based on a thorough assessment of work processes and an understanding of the types of skills and abilities needed to perform those work processes. Structure should facilitate, not hinder, the work. Often organizational structure is created for the convenience of management, with less regard to the work itself. For example, the following statement is often heard, “he reports to me because there was no one else to do it”

(Beyerlein & Harris, 2004). In a collaborative organization, teams are organized around processes, products, or customers in order to maximize the use of cross-functional teams that bring diverse experience and expertise together. Because of the process or product focus, the collaborative organization has a more lateral focus to work as opposed to a vertical silo focus (Harris & Beyerlein, 2003b; Harris & Steed, 2001).

Because flexibility and adaptability are so important to meeting the demands of the ever-changing business environment, organizational structure of a CWS must be able to flex and change as well. Because of the different needs, many different types of collaborative structures exist. A mix of structures is used to meet the needs of each situation (Beyerlein & Harris, 2004).

As the boundaries of organizations become more permeable, groups may have members from more than one organization (such as different organizations working together to complete a government contract like developing new military aircraft) (Beyerlein & Harris, 2004). As organization boundaries become more permeable and more partnerships between organizations develop to conduct work together, collaborative structures may extend beyond the boundaries of the organization

Systems

Using the human immune system as a metaphor, the organization often treats changes to the system like white blood cells do an intruding disease; it gathers the forces to surround the change and “kills” it. The existing organizational immune system can kill the CWS initiative before it can get started. Changing support systems to support collaboration is one way that the “immune system” is changed (Beyerlein & Harris, 2004). The next sections summarize support systems concepts, review different types of support systems, and present considerations for planning support systems change.

Support systems concepts. The idea of changing the context of collaboration is overwhelming when looked at from a broad perspective. The term “support system” is used to further define the organizational surroundings. A support system is “part of the organizational infrastructure that facilitates carrying out the processes necessary to do the work; to manage, control, coordinate, and improve it; and to manage the people who are doing it” (Mohrman, Cohen, and Mohrman, 1995, p. 302). Rewards and compensation, recognition, training, and performance management are examples of support systems. Through modifying and creating systems, collaborative work systems build cooperation and collaboration into the organizational context (Beyerlein & Harris, 2004). Organizational support systems should (Mohrman, Cohen, and Mohrman, 1995):

- (a) Support the work being done in the organization.
- (b) Fit with the way the organization is designed.
- (c) Change to fit new logic when the organizational design changes.
- (d) Support desired behavior (in this case, collaboration).

Traditional support systems are set up to reinforce individual work and, perhaps unintentionally, competition between workers. CWS requires collaboration and cooperation, so systems must reinforce teamwork. For example, a traditional system typically bases pay solely on individual contributions, which sets up a situation where individuals are competing for pay. In a CWS situation, if a team is instructed to work together on projects, yet the reward system is based on individual contributions (for example, the person with the highest sales numbers on the team gets a bonus), chances are quite high that the desired teamwork will not occur. Instead, to foster collaboration and cooperation, CWS-based reward systems need a component to reward the team for accomplishing team goals (Beyerlein & Harris, 2004). Table 9 characterizes the

differences between traditional and collaborative systems (see also Mohrman, Cohen, and Mohrman, 1995).

Table 9

*Traditional versus Collaborative Support Systems
(Beyerlein & Harris, 2004; used with permission from Pfeiffer)*

Traditional	Collaborative
Systems are oriented toward the individual	Systems are collectively oriented
Systems are dependent on manager input only	Systems are open to input of all
Systems are accessible to managers only	Systems are accessible to all
Systems are inflexible and change slowly, if at all	Systems are flexible and capable of quick change
Systems are generic, “one-size fits all”	Systems are tailored to meet the needs of each group
Groups frequently have to create “work-arounds” for systems	The needs of groups are always met by systems, eliminating the need for “work-arounds”

Organizations need supports in place for all aspects of performance. Formal, informal, or a combination can be used, as long as sufficient support is provided in some manner. For example, formal support may include performance appraisal systems that tie into compensation systems. Examples of informal support include informal methods of feedback such as in-the-moment critique and “how are we doing” reviews at team meetings (Beyerlein & Harris, 2004).

Support can occur at individual, team, and organization levels. For example, in the rewards system, compensation may be necessary at all three levels – for meeting individual, team, and organizational goals. Most likely, all three levels of support are necessary for each support system, though the proportions may vary (Beyerlein & Harris, 2004).

To be an adaptive organization, employees need access to the outside world. Incorporating these links into support systems is one way to ensure this access. For example, the

learning system could incorporate databases that allow access to current newspapers and articles to ensure that employees have the most current data possible (Beyerlein & Harris, 2004). To deal with the quickly changing needs of the external environment, individuals and teams within the organization need to be able to change quickly. Support systems must adjust rapidly to meet these change requirements (Beyerlein & Harris, 2004; Harris & Beyerlein, 2003b).

A crucial part of the environment to which support systems must be aligned is the strategic goals of the organization. Every system must be tied to those strategic goals. Every decision made should be based on the strategic goals. After all, the reason the organization is in business is to complete the work, and the strategic goals are the way completing the work is defined. If people at all levels are making decisions with the strategic goals in mind, then alignment is achieved (Beyerlein & Harris, 2004).

The whole array of support systems should also be viewed as a system. When individual support systems conflict with each other, quality of support drops, and team performance drops with it (Harris & Beyerlein, 2003b).

Types of support systems. Hall (1998) operationalized team environment in terms of nine support systems: (a) executive management, (b) direct supervision, (c) group design, (d) performance definition, (e) performance review, (f) training, (g) rewards, (h) information, and (i) integration. Some literature (e.g., Howell, Bowen, Dorfman, Kerr, & Podsakoff, 1997) considers systems such as these to be substitutes for leadership, where some sort of system replaces leadership tasks traditionally maintained by an individual. This research “focuses on whether subordinates are receiving needed task guidance and incentives to perform without taking it for granted that the formal leader is the primary supplier” (Howell et al., 1997, p. 23).

The list below expands on Hall's (1998) research, and comes from five years of research on team-based support systems (Beyerlein & Harris, 2003).

- (a) Leadership, including executive leaders, direct supervision, team leaders, and team members/shared leadership
- (b) Organization and team design
- (c) Performance management, including goal setting, performance measurement, performance feedback, rewards, and recognition
- (d) Financial and resource allocation
- (e) Learning, including communication, information, knowledge management, and training
- (f) Physical workspace and tools
- (g) Integration, including between-teams integration, teams and systems integration, and change initiatives integration
- (h) Creativity and innovation

Table 10 lists a wide variety of support systems and what they look like in a collaborative setting. Table 11 is another list of definitions of support systems and supporting references.

Table 10

*Collaborative Applications of Support Systems
(Beyerlein & Harris, 2004; used with permission from Pfeiffer)*

Support System	Collaborative Applications
<p><i>Goal setting system</i></p> <p>Methods of establishing aligned goals (e.g., goals, priorities, and tasks)</p>	<ul style="list-style-type: none"> • Align goals across organization levels (horizontal and vertical). • Facilitate shared understanding and common commitment to goals. • Give employees input into higher-level goals and responsibility for setting their own goals. • Utilize systematic goal-setting procedures. • Ensure clarity of goals. • Create processes for prioritizing goals when goal conflict occurs. • Create realistic goals, with some that require a stretch.
<p><i>Performance measurement system</i></p> <p>Methods of identifying and measuring appropriate performance</p>	<ul style="list-style-type: none"> • Measure what you value – what you measure is what gets done! • Use both formal and informal measurement. • Use measurements that are understandable, useful, available, and meaningful. • Use principles of valid measurement. • Measure what people have control or influence over. • Measure to improve performance, not to micro-manage, punish, or place blame. • Measure at multiple levels – individual, team or group, and organization. • Measure the intangibles (e.g., “soft” data such as quality of decision making and communication between groups) as well as the tangibles (e.g., “hard” data such as cost and quality).
<p><i>Performance feedback system</i></p> <p>Methods (formal & informal) of relaying information regarding appropriate performance and other desired behaviors associated with performance</p>	<ul style="list-style-type: none"> • Use both formal and informal feedback systems. • Only give feedback on things within that person’s or group’s influence. • Give feedback to members at all levels (e.g., individual, team, between-team and organizational). • Create mechanisms for feedback that do not require a person to deliver it (e.g., quality systems embedded in the task itself). • Create an atmosphere where people are open to feedback, value it, and make use of it for performance improvement. • Make time to listen, reflect on feedback, and make improvements accordingly (at individual, team, between-team, and organizational levels). • Ensure feedback is given in a timely manner. • Ensure that formal and informal feedback systems focus on the performance, not the personal characteristics, of an individual.

(table continues)

Table 10 (continued).

Support System	Collaborative Applications
<p><i>Reward and recognition system</i></p> <p>Methods of rewarding and recognizing performance and other desired behaviors (individual, team, business unit levels of performance)</p>	<ul style="list-style-type: none"> • Highlight both intrinsic (e.g., opportunity to learn new skills) and extrinsic (e.g., pay) rewards. • Create rewards and recognition at individual, team, between-team, and organizational levels. • Align rewards and recognition to what is valued. • Ensure that rewards and recognition are fair (the procedure itself and consistent application of the procedure) and given in a timely manner. • Ensure that employees share in the outcomes of the organization. • Create both informal and formal rewards and recognition. • Create meaning around rewards and recognition – don’t assume that something that is rewarding to you is rewarding for all. Ask people about what they want. • Recognize publicly. • Realize that sometimes recognition from peers is more important than gifts.
<p><i>Financial system</i></p> <p>Financial systems to support collaboration, including the accounting and reporting systems</p>	<ul style="list-style-type: none"> • Capture the value that teams add and make sure it is fed back to top strategic decision makers, the team itself, and anyone else who is relevant. • Share financial information with team members to give them the business knowledge. • Go beyond the traditional short-term focus of financial and accounting systems by creating long-term measures to give to long-term investors and support validity of CWS initiative. • Financial and control systems must be changed so people (especially support groups) are reinforced for supporting teams.
<p><i>Resource allocation system</i></p> <p>Processes for ensuring that teams get the resources they need to get the work done</p>	<ul style="list-style-type: none"> • Ensure that employees have the responsibility, accountability, and authority to get the resources that they need. • Establish assessment processes to determine where employees need additional resources. • Create new expectations of people providing resources (e.g., purchasing). Reinforce these expectations with other support systems.
<p><i>Communication system</i></p> <p>Methods for communication throughout the organization</p>	<ul style="list-style-type: none"> • Create formal (e.g., newsletters) and informal (e.g., learning forums) mechanisms for communication. • Facilitate communication in all directions. • Manage the grapevine – the informal communication networks in your organization. • Value the “water cooler” – the informal sharing places in your organization. • Publish the progress of the CLT and CWS initiative in as many venues as possible (e.g., bulletin boards, newsletters, emails, town hall meetings, websites, posters, t-shirts, etc.). • Tailor the method of communication to each audience. • Communicate via integration mechanisms (see integration section). • Make CLT accessible to as many employees as possible.

(table continues)

Table 10 (*continued*).

Support System	Collaborative Applications
<p><i>Information system</i></p> <p>Methods for employees to get the information they need to perform effectively</p>	<ul style="list-style-type: none"> • Utilize non-technical information systems, such as meetings within and across groups, and white boards with current issues listed. • Make technology people-friendly – get input from people in creating the systems. • Create accountability in the information technology group (e.g., measure how well the employees utilize the technology). • Make sure teams have the tools in place (e.g., computers where they can be used) to access technology. • Give employees access to all the information (e.g., business accounting information) they need to contribute to overall performance, not just the information you think they need. • Deal with the realities of corporate mandated systems while attending to the needs of employees. • Educate and influence corporate to institute enterprise-wide systems (e.g., performance appraisal) that are flexible enough to meet the needs of teams.
<p><i>Knowledge management system</i></p> <p>Processes for acquiring, organizing, and sharing, and utilizing knowledge</p>	<ul style="list-style-type: none"> • Identify, capture, and share best practices. • Recognize that knowledge management is more than a database. But use technology whenever possible to store information and promote sharing. • Create mentoring programs to pair more experienced and knowledgeable workers with less experienced workers. • Remove barriers to sharing learning. • Create platforms that enable sharing – use a combination of technology, organizational structure and processes, and culture. • When using technology, use multi-media approaches to reach as many sensory levels as possible. • Recognize the value of unspoken knowledge and create mechanisms for translating it into spoken knowledge. • Use story telling to share valued learnings. • Encourage teams to create shared databases.
<p><i>Training system</i></p> <p>Methods for teams and individuals to identify and get the skills needed to perform (e.g., interpersonal skills training, business skills training)</p>	<ul style="list-style-type: none"> • Make training sessions work sessions as well. • Balance between technical, business, and social skills training. • Create processes that allow employees to determine their training needs and timing. • Build internal capacity to deliver and create training. • Consider carefully who should deliver the training – who is capable and who is best suited to deliver the message. • Take employees from where they are to where they need to be, without time as the sole focus. • Involve appropriate people in the development of training – e.g., quality people in quality training, etc. • If “off the shelf” solutions are used, tailor them to your needs. • Get help from outside sources (e.g., consultants, local groups and universities) if necessary. • Create processes to determine whether the training is working. • Match the type of training (classroom, mentoring, on-the-job, coaching, conferences, site visits, workshops, etc.) to the need. • Incorporate real feedback (peer, boss, etc.) into training • When possible, conduct team training in intact teams. • Help teams bring new members up to speed (e.g., time, resources).

(table continues)

Table 10 (continued).

Support System	Collaborative Applications
<p><i>Selection system</i></p> <p>Processes for bringing new and transferred employees with the right skills into the right teams</p>	<ul style="list-style-type: none"> • Create new succession planning mechanisms. • As teams gain expertise, give them an increased role in selection (interviews, etc.). • If the team is involved in selection, its contributions must be in line with legal requirements for selection. Make sure the team has the resources available to deal with legal and policy issues (e.g., Human Resources department assistance). • If team members are given a voice in selection, make sure they understand that their input is heard, and explain when a different decision is made. • Ensure diversity of perspective and expertise – moderate level of diversity so the team members can establish some cohesiveness, but not fall victim to groupthink. • Let teams have a role in determining competencies required for new team members.
<p><i>Physical workspace and tools</i></p> <p>The actual spaces in which the employees and teams work. If it is a virtual team, then the “space” created by technology (e.g., budgets, tools, and computers)</p>	<ul style="list-style-type: none"> • Make sure employees have the tools they need and that they work properly. • Reorganize the workspace so that it is conducive to collaboration. • Allow employee input into redesign of workspace. • Recognize shared work issues and come up with joint solutions and norms (e.g., same workspace for different shifts). • Ensure that teams have computers, storage space, etc., for maintenance of team records and documents. • Provide proper training on tools to gain full value of the tool. • Create team meeting spaces. • When possible, physically co-locate team members to promote informal communications. • When physical co-location is not possible, provide technology to simulate physical co-location as much as possible. • Provide employees with any special facilities needs.
<p><i>Integration</i></p> <p>Methods for aligning, defragmenting, creating a holistic organization, capitalizing on the “between” spaces</p>	<ul style="list-style-type: none"> • Integrate between teams so they cooperate instead of compete. • Ensure that between-support systems are aligned. • Ensure that multiple change initiatives are aligned in terms of complementary content and sequence. • Use integration mechanisms such as liaison roles, integration teams, and multiple team membership. • Periodically assess the alignment between all the parts. • Identify problem areas where pieces are not fitting together and do something about it. • Identify priorities and solve conflicts between parts.

(table continues)

Table 10 (continued).

Support System	Collaborative Applications
<p><i>Organization design</i></p> <p>Methods of looking at the organization as a whole, determining appropriate places for teams, and supporting them through support system design and culture</p>	<ul style="list-style-type: none"> • The design of the organization sets the context for decisions in designing the teams. • Match the design to the environment and the type of work. • Design in flexibility and speed. • Create a few strict rules at the organizational level to guide design – too many rules creates problems at lower levels. • Continually assess how the design is working and adjust appropriately. • Look for opportunities for using teams, then match the correct type of team to the opportunity. But remember that not all tasks are team tasks, so design for individuals when appropriate. • Design in ways that create between-team opportunities for adding value. Do not allow teams to become the new silos.
<p><i>Team design</i></p> <p>At the team level, making sure the team has the inputs it needs to get the work done</p>	<ul style="list-style-type: none"> • Treat team as customer. Provide what is needed to get the job done. • Ensure appropriate team structure (e.g., team leader, team facilitator, etc.). • Ensure appropriate team membership (e.g., correct skills and experiences to get the job done) and size. • Design appropriate individual jobs. • Ensure team design fits the task (e.g., self-managing teams, task force, project team, cross-functional team, etc.). • Ensure effective decision processes and decision escalation paths. • Ensure role clarity (one mechanism is effective team charters that are revised as needed).
<p><i>Leadership system</i></p> <p>Formal and informal processes of distributing leadership throughout the organization, including supporting formally-appointed leaders at all levels in learning the skills necessary to support collaboration.</p>	<ul style="list-style-type: none"> • Show formally appointed leaders how their roles should change to support collaboration, thereby increasing the chances that these leaders will support the CWS initiative. • Support the development of the characteristics of collaborative leadership. • Create momentum for change with senior manager support. • Preserve the expertise of the middle managers, even if the goal is a flatter organization. If the “middle” is eliminated, new roles might include: sponsors, champions of change effort, consultants, integrator roles (vertical and horizontal), and customer/supplier liaison roles. • Transform traditional direct supervisors into coaches, who help develop internal processes of teams and gradually transition some of their tasks to teams while taking on a more strategic role.

Table 11

Definitions and References for Collaborative Support Systems (Harris & Beyerlein, 2003b).

Category	Support System	Collaborative Definition	References
Leadership	Executive leaders	Formal and informal processes that top leaders use to create leadership conducive to teamwork.	Beyerlein & Harris, 2003 Hall, 1998 Leader's roles – Sundstrom and associates, 1999
	Direct supervision	Formal and informal processes that direct supervisors use to create leadership conducive to teamwork.	Beyerlein & Harris, 2003 Hall, 1998 Leader's roles – Sundstrom and associates, 1999
	Team leaders	Formal and informal processes that team leaders use to create leadership conducive to teamwork.	Beyerlein & Harris, 2003 Leader's roles – Sundstrom and associates, 1999
	Team members/shared leadership	Formal and informal processes that team members use to create leadership conducive to teamwork.	Beyerlein & Harris, 2003
Design	Organization design	Methods of looking at the organization as a whole and determining appropriate places for teams, and supporting them through support system design and culture work.	Beyerlein & Harris, 2003 Group design - Hall, 1998 Team structure, Sundstrom and associates, 1999
	Team design	At the team level, making sure the team has the inputs it needs to get the work done.	Beyerlein & Harris, 2003 Team structure, Sundstrom and associates, 1999
Integration	Between-teams integration	Methods for ensuring that teams do not become the new silos, and instead are pieces of an integrated whole (e.g., informal integration, formal leadership roles, and policies).	Beyerlein & Harris, 2003
	Change initiatives integration	Methods for ensuring that multiple change initiatives are aligned in terms of complementary content and sequence.	Beyerlein & Harris, 2003

(table continues)

Table 11 (*continued*).

Category	Support System	Collaborative Definition	References
Performance management	Goal setting system	Methods of establishing aligned goals (e.g., goals, priorities, and tasks).	Beyerlein & Harris, 2003 Direction setting - Mohrman, Cohen, Mohrman, 1995
	Performance measurement system	Methods of identifying and measuring appropriate performance.	Beyerlein & Harris, 2003 Defining performance – Hall, 1998 Defining performance - Mohrman, Cohen, Mohrman, 1995 Measurement and feedback - Sundstrom and associates, 1999
	Performance feedback system	Methods (formal & informal) of reviewing and appraising appropriate performance and other desired behaviors associated with performance.	Beyerlein & Harris, 2003 Performance appraisal – Hall, 1998 Reviewing performance - Mohrman, Cohen, Mohrman, 1995 Measurement and feedback - Sundstrom and associates, 1999
	Reward system	Methods of rewarding performance and other desired behaviors (individual, team, business unit levels of performance).	Beyerlein & Harris, 2003 Hall, 1998 Rewarding performance - Mohrman, Cohen, Mohrman, 1995
	Recognition system	Methods recognizing, formally and informally, performance and other desired behaviors (individual, team, business unit levels of performance).	Beyerlein & Harris, 2003
Selection system	Selection system	Processes for bringing new and transferred employees with the right skills into the right teams.	Beyerlein & Harris, 2003 Team staffing - Sundstrom and associates, 1999
Creativity and innovation	Creativity and innovation system	Methods for ensuring that creativity and innovation are built into the system.	Beyerlein & Harris, 2003

(*table continues*)

Table 11 (*continued*).

Category	Support System	Collaborative Definition	References
Learning (formal and informal)	Communication system	Methods for communication throughout the organization.	Beyerlein & Harris, 2003 Mohrman, Cohen, Mohrman, 1995 Communication technology - Sundstrom and associates, 1999
	Information system	Methods for teams to get the information it needs to perform effectively (access & sharing, e.g., common databases, goals, and priorities)	Beyerlein & Harris, 2003 Hall, 1998 Information technology - Mohrman, Cohen, Mohrman, 1995 Sundstrom and associates, 1999
	Knowledge management system	Processes for acquiring, organizing, and sharing, and utilizing knowledge.	Beyerlein & Harris, 2003
	Training system	Methods for teams and individuals to identify and get the skills needed to perform (e.g., interpersonal skills training, and business skills training).	Beyerlein & Harris, 2003 Hall, 1998 Developing performance - Mohrman, Cohen, Mohrman, 1995 Sundstrom and associates, 1999
Physical workspace and tools	Physical workspace and tools	The actual space in which the team works. If it is a virtual team, then the “space” created by technology (e.g., budgets, tools, and computers)	Beyerlein & Harris, 2003 Facility - Sundstrom and associates, 1999
Change and Renewal	Renewal system	Methods for periodically reevaluating and changing organizational design and systems, when necessary.	Beyerlein & Harris, 2003

Planning support systems change. Support systems are so large that they are difficult to design and manage. One approach is the creation of a strategic design plan for support systems development that can link with the employee empowerment plan (see “Role of Employees”) and the plan defining the changing roles of leaders (see “Role of Leaders”). This plan then becomes the guiding force for support systems development (Beyerlein & Harris, 2004).

One reality that often hinders support systems change is inflexible enterprise-wide systems that are mandated by the corporate office. It is up to the change leadership team and others in the organization to find creative ways to deal with demands of both enterprise-wide systems and needs of the CWS business unit (Beyerlein & Harris, 2004). When possible, support systems should create an umbrella so the organization can remain a cohesive whole, yet be flexible to meet the needs of various teams and individuals under the umbrella of support (Harris & Beyerlein, 2003b).

Creating a successful context for collaboration requires intentional effort. The time and effort required to change support systems is huge – it takes much more time to implement changes than to plan them. An “iceberg effect” happens when changing support systems. At first, only the tip of the iceberg above the water is seen, looking like relatively small changes. However, upon further investigation, the extent of needed change that was hiding under the water is revealed. To deal with the “iceberg effect,” plans need to be flexible to deal with unforeseen hurdles (Beyerlein & Harris, 2004).

Creating committees around support systems areas is one way to focus intentional effort and make change manageable. Committees should have representatives from affected stakeholders and include key implementers and decision makers of the support systems being changed. For example, the rewards support system committee would need someone from the

department responsible for creating and implementing compensation system changes as a member. The support systems strategic planning tool becomes the “charter” for each of the committees (Beyerlein & Harris, 2004). To maintain alignment, support systems committees must integrate within their groups and across all support systems committees.

Role of Employees

In a collaborative organization, workers gradually become more empowered. Empowerment means increasing authority, ability, and accountability of employees to accomplish their work. Authority means giving employees the power and freedom to manage and accomplish tasks and make relevant decisions. Accountability means holding individuals and groups answerable for accomplishing assigned tasks. Ability means having the necessary information, skills, and knowledge for effective decision making and task completion (Beyerlein & Harris, 2004).

Empowerment is important because it unleashes the hearts and minds of the individual employees and the synergies that emerge from effective collaboration. Empowerment improves personal and organizational performance, creates shared leadership, and provides the backbone of successful teams. Empowerment increases involvement and commitment while keeping individual and team decisions in alignment with organizational goals and enhances personal development as employees gain new skills (Beyerlein & Harris, 2004).

Empowerment is often perceived as sharing power, but it is more about creating power. Empowerment means shifting responsibility for some of the managers’ daily tasks to employees. As employees become more empowered, managers have more time for strategic activities (such as improving processes and seeking out new customers) to improve the business. In essence, empowerment of managers should increase along with that of employees. Managers often fear

empowerment because they think it takes away their jobs. The present study argues that empowerment should create new organization-enhancing strategic roles for managers, not elimination. As the team (or employee) becomes more empowered and takes on more responsibility, the manager is able to shift his or her daily responsibilities to the team. This leaves the manager free to take on more strategic responsibilities. Empowerment allows both the manager and team to achieve more (Beyerlein & Harris, 2004).

True empowerment requires a foundation of trust. Trust requires respect, consistency, clarity, openness and honesty. Managers may fail to trust employees to be accountable when empowered. Employees may suspect hidden motives and agendas. Trust can be supported by creating environments where people are involved in decision making, communication goes in all directions, and employees are truly heard and their suggestions implemented (Beyerlein & Harris, 2004).

Empowerment sometimes means letting groups take risks so they can learn from their mistakes. Having check systems in place for decisions (such as criteria for a good decision, approval from management) provides a safety net. It is important to clarify who makes what decisions where (for example, use a decision making responsibility chart), and under what conditions those decisions may be overturned. Guidelines for when decisions should be escalated and how those escalated decisions should be handled provide clarification and minimize confusion (Beyerlein & Harris, 2004).

Leaders create conditions where empowerment can occur by sharing power, information, and decision making. Leaders must back up their talk about empowerment with their actions. Traditional leaders often cave in to pressure from others in organization to “make that person do

their job.” Empowered leaders must resist the pressure to micro-manage, which represents a very short-term perspective (Beyerlein & Harris, 2004).

How empowered an organization must be to be successful varies by organization, and this empowerment level should be consciously chosen by the leadership (Guillory & Galindo, 1995). An extension of this principle is that the empowerment level of each structure (teams, groups, and individuals) in the organization must be consciously chosen (Beyerlein & Harris, 2004).

Managers should consider the following when choosing empowerment level (Beyerlein & Harris, 2004):

- Direct control desired by management. Is management comfortable with empowering its workforce with decision-making authority and responsibility? Choose levels of empowerment that management can handle.
- Team or group maturity. Does the team or group have experience working together? Do members have a history of working well together?
- Trust. To what degree do employees have trust in each other, in the management, and in the organization?
- Ability. To what extent does the team, group, or individual have the abilities (for example, technical skills, interpersonal skills, business knowledge) to take on the responsibilities empowerment brings?
- Unions and outside regulators. Do union contracts and other regulators (for example, the airline industry is strictly regulated by the FAA) prohibit certain tasks to be done by employees?

- Experience. Does the team, group, or individual have the necessary experience to accomplish the task?
- Authority. Can the organization provide the team, group, or individual with the power to accomplish the task? Will others in the organization accept that power?
- Accountability. Can the organization hold the team, group, or individual accountable for the tasks?

A major hurdle to effective empowerment is lack of a plan. Empowerment should proceed in steps that correspond to the developing capabilities of the team. A study of empowerment which steps across 117 teams in nine companies by the Center for the Study of Work Teams (Beyerlein, Beyerlein, & Richardson, 1993) showed that the first steps in empowerment were usually team responsibility for problem solving and safety decisions. The last steps were those dealing with disciplining, hiring, and firing of employees. Many other responsibilities were arranged in between these extremes of safety and risk (Beyerlein & Harris, 2004).

An empowerment plan is a tool that: describes how you want employee behavior to change as a result of empowerment, helps you develop a common mindset about what empowerment will look like in your organization, can be used to communicate to others, and helps employees understand what it is they have to do to continue their development. Operationalizing empowerment is a difficult challenge, but must be done for employees to understand what needs to be done to get to the next level.

Role of Leaders

Although leadership represents a support system and is treated in that section of this paper, it deserves further notice here, because it is the only system that is responsible for

changing the systems. Leaders are responsible for designing and influencing change in the systems, structures, and processes to support collaboration. It also is one of the hardest systems to change. Organization change starts with self-change. If management does not change, it stifles the rest of the initiative. Moran (1996) discovered that 77% of team initiatives failed due to lack of management support. Managers can be huge hurdles in the CWS initiative. Managers should be shown their new roles so they are willing to let go of old ones (Beyerlein & Harris, 2004).

A leader is traditionally seen as a person in a formal position of power in the organization. To become a more collaborative organization, formal leaders empower others, distributing leadership throughout the organization. Since leadership is distributed throughout the organization, it should be viewed as a system. Leadership in a CWS encompasses the people in formal positions of power (such as managers and supervisors), but also includes the worker level (Beyerlein & Harris, 2004).

Organization leaders advocate CWS through words and actions, which are indicative of their management philosophy. First, the management philosophy must be one of involvement. The organization is built on the principle that people have a right to be involved in matters that affect them. In return, people will make decisions in the best interest of the organization because of awareness of mutual benefit. Second, management development must be built around the concepts of collaboration and empowerment, focusing on a collaborative, facilitative, developmental role. Part of this includes redefining the ego role to become less controlling. Top management in the business unit (as well as the other levels of management) must have announced and demonstrated commitment to collaboration to succeed (Harris & Beyerlein, 2003b).

Collaborative leadership does not mean including everyone in the decision making process for every decision. Instead, it means involvement when involvement is appropriate. Leaders in a CWS pick the appropriate style of leadership for each situation. Appropriate leadership style depends on such factors as the maturity or experience of the individual or group, the level in the organization, and the type of decision to be made (simple or complex, routine or non-routine, etc.) (Beyerlein & Harris, 2004).

Management's role as the organization's representatives is to relay messages in an effort to cultivate shared understanding and to respect teams' decisions when they are aligned with company efforts. Included in the changing role of the manager in a collaborative organization is the new responsibility of understanding not only the organization's philosophical objectives, but those of individual groups as well. In doing so, they are able to manage and direct teams so that they may accomplish their objectives, while at the same time moving the organization toward its goals in the process (Mohrman, Cohen & Mohrman, 1995). It is a difficult transition to let go of the decision-making authority of the past, and let teams not only make their own decisions, but then act on them.

If a management team is utilized, it must model systematic decision-making processes for other teams to follow (Mohrman et al., 1995). Teams tend to follow the lead of managers, but “walking the walk” is much more powerful than just “talking the talk.” Unfortunately, in reality, management teams often do not use these processes, and the talk falls upon deaf ears when it is incongruent with the walk. Therefore, in organizations using management teams, the ability to be a team player would be a characteristic of effective managers.

The individuals best able to lead the organizational change to the collaborative environment are the formal leaders themselves. Yet, these supervisors and managers are often

reluctant to find “substitutes” for their leadership because they do not know what their new roles will be. In fact, work team management or supervision is often identified as a primary reason why self-managing teams fail to properly develop and yield improvements in productivity, quality, and quality of work life for American workers (Cummings, 1978; Letize & Donovan, 1990; Manz & Sims, 1987; Walton & Schlesinger, 1979; Stewart & Manz, 1995).

In a CWS, formal managers and leaders do not play traditional oversight roles. Instead, they become participative partners with employees – working with and through them, rather than over them -- facilitating a philosophy that employees want to do the right thing for the organization, and tapping the expertise of team members in an environment that is too complex for one person to make good decisions. In a CWS, there is a different role definition of who does what kinds of activities – oversight tasks of traditional managers become the responsibility of the team, leaving the manager free to do more strategic work. Managers have responsibility for cultivating an environment of involvement where everyone is engaged or invited to engage in the business, a supportive environment where participation is the rule, and where everyone’s voice counts. Because of this environment and the increased communications and interaction it brings, top management becomes more aware of the needs, values, and concerns of employees. Formal leaders have to develop facilitative leadership styles, and become less directive with an emphasis on coaching and facilitation. The role of formal leaders is to enable, inspire, and guide the teams (Harris & Beyerlein, 2003b).

Leadership in the community of practice. Leadership in the community of practice is different from traditional command and control leadership models. In the community of practice frame, leadership is seen as a social meaning-making process that occurs in groups of people who are engaged in some activity together. Leadership is the process through which people put

tools (authority, norms, values, work systems) to work to create meaning (Drath & Palus, 1994). Instead of a generic force that the “leader” can apply, leadership is part of a context, a process that arises in various forms and with various effects whenever people attempt to work together. Anyone in the community of practice can be part of the leadership process, not just the recognized leader or manager. Leadership becomes a process rather than a function given a manager.

Since an important characteristic of communities of practice is that they are emergent, managers should not try to gain control, they should surrender it (Brown & Gray, 1995). Instead of directing the community of practice, the manager should support it. Additionally, since the communities of practice viewpoint assumes people are naturally in motion (Kelly, as cited by Drath & Palus, 1994), they need, rather than motivation to act, frameworks within which their actions make sense. Instead of a directive leader, the manager is simply a player in the leadership process, providing a framework for others.

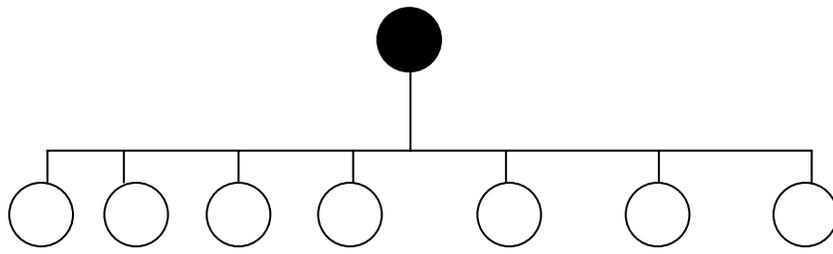
Characteristics of collaborative leadership. While leaders must be able to apply different styles to different situation, there are some common skills and abilities that leaders must learn to support the transition to CWS. Some of the characteristics of collaborative leaders are listed in Table 12. These characteristics look different in leaders at different levels of the organization (Beyerlein & Harris, 2004).

Table 12

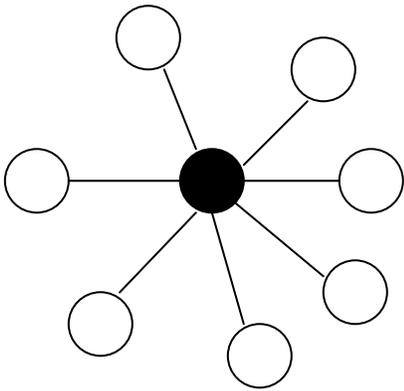
*Characteristics of Collaborative Leadership
(Beyerlein & Harris, 2004; used with permission from Pfeiffer)*

Characteristic	Description
Develop organizational context	Build systems, structures, and relationships to support collaboration in the organization and facilitate the accomplishment of work.
Build teams or groups	Create processes within teams or groups to support better collaboration and the accomplishment of work.
Support individual development	Work with individuals to determine opportunities for improvement, and develop methods (training, experiences, etc.) for them to improve.
Set direction	Through strategic planning and working with others in the organization, set the direction for the group, team, or organization and communicate it so that all understand.
Actively support the CWS initiative	Participate in groups leading the CWS initiative, give time and other resources to relevant activities, and formally and informally support the effort through words and actions as much as possible.
Model collaboration	Participate in groups or teams when relevant, involve others in decision making, actively discuss the importance of collaboration, and act in accordance with your words.
Provide resources	Seek to understand the resource needs of others and work to get those resources.
Integrate the organization	Act as an integrator and develop interfaces between all parts of the organization.
Interface with the environment	Work to develop open lines of communication with customers, suppliers, regulators, the corporate headquarters, and other parts of the environment for all in the organization.
Counsel and coach others	Listen to the concerns of others and provide feedback, encourage signs of progress, and suggest opportunities and means for improvement.
Communicate and provide information	Facilitate communication in all directions, share relevant information, and act as a resource.
Lead performance management	Understand, communicate, and develop progress toward organizational, group or team, and individual goals.

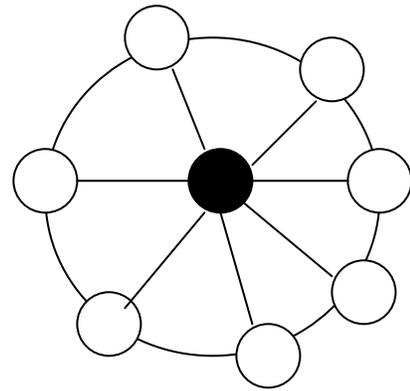
The leader transition. To support the transition to the collaborative work systems, the role of the leader changes from a traditional command-and-control director to a collaborative supporter of the group. See Figure 5 for a visual demonstration. This transition should occur at all levels of the organization. How far to go in the transition depends on the needs of the organization, the needs of the leader's group, and the style or preferences of the leader (Beyerlein & Harris, 2004).



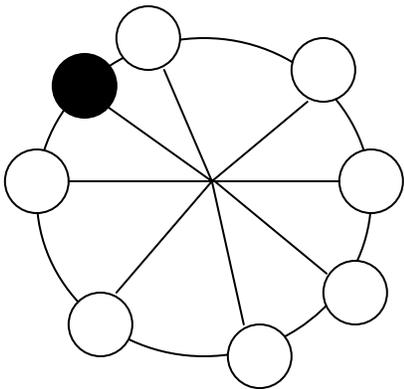
Stage 1
Leader is the director



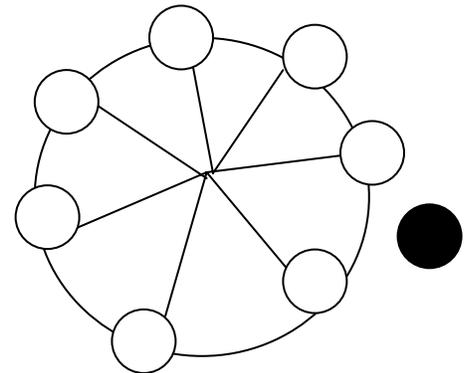
Stage 2
All decisions and communication go through the leader



Stage 3
Leader makes all decisions but communication begins to occur between others



Stage 4
Leader is involved as a member of the group



Stage 5
Leader becomes coach

Figure 5. The leader transition (Beyerlein & Harris, 2004, used with permission from Pfeiffer; adapted from Wilson, George, Wellins, & Byham, 1994).

Figure 6 demonstrates the transition of leaders from a traditional organization to an organization supporting collaboration. Dotted lines connect the level of manager in the traditional organization to the new roles in the organization supporting collaboration. The arrows indicate one- and two-way communication between leaders (Beyerlein & Harris, 2004). As seen in the figure, organizations supporting collaboration are flatter than traditional ones. Fewer levels of hierarchy means that decision making is made closer to where the work is done. Leadership in the collaborative organization becomes a shared system with leadership occurring at all levels. This makes for a messier diagram, but better communication, decision-making, and coordination.

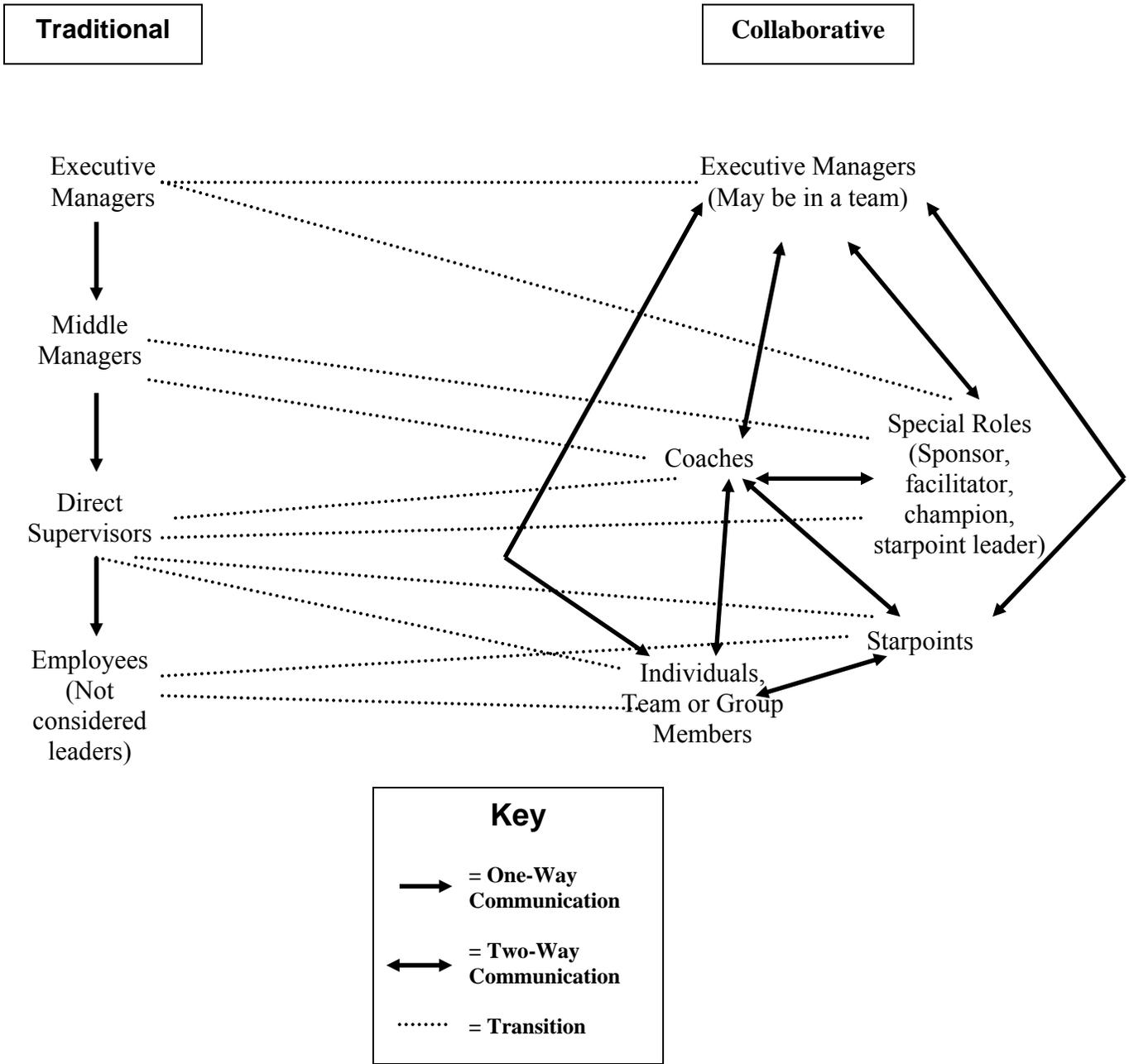


Figure 6. Formal leader transition from traditional to collaborative organization (Beyerlein & Harris, 2004; used with permission from Pfeiffer).

In the traditional organization, three main levels of leadership exist: Executive managers “live” at the top of the organization creating a strategic view, middle managers coordinate groups at the bottom and “translate” between the top and the bottom, and direct supervisors oversee daily operations of the workforce. Employees are not considered leaders in the traditional organization. Communication between levels of leaders is primarily top down and one-way (Beyerlein & Harris, 2004).

In a Collaborative Organization, three main levels of leadership exist, but they are different than in the traditional organization. Executive managers remain at the top, but may work in management teams. The organization supporting collaboration is flatter than the traditional, so middle management no longer exists. Previous middle managers are transitioned to coaches or special roles. The second level of leadership includes coaches and special roles, which are the new roles of traditional direct supervisors and middle managers. This second level supports collaboration at the employee level and integrates between the employee level and executive manager level. The third level of leadership is the employee level. In the collaborative system, employees are considered leaders, and fill roles such as starpoints (to be discussed later) and take the lead in areas of their expertise. Communication in the system supporting collaboration occurs between all levels, and is two-way, promoting extra forms of collaboration between the levels (Beyerlein & Harris, 2004).

If the middle management level of the organization has been eliminated, there is still a key role for these people. Middle managers have a wealth of experience and knowledge – valuable intellectual capital – which will be lost if they are removed. Former middle managers can be moved to new roles such as sponsors, champions of the change effort, consultants, integrator roles (vertical and horizontal), and customer/supplier liaison roles. These roles are

extremely important to the CWS initiative, and will be described later in Table 13. (Beyerlein & Harris, 2004).

Collaborative leadership looks different at different levels of the organization. For each level of leadership – employees, coaches and special roles, and executive managers—the next sections define responsibilities in a CWS (Beyerlein & Harris, 2004). Each of these levels will be described collectively. The organization must divide up the responsibilities of each level into roles. Some possible roles will be described for each level. One person cannot do everything; instead, the responsibility must be shared among many at each level of leadership, creating a shared system of leadership (Beyerlein & Harris, 2004).

Employee leadership. In a Collaborative Work System, leadership is not the sole province of managers and supervisors. Instead, empowerment creates a system of shared leadership at all levels. Empowerment plans (see “Role of Employee”) begin to define the process for sharing leadership, as employees take leadership roles through teams and groups. In a CWS, employees are encouraged to take on informal leadership roles by leading projects and decision making relevant to their areas of expertise and interest. In addition to empowerment planning and informal leadership, employee leadership roles can be created to further share leadership. Some of these roles are listed in Table 8 (Beyerlein & Harris, 2004).

Coaches and special roles. The coaches and special roles level of leadership has the most daily interaction with teams and groups. Their actions either support or inhibit collaboration in teams and groups, so working with them to develop collaborative leadership skills is important. Development of coaches and special roles of leadership must align with the empowerment of teams, groups, and individuals (see “Role of Employees”). Coaches and people in special

leadership roles may participate in change leadership teams, management teams, and integration teams (Beyerlein & Harris, 2004).

One person cannot effectively accomplish all of the responsibilities of the coach in the CWS, so special roles can be created to divide up parts of that responsibility. A list of special roles can be seen in Table 13. Each organization should consciously choose how to divide up these roles and act accordingly (Beyerlein & Harris, 2004).

Table 13

Special Leadership Roles (Beyerlein & Harris, 2004; used with permission from Pfeiffer)

Role	Description
Collaboration sponsor	Individuals with no formal authority over groups or teams they assist who act as a “mentor” to teams or groups by checking on their progress towards developing their own processes, working with them to determine needs, championing them to other parts of the organization, and helping get resources to develop them.
Collaboration facilitator	Facilitates team and group processes in order to assist coaches to develop effective teams. This may include facilitation of meetings, conflict resolution, authority transfer, goal development, leadership emergence, and interpersonal cooperation.
Collaboration trainer	Develops, customizes, and presents training to support team and group development and performance improvement. Helps groups and teams identify training needs and develops processes for meeting those needs.
Collaboration consultant	Individuals with expertise in collaboration who act as resource to the CLT to help develop the CWS. Resource areas may include organization design, development of support systems, design of assessment of coaching behaviors, continued skill development, debriefing sessions, behavioral observations, and process suggestions.
Executive coach	Guides and supports coaches as they work to develop their teams and groups. May include assessment of coaching behaviors, continued skill development, debriefing sessions, behavioral observations, and process suggestions. May be done through a one-one-one relationship and/or a coaching group.
Integrator	Responsible for integrating groups and teams working on pieces of a whole product, process, or service.
Customer/supplier liaison	Responsible for developing customer and supplier relationships, and serving as liaison between groups in the organization and the customer or supplier.
Learning network developer	Supports the development of informal groups with similar educational interests and needs (such as engineers working on oil rigs). Responsible for forming the network, publicizing it, facilitating the group in determining its needs, and developing knowledge management systems for the group to use to create and share learning.
Community of practice supporter	Responsible for identifying naturally occurring communities of practice (for example, copy machine repair technicians) who informally come together to share their experiences and solve problems. Supports these communities of practice by creating physical and electronic spaces for them to occur, and identifying and modifying any existing organizational policies or norms (such as “don’t let people stand around and talk, that is wasting time”) hindering their existence, and creating new policies to support them.

Executive management. Whether they know it or not, everyone in the organization looks to executive managers for their cues on what is important and what is not, so it is crucial to the CWS initiative that executive managers actively support it through their words and actions. Executive managers may work in management teams or independently with informal collaboration with other managers, and often create management teams of their own. Management teams are comprised of management members from multiple functions, and are responsible for coordinating, integrating, and providing direction to other teams. Executive managers may also participate as members of the change leadership team or as champions or sponsors of that group (Beyerlein & Harris, 2004).

Like the other levels of leadership, one executive manager cannot achieve all the responsibilities in a CWS alone. Instead, executive managers may each take a different focus, playing to their strengths and interests. For example, one might be the primary champion of the CWS initiative, while another focuses on creating performance management systems, and so on. (Beyerlein & Harris, 2004).

Planning leader role transition. The leader role transition plan extends the empowerment plan (see “Role of Employees”) to the leader level. It serves to clearly define the new roles of leaders. The leader role transition plan shows leaders what their new roles will be once employees have become empowered to take some tasks traditionally belonging to the leader. When the leader knows about the new role, he or she is more likely to support empowerment of employees.

Organization Effectiveness

A central premise of the present study is that collaborative effectiveness enhances organization effectiveness. This section reviews the literature on team effectiveness and organization effectiveness.

Team Effectiveness

Hackman (as cited by Weil, 1995) cites three useful measures for team effectiveness. The measuring standards are (1) productive output that meets or exceeds standards, (2) social processes that maintain or enhance the capability of members to work together on team tasks, and (3) group experience that satisfies personal needs of group members (Weil, 1995).

According to Cohen, Ledford, and Spreitzer (1996), work team effectiveness is defined as both high performance and employee quality of work life. The idea draws from sociotechnical theory, which states that both social and technical systems must be maximized for an optimally effective team.

Schwarz (1994) modified Hackman's work to specify three criteria necessary for effective groups. First, an effective group delivers output that meets or exceeds the standards of the group's stakeholders. Second, the processes used to carry out the work allows members to work together effectively on current projects and on subsequent efforts. Finally, as a whole, the group experience must satisfy the needs of its members.

Tannenbaum, Salas and Cannon-Bowers (1996) define effectiveness as a combination of team performance in terms of outputs and the team's ability to grow and regenerate itself.

Tannenbaum and colleagues (1996) cite some contextual prerequisites for team success. First, there must be a logical reason for using a team. Teams are not a panacea for every situation; if a task is better done individually, no team is needed. Second, management must demonstrate that

they support the team. Third, the team must have the necessary resources to complete the task(s). Finally, the team's needs must be properly diagnosed. If the above assumptions are met, then a wide range of interventions are available to facilitate a move toward team effectiveness

To better understand team effectiveness, team performance is evaluated in terms of inter-team productivity and intra-team productivity. According to Mohrman, Cohen & Mohrman, Jr., (1995) team effectiveness is based on team performance, which is the extent to which the groups' productive output meets the approval of customers, interdependent functioning, which is the extent to which the team is inter-reliant on one another, and team satisfaction, which is the extent to which the team is satisfied with team membership.

Tannenbaum, Beard & Salas (as cited by Tannenbaum et al. 1996) created a model in 1992 to describe Team Effectiveness. Team effectiveness is seen in terms of inputs, throughputs, and outputs, with contextual characteristics in the background. Inputs include task characteristics, work structure, individual characteristics, and team characteristics. Throughputs include team processes and team interventions. The throughputs are the way the team interacts while converting inputs to outputs. Outputs include team changes, team performance, and individual change – all of which are indicators of team effectiveness. The contextual characteristics apart from the team are composed of organizational and situational components (Tannenbaum, Salas & Cannon-Bowers, 1996).

Organization Effectiveness

While organization effectiveness is largely subjective according to the needs of each organization, some general constructs of organization effectiveness that apply to the majority of organizations exist. Several models of organization effectiveness are reviewed below.

A review of organization effectiveness models (Henri, 2004) summarized the literature in terms of five types of models. The goal model (e.g., Goodman, 1977; Etzioni, 1960) focuses exclusively on the ends, such as achievement of goals and objectives. The system model (e.g., Yuchtman & Seashore, 1967) emphasizes the means (such as inputs, resources, and processes) in addition to the ends. The strategic-constituencies model (e.g., Connolly, Colon, & Deutch, 1980) adds the expectations of the organization's stakeholders (such as owners, employees, customers, suppliers, regulators, community) to the effectiveness equation. The competing-values model (e.g., Quinn & Rohrbaugh, 1983) views each organization's set of values as the lens for assessing organization effectiveness. Finally, the ineffectiveness model (e.g., Cameron, 1984) assumes that it is easier and more beneficial to identify problems than competencies; hence, organization effectiveness is defined as the absence of ineffectiveness factors.

Forrester and Drexler (1999) developed a team-based organization performance model as the result of converging evidence in their consulting practice. They conceptualize team-based organization effectiveness in three categories: innovation, flexibility, and outstanding results. Innovation is the creation of new products and processes as well as living by values that encourage challenging the status quo. Flexibility refers to the ability to adapt and adjust quickly while maintaining what is most important to the organization. The category of outstanding results includes both immediate payoffs (such as profits, quality and quantity of products produced) and long-term benefits (such as altering the long-term direction of the organization, changing the way business is done, overcoming seemingly insurmountable obstacles).

In a study relating organizational culture and effectiveness (Denison & Mishra, 1995), organization effectiveness was defined as sales growth, profits, quality, employee satisfaction, and return on assets. Return on assets and sales growth was tracked as objective measures.

Another version of sales growth, profits, quality, and employee satisfaction were used as subjective measures where participants were asked to compare their organization to the performance of other similar organizations.

Research Questions and Hypotheses

The current study examines the relationship between collaboration in organizations (as defined by the organization support of collaboration section of the strategic design process model) and organizational effectiveness (as described by the elements of organizational effectiveness model). Each of the models is reviewed below. This section concludes with an examination of the research questions and hypotheses for this study.

The Strategic Design Process Model

Creating and improving collaborative work systems requires an ongoing strategic approach to design and implementation. A strategic approach to design provides a framework for intelligent decision-making on a large scale and sets the stage for effective implementation. The strategic design process, defined through critical success factors, is a way of systematically looking at both the process and the content of the change required for a successful collaborative change effort (Beyerlein & Harris, 2004). See Figure 7 for a visual representation of the strategic design process model.

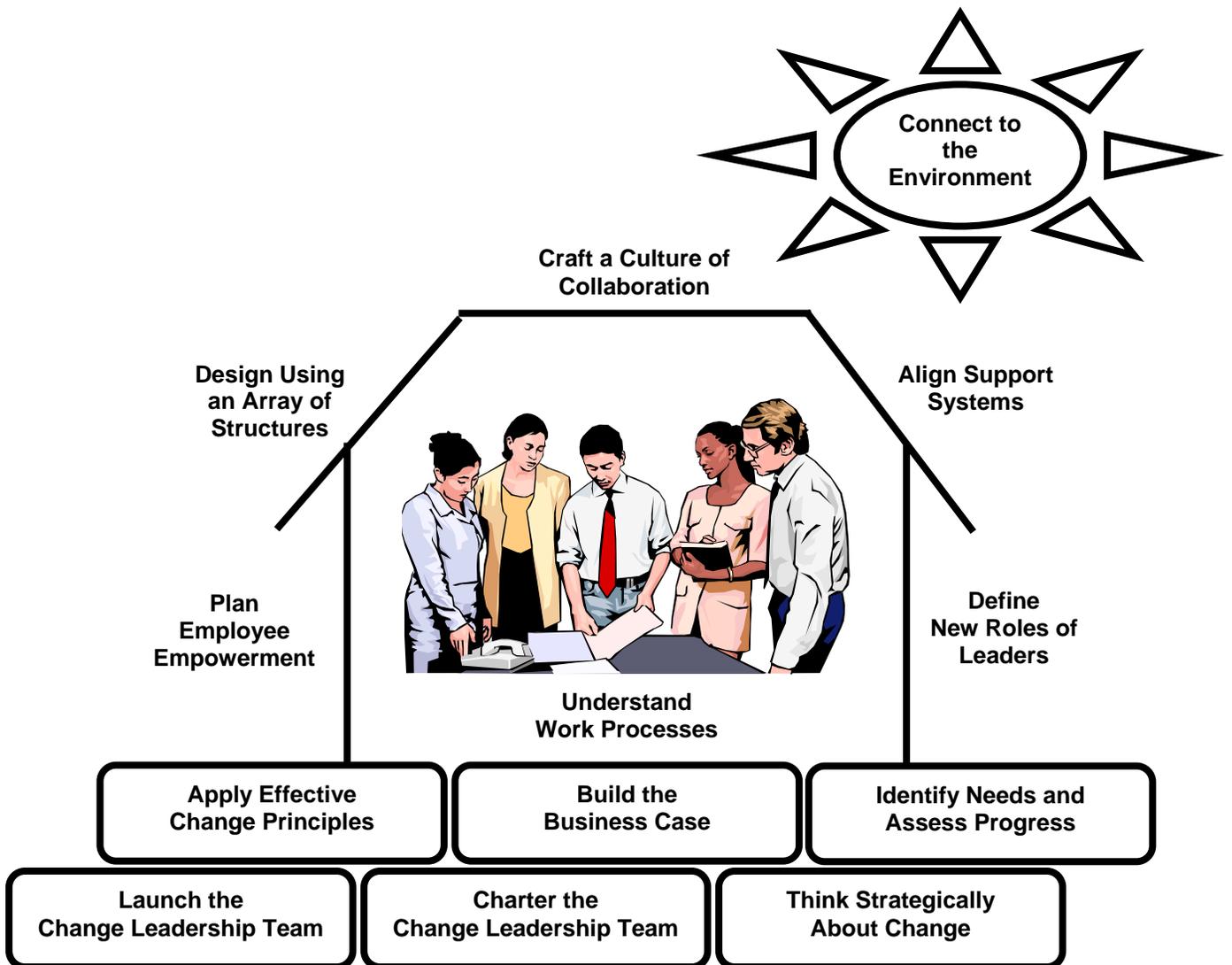


Figure 7. The strategic design process model (Beyerlein & Harris, 2004; used with permission from Pfeiffer).

An early version of this model was created through an interview study of 21 professionals in the field of organizational development and was refined through experience and practice (see Figure 2). The model is the foundation for *Guiding the Journey to Collaborative Work Systems: A Strategic Design Workbook* (Beyerlein & Harris, 2004), a workbook that shares practical activities for developing these critical success factors for collaboration. See Appendix A for more detail on model development. The two parts of the strategic design process, the foundation for change and organization support of collaboration, are further defined in the next section.

Part I: The Foundation for Change. The bricks at the bottom of the model (see Figure 7) illustrate the first part of the strategic design process, the Foundation for Change. This section examines the “process” of organizational change. The process of change is just as or more important than the content of change. Any change effort, the change to a more collaborative organization in particular, must have a strong foundation for success. Each of the critical success factors acts as a brick in the foundation. If any brick is weak, the foundation will crumble and sacrifice the integrity of the entire structure. Each of the Foundation for Change “bricks” is summarized in Table 14.

Table 14

*Dimensions for Measuring the Foundation for Change
(Adapted from Beyerlein & Harris, 2004; used with permission from Pfeiffer)*

Dimension	Overview
Launch the Change Leadership Team	The change leadership team is a representative group of individuals responsible for planning and leading the change effort. The change effort to collaboration is so big that it needs a team to provide adequate range of perspectives and resources for getting it done.
Charter the Change Leadership Team	The charter documents the change leadership team's guidelines for working together and interfacing with the rest of the organization. The process of chartering builds the team's maturity, which significantly influences the effectiveness of the change effort.
Think Strategically about Change	A well planned change effort to collaboration covers extensive change activities and a long time frame. The planning for such large scope work requires a strategic framework for framing tactical action, so all aspects of the initiative are aligned with each other and with the business strategy.
Apply Effective Change Principles	Effective change principles represent tested methods of change. Success of the change effort is relative to the extent that effective change principles are applied.
Build the Business Case	The business case articulates the rationale for the investment in the change effort in terms of business results. Building the business case, including defining what success looks like, and putting it in the organization's language is essential for gaining the commitment of stakeholders in the change effort..
Identify Needs and Assess Progress	Integrate the results of observation, interviews, surveys, etc., into an ongoing system of assessment to support the change effort. Assessment builds momentum across the organization for the change effort, gives feedback that helps provide focus on the goal state, renews top management support, identifies when milestones are achieved so short-term successes can be celebrated, and provides an organization-wide perspective needed for creating and implementing the change effort.

Part II: Organization support of collaboration. The second part of the strategic design model is represented by the house and sun in Figure 7. This section examines the “content” of the organizational change necessary to support collaboration. Redesigning the framework of the organization to support collaboration should improve both business and people results.

The work is in the center of the model, inside the building, because ultimately the goal of the organization is to do business, and business reasons should be the “anchor” of any change effort. The environment (like the weather) is on the outside of the organization, but is vital to the success of the organization. The work and the environment are the parts of the model that are the least influenced by organizations. While the organization has some impact on them through work redesign and attempts to shape the environment, these pieces are somewhat given, and the organization has to deal with them.

The pieces of the organization that create the framework of the building are culture, structure, employee empowerment, leader roles, and systems. The building framework must be constructed to meet the needs of the work being done inside it, and be able to adjust to the changing demands of the weather (the environment). Each dimension in the organization support of collaboration part of the strategic design process model is summarized in Table 15 (Beyerlein & Harris, 2004).

Table 15

*Dimensions for Measuring Organization Support of Collaboration
(Adapted from Beyerlein & Harris, 2004; used with permission from Pfeiffer)*

Dimension	Overview
Connect to the Environment	The environment is the world outside the organization. This world includes customers, suppliers, competitors, government regulators, the community and other parts of the larger organization. No matter how well the organization appears to work internally, if the environment shifts and organization does not move accordingly, success will be threatened.
Craft a Culture of Collaboration	Culture represents what happens in the day-to-day work life, the shared values and assumptions of the people in the organization. True culture change is difficult and slow, but can be accomplished through changing the more tangible parts of the organization (structure, systems, employee and leader behavior).
Understand Work Processes	The work encompasses the tasks, processes, and performance goals that must be achieved to accomplish the business of the organization. The work is the core of the organization; without it, the organization has no reason to exist.
Design Using an Array of Structures	Organizational structure includes the way people are organized to carry out the work, including functional and program segments and connections. Different types of work structures (such as individuals, work teams, and project teams) are needed because the work and the environment demand it.
Plan Employee Empowerment	The term “employees” as used here refers to the front-line workers who are responsible for the daily completion of the work. If you want employee behavior to change, you must lay out a plan for describing your expectations for change.
Define New Roles of Leaders	The term “leaders” as used here refers to managers, supervisors, and executives. Employees (front-line workers) can also take on leadership roles. The leaders of the organization set the tone through their actions and words.
Align Support Systems	The context of the organization can be defined in terms of support systems. Support systems are the infrastructure created to support the work and the people doing the work within the organization. Common support systems include: the manner in which people are evaluated and compensated for their performance, the training and development that people receive, and the physical environment in which they perform their tasks. Systems must support collaboration if true collaboration is desired.

Focus of current study. Both parts of the strategic design process are important for successful change to a more collaborative organization. However, Part I: The Foundation for Change applies only to organizations currently undertaking change efforts. A questionnaire measuring the foundation for change is available, but optional in the current study.

Part II: Organization support of collaboration relates to what different aspects of the organization have to look like to support various levels of collaboration. This study will focus on empirically validating this part of the model by applying it to the fullest possible spectrum of organization types regardless of whether they are currently undergoing change efforts.

The Elements of Organization Effectiveness Model

The elements of organization effectiveness model was created from a combination of the following: (1) examining team effectiveness measures and translating them to the organization level, (2) asking participants of an interview study of 21 experts in the field the question, “what makes team-based organizations effective?”, (3) sending an email question to subject matter experts asking, “What are the financial and non-financial benefits of effective collaboration, particularly at the organization level?”, (4) reviewing the literature, and (5) learning from experience consulting with organizations. For more information on test construction, see Appendix B. Figure 8 displays a visual representation of the elements of organization effectiveness model. See Table 16 for a summary of each element of organization effectiveness.



Figure 8. The elements of organization effectiveness model.

Table 16

Dimensions for Measuring Organization Effectiveness.

Dimension	Definition
Performance	Performance includes the elements of organization effectiveness that relate to what organizations typically think of when they think “effectiveness.” Elements of cost and quality are included here.
Customer Satisfaction & Growth	Customer satisfaction includes items that relate to how existing customers are treated by the organization and how well the organization can gain new customers.
Employee Involvement	Employee involvement includes items that relate to the extent that the organization involves employees in decision making and communicating and rewards them for that involvement.
Treatment of People	Treatment of people includes items that relate to how employees perceive they are being treated by the organization. Elements of trust, satisfaction, respect, and commitment are included here.
Connection to Outside World	Connection to the outside world includes items that relate to how the organization connects to the community, family, and larger organization (such as corporate office and other sites).
Flexibility & Innovation	Flexibility & innovation includes items that relate to the organization’s ability to adapt and change to meet the needs of its environment.

Research Questions and Hypotheses

The study provides much-needed empirical investigation of the concepts of organization support of collaboration and organization effectiveness and the relationship between the two. Refer back to Figure 1 for a summary of the three phases of the study with accompanying research questions. A visual summary of all predicted relationships for the present study can be seen in Figure 9. The dimensions for the study are described in Tables 15 and 16. Please refer to the summary of predicted relationships throughout the following examination of research questions and hypotheses.

Organization Support of Collaboration

Organization Effectiveness

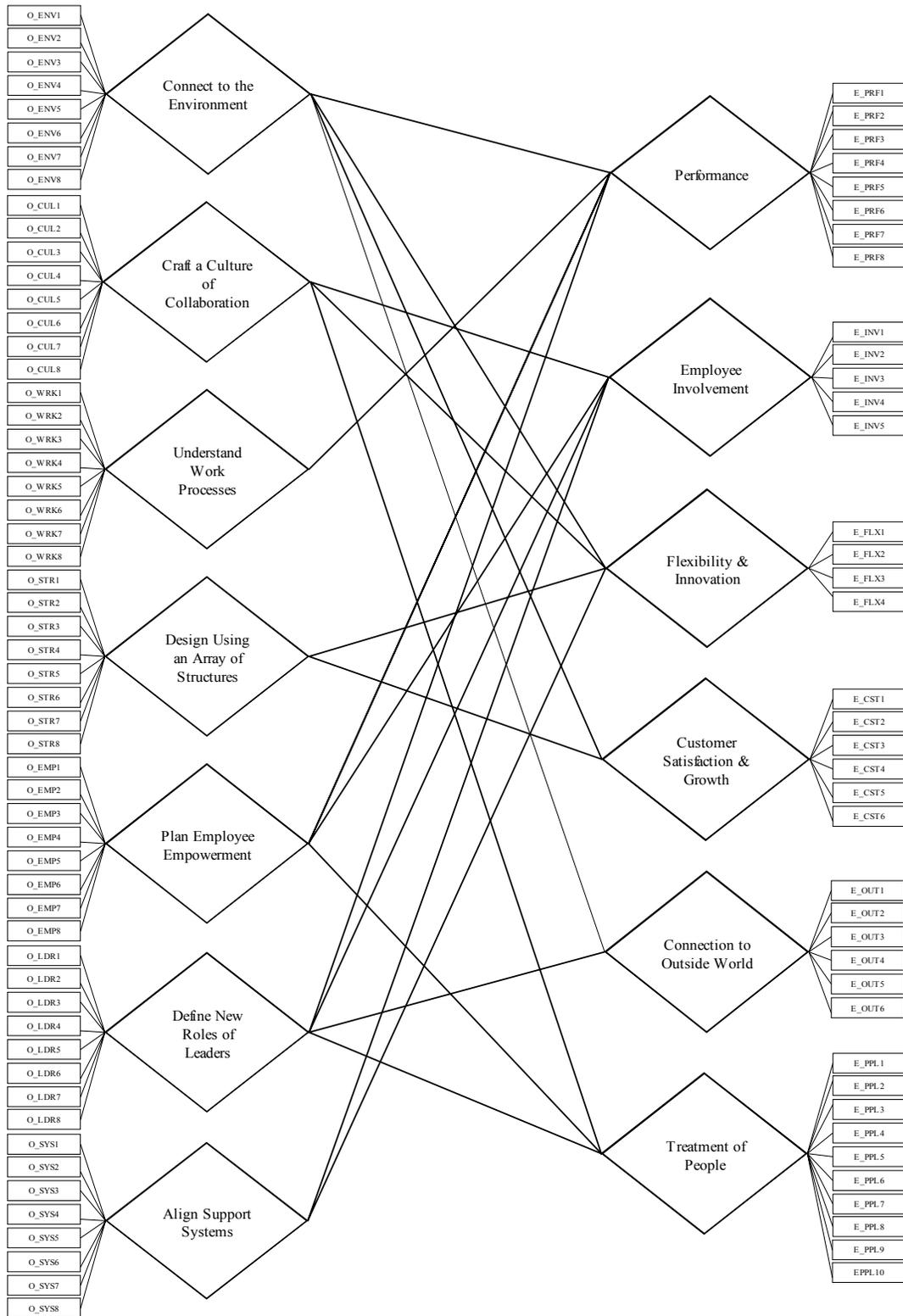


Figure 9. Summary of expected relationships.

Note. Study variables are linked to expected factors. Lines between factors represent hypothesized significant relationships.

Phase 1: Generate Empirical Models. The objective of Phase 1 is to determine what factor structures of organization support of collaboration and organization effectiveness are created by empirical data. Two sets of hypotheses (Hypotheses 1 and 2) are proposed based on the theoretical models being tested in this study.

Hypothesis 1. The first set of hypotheses test the model of organization support of collaboration (see Figure 9). The first hypothesis of the set predicts the number of factors in the model: (a) there are seven factors of organization support of collaboration. The other hypotheses predict the factors that will form as a result of data analysis: (b) Connect to the Environment, (c) Craft a Culture of Collaboration, (d) Understand Work Processes, (e) Design Using an Array of Structures, (f) Plan Employee Empowerment, (g) Define New Roles of Leaders, and (h) Align Support Systems.

Hypothesis 2. The second set of hypotheses test the model of organization effectiveness (see Figure 9). The first hypothesis of the set predicts the number of factors in the model: (a) there are six factors of organization effectiveness. The other hypotheses predict the factors that will form as a result of data analysis: (b) Performance, (c) Employee Involvement, (d) Flexibility & Innovation, (e) Customer Satisfaction & Growth, (f) Connection to Outside World, and (g) Treatment of People.

Phase 2: Select Best Fit Models. The purpose of Phase 2 is to examine the revised models of organization support of collaboration and organization effectiveness created in Phase 1 and theoretical alternatives to determine which model best fits the data. The result will be validated measurement models for each of the concepts. There are two sets of hypotheses (Hypotheses 3 and 4) for Phase 2.

Hypothesis 3. The third set of hypotheses further test the model of organization support of collaboration (see Figure 9). The first hypothesis of the set predicts the number of factors in the model: (a) there are seven factors of organization support of collaboration. The other hypotheses predict the factors that will form as a result of data analysis: (b) Connect to the Environment, (c) Craft a Culture of Collaboration, (d) Understand Work Processes, (e) Design Using an Array of Structures, (f) Plan Employee Empowerment, (g) Define New Roles of Leaders, and (h) Align Support Systems.

Hypothesis 4. The fourth set of hypotheses further test the model of organization effectiveness (see Figure 9). The first hypothesis of the set predicts the number of factors in the model: (a) there are six factors of organization effectiveness. The other hypotheses predict the factors that will form as a result of data analysis: (b) Performance, (c) Employee Involvement, (d) Flexibility & Innovation, (e) Customer Satisfaction & Growth, (f) Connection to Outside World, and (g) Treatment of People.

Phase 3: Relationship Between Models. The objective of Phase 3 is to examine the relationship between the measurement models of organization support of collaboration and organization effectiveness created in Phase 2. The predicted significant relationships are illustrated in Figure 9 and summarized in Table 17. There are 7 sets of hypotheses (Hypotheses 5 through 11) for Phase 3.

The following hypotheses are based on the predicted factors for Phases 1 and 2. If necessary, these hypotheses will be revised based on the resulting factors developed in Phases 1 and 2. Should revisions be necessary, Figure 9 will be updated and revised hypotheses stated prior to Phase 3 analysis. The revised figure and the list of hypotheses for Phase 3 will be included in this document prior to any reference to Phase 3 analysis.

Hypothesis 5. The Connect to the Environment factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Performance, (b) Flexibility & Innovation, (c) Customer Satisfaction & Growth, and (d) Connection to Outside World.

Hypothesis 6. The Craft a Culture of Collaboration factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Employee Involvement, (b) Flexibility & Innovation, and (c) Treatment of People.

Hypothesis 7. The Understand Work Processes factor of organization support of collaboration will be most strongly related to organization effectiveness factor Performance.

Hypothesis 8. The Design Using an Array of Structures factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Flexibility & Innovation, and (b) Customer Satisfaction & Growth.

Hypothesis 9. The Plan Employee Empowerment factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Performance, (b) Employee Involvement, and (c) Treatment of People.

Hypothesis 10. The Define New Roles of Leaders factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Performance, (b) Employee Involvement, (c) Connection to Outside World, and (d) Treatment of People.

Hypothesis 11. The Align Support Systems factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Employee Involvement, and (b) Flexibility & Innovation.

Table 17

Hypotheses for Relationships between Organization Support of Collaboration and Organization Effectiveness.

Organization Support of Collaboration	Organization Effectiveness					
	Performance	Employee Involvement	Flexibility & Innovation	Customer Satisfaction & Growth	Connection to Outside World	Treatment of People
Connect to the Environment	H5A		H5B	H5C	H5D	
Craft a Culture of Collaboration		H6A	H6B			H6C
Understand Work Processes	H7					
Design Using an Array of Structures			H8A	H8B		
Plan Employee Empowerment	H9A	H9B				H9C
Define New Roles of Leaders	H10A	H10B			H10C	H10D
Align Support Systems		H11A	H11B			

CHAPTER 2

METHOD

This study was a between-subjects design using web-administered questionnaires of individuals working in organizations. Any individual from any organization could take part, as a wide variety of organization types was desired. Variables were derived from two instruments. Perceptions of Organization Support of Collaboration measures how well organization design elements are perceived to support collaboration and Perceptions of Organization Effectiveness measures the perceived effectiveness of the organization.

This chapter begins with a discussion of the procedure for recruiting participants and questionnaire administration for this study. The Participants section describes the demographics of the participants in the sample. The Instruments section describes the questionnaires used to measure the concepts, including a brief overview of how the questionnaires were developed. Finally, the Analysis section describes the data analysis procedures used to test the research questions and hypotheses for each of the three phases of the study.

Procedure

Participants for the study were recruited via email. The email invitation included information about the researcher, an overview of the premise of the study, a promise to maintain the confidentiality of the results, and instructions for completing the questionnaire including a web link to the questionnaire. Two versions of the email invitation were used. The first one (Appendix C) was in the form of questions and answers while the second one (Appendix D) was in a narrative format.

The email invitation was broadcast on a variety of email discussion lists (see Appendix E for a summary of mailing lists used) representing professional organizations and interest groups primarily from the field of organizational development. These discussion lists serve as electronic forums for professionals to discuss issues related to their professions and to gather opinions, advice, and instruction from other professionals. Appropriate permission was gained from moderators or list owners when necessary. The email invitation was also sent to members of the Society of Industrial/Organizational Psychology (SIOP), members of the researcher's college alumni band group (Longhorn Alumni Band), contacts of the Center for Collaborative Organizations at the University of North Texas, and personal contacts of the researcher. Recipients of the email invitation were asked to forward the information to others they thought might be interested in participating in the study.

Free feedback reports at two levels were offered as an incentive to participate. Any individual participating in the study was eligible to receive a study-level report summarizing the compiled results of everyone participating in the study. An organization-level report was available if 30 or more people from the same organization took the questionnaire (special arrangements were made for smaller organizations). The organization-level report summarized the compiled results of the organization without identifying any individual. Individuals wishing to receive a feedback report were asked to email the researcher directly to request the report.

The web version of the questionnaire was created on SurveyMonkey.com, a service that supports the development of web-based surveys and provides a platform for data collection. Clicking on the link in the email invitation took participants to a page which summarized directions for taking the questionnaire. The second page of the questionnaire requested participants' agreement to participate in the study by providing informed consent information

(see the research consent form in Appendix F). This information outlined the purpose of the study, any potential harm that could result from participating in the study, and researchers' contact information should the participants have any questions. Participants were required to check the "I Agree to Participate" box before advancing to the next page, thereby providing their informed consent. Participants then advanced through a series of web pages to complete the web-based questionnaire at their own pace.

Some organization contacts requested a paper-and-pencil version of the questionnaire to distribute to members of their organization without Internet access. Two hundred and six participants completed the paper-and-pencil version of the questionnaire. See Appendix G for the paper-and-pencil version of the questionnaire. The content of the paper-and-pencil version of the questionnaire was the same as the web questionnaire. The paper-and-pencil versions of the questionnaire were sent to the researcher and an assistant entered the data into the SurveyMonkey.com system.

After data collection was concluded, data were exported from SurveyMonkey.com into an Excel spreadsheet. This Excel spreadsheet was converted into a file usable for SPSS. The data in the SPSS file was converted into a covariance matrix for use in LISREL analysis.

Participants

The goal for data collection was 1200 complete responses to the questionnaire to provide two separate samples for the study. Unfortunately, insufficient data were collected to achieve this goal. Instead, the total study sample was included for each of the three Phases of the study to provide adequate sample size for analysis. A total of nine hundred, ninety-two participants responded to the questionnaire. However, only 668 participants consented to participate and 593

finished the initial demographics section. Five hundred, forty-six participants completed the entire questionnaire.

Gender was equally distributed. The majority of respondents held a bachelor's degree (30%), while 23% had a masters' degree, and 15% had doctorate degrees. The overwhelming majority (93%) were full-time employees, while 3% were part-time, 3% were contract, and 2% were non-paid volunteers. Twenty-one percent of respondents were compensated hourly, 38% were salaried employees (non-supervisor), 12% were supervisors, 21% were managers, and 9% were executives. Eighty-six percent of participants said they worked as part of some type of a team.

Each participant was asked to identify their organization and think of this organization throughout the questionnaire. Fifteen percent of respondents identified the organization being assessed as a corporation encompassing multiple sites, while 14% indicated a department within a site, 38% indicated a site within a larger corporation, 6% indicated a department crossing over several sites, 5% indicated a single-site corporation, 5% indicated a small business, and 17% indicated "other." Fifty-eight percent of respondents described the organization as for profit (34% publicly owned and 24% privately owned), 23% not for profit (14% publicly owned and 9% privately owned), 12% government, and 7% "other." The "other" category primarily consisted of educational institutions. A wide variety of industries was represented, with the majority being education (25%) followed by manufacturing (20%) and healthcare (14%). A full list of industries represented can be seen in Table 18.

Table 18

Industries Represented in Sample

Industry	Percent
Communications	9%
Construction	1%
Consulting	6%
Education	25%
Energy and Utilities	1%
Financial	3%
Healthcare	14%
Manufacturing – Basic Materials	2%
Manufacturing – Capital Goods	11%
Manufacturing – Consumer Cyclical	2%
Manufacturing – Consumer Non-Cyclical	5%
Retailer	3%
Services	4%
Transportation	1%
Technology	3%
Other	13%

Participants responded to several questions regarding the characteristics of the organization. Information about the number of people in the organization can be seen in Table 19. The majority of organizations consisted of 11-50 people (23%) or 401-500 people (22%). The composition of the organization was an average of 35% hourly/clerical, 48% technical/professional, 22% supervisors/managers, and 10% other. Only thirteen percent of the respondents indicated that the organization was represented by one or more labor unions, and 20% had some percentage of people employed outside of the United States.

Table 19

Number of Employees in the Organizations Being Assessed

Number of Employees	Percent of Respondents
1-10	8%
11-50	23%
51-100	13%
101-200	8%
201-300	3%
301-400	5%
401-500	22%
501-1000	4%
1001-2000	3%
2000+	11%

A broad sample of organization structural types, from traditional to more advanced, as well as organizations both currently taking on change efforts and not, was desired for the study. Respondents were asked to review a list of organization type descriptions (see Table 1) and indicate which description best described the organization now. Perception of organization type was fairly evenly distributed, as eleven percent of respondents indicated “traditional organization,” 30% indicated “organization using teams,” 14% indicated “spontaneous collaboration organization,” 19% indicated “team-based organization,” and 27% indicated “collaborative organization.” Fifty-seven percent of respondents indicated that their organizations had change efforts related to collaboration underway or in the planning stages, 19% indicated no change efforts, and 24% were unsure.

Instruments

Data for this study were collected using two instruments. The first measures organization support of collaboration and the second measures organization effectiveness. Both instruments

are subjective, asking individuals for their perceptions of their organizations. The two instruments are reviewed below.

Perceptions of Organization Support of Collaboration

The first instrument (see Appendix H) measures the extent to which organization design elements are perceived by participants to support collaboration. Prior research was conducted by the author to determine the dimensions that should be used in the measurement of organization support of collaboration (see Table 15 at the end of Chapter 1). The dimensions are: Connect to the Environment, Craft a Culture of Collaboration, Understand Work Processes, Design Using an Array of Structures, Plan Employee Empowerment, Define New Roles of Leaders, and Align Support Systems. The seven dimensions are a result of an extensive review of the literature, an interview study of subject matter experts in the area of team-based organizations, and intense editing by professional editors, professors, and graduate students in preparing an earlier version of the questionnaire for a published workbook (Beyerlein & Harris, 2004). See Appendix A for more details on questionnaire development. Each of the dimensions consisted of 8 items, resulting in a total of 56 items for the instrument. Participants responded to the items using a 5-point rating scale, 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

Perceptions of Organization Effectiveness

The second instrument (see Appendix I) measures individual perceptions of organization effectiveness. Prior research was conducted by the author to determine the dimensions that should be used in the measurement of organization effectiveness (see Table 16 at the end of Chapter 1). The dimensions are: Performance (7 items), Employee Involvement (5 items), Flexibility & Innovation (4 items), Customer Satisfaction (6 items), Connection to Outside World (6 items), and Treatment of People (10 items). The six dimensions are the result of a

previous study on team effectiveness (Hall, 1998), an extensive review of the literature, an interview study of subject matter experts in the field of team-based organizations, and an email question to practitioners in the field. See Appendix B for more details on questionnaire development. The instrument consisted of 38 items total. Participants responded to the items using a 5-point rating scale, 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. A “not applicable” response was also available.

Analysis

The study has three distinct components, labeled Phase 1, Phase 2, and Phase 3, which were used to investigate the models of organization support of collaboration and organization effectiveness. The objective of Phase 1 was to develop an empirical model for each of the concepts being studied, organization support of collaboration and organization effectiveness. Phase 2 compared the empirical model developed in Phase 1 with theoretical alternatives to determine which one was the best fit to the data. Phase 3 examined the relationships between the models confirmed in Phase 2 for organization support of collaboration and organization effectiveness. For an illustration of the phases of the study as well as research questions, see Figure 1. Analysis procedures for each phase are reviewed below.

Phase 1: Generate Empirical Models

The goal of Phase 1: Generate Empirical Models was to develop empirical models around each of the concepts of organization support of collaboration and organization effectiveness. These concepts are measured by the *Perceptions of Organization Support of Collaboration Questionnaire* and the *Perceptions of Organization Effectiveness Questionnaire* developed through literature review and qualitative analysis.

Each instrument was analyzed independently using the same set of procedures. After screening data by removing cases with missing data, univariate outliers, and multivariate outliers, a series of exploratory factor analysis procedures was performed. The exploratory factor analysis procedure was run and items removed until a factor structure emerged with all remaining items loading on a factor, no items cross-loading on more than one factor, and all items with acceptable communalities (the proportion of variance that each item has in common with other items in the factor). Finally, tests of reliability including item-total correlations and Cronbach's alpha were run on the remaining items in the resulting scales.

Phase 2: Select Best Fit Models

The purpose of Phase 2: Select Best Fit Models was to examine the revised models of organization support of collaboration and organization effectiveness created in Phase 1: Generate Empirical Models and theoretical alternatives to determine which model best fit the data. Only the questionnaire items remaining after Phase 1 were used in Phase 2. The data analysis strategy is reviewed below.

First, the data were screened for missing data and outliers and sample size adequacy was addressed. Then the empirical models developed in Phase 1 for organization support for collaboration and organization effectiveness and their theoretical alternatives were tested for "best fit" using confirmatory factor analyses (CFAs). Descriptive statistics and correlations for all included study variables were summarized for the "best fit" models. Tests of reliability were run on the scales in the "best fit" models.

Phase 3: Relationship Between Models

The purpose of Phase 3: Relationship Between Models was to examine the links between the models of Organization Support of Collaboration and organization effectiveness selected for

“best fit” in Phase 2 The same questionnaire items that were used in Phase 2 were utilized in Phase 3. First, data screening procedures and sample size adequacy were addressed. Then the original model of expected relationships was revised to account for the results of Phase 2: Select Best Fit Models. The links between the models were analyzed using structural equation modeling.

CHAPTER 3

RESULTS

Study data was analyzed in three distinct phases, each one building on the previous phase. In Phase 1: Generate Empirical Models, the data were first screened for missing data and outliers. Then exploratory factor analysis was run on each of the two questionnaires, Perceptions of Organization Support of Collaboration and Perceptions of Organization Effectiveness, to examine the construct validity of each instrument. Items that did not load on any of the factors were removed from the analysis. Tests of reliability including item-total correlations and Cronbach's alpha were run on the remaining items in the resulting factor structures. Finally, study hypotheses were reviewed in light of the results.

Phase 2: Select Best Fit Models tested the empirical models for organization support of collaboration and organization effectiveness developed in Phase 1 as well as theory-derived alternative models. The purpose was to determine which model was the "best fit" for the data collected using confirmatory factor analyses (CFAs). Descriptive statistics and correlations for all included study variables were examined for the "best fit" measurement models. Study hypotheses were reviewed taking the results into consideration.

Phase 3: Relationship Between Models examined the relationships between the "best fit" measurement models selected in Phase 2. In this phase, structural equation modeling was used to investigate the links between organization support of collaboration and organization effectiveness. Results were then compared to study hypotheses.

Phase 1: Generate Empirical Models

The purpose of Phase 1: Generate Empirical Models was to determine what factor structures of organization support of collaboration and organization effectiveness were created by the empirical data. The data were first screened for missing data and outliers. Each questionnaire was treated separately for the purpose of data screening to maximize sample size as increasingly more people dropped out of questionnaire participation the further along in the overall questionnaire they progressed. Exploratory factor analyses were run on each of the two questionnaires, organization support of collaboration and organization effectiveness. Tests of reliability were run on the scales in the final factor structures. Finally, results were compared to study hypotheses.

Organization Support of Collaboration

Data Screening

A total of nine hundred, ninety-two participants responded to the questionnaire; however, only 475 cases were included in the analysis based on the following screening criteria: no missing data, no univariate outliers, and no multivariate outliers. The following data were deleted: 445 respondents for missing data¹, 16 respondents for univariate outliers, and 56 respondents for multivariate outliers. To determine univariate outliers, scores for each variable were standardized into z-scores. Cases falling above 3.29 or below -3.29 standard deviations from the mean for any variable were removed as univariate outliers from the dataset. Mahalanobis distance was used to determine the removal of multivariate outliers greater than the critical value $\chi^2(55) = 93.17, p < 0.001$ (Tabachnick & Fidell, 1996).

¹ The large amount of missing data was attributed to participants failing to complete the questionnaire, perhaps due to a loss of interest to continue or perception of excessive length of the questionnaire.

Sample Size Adequacy

The sample size is adequate, as the 475 cases exceed the recommended 150 to 250 (Cattell, 1978; Guilford, 1954; Hinkin, 1995). The sample size was considered good to very good when the Comrey & Lee (1992) categorization was applied (100 = poor; 200 = fair; 300 = good; 500 = very good). The criteria of subjects-to-variables ratio no lower than 5 (Bryant & Yarnold, 1995) was met. The suggested minimum sample size was also met according to the newer recommendations of MacCallum, Widaman, Zhang, and Hong (1999). These findings indicate that communalities greater than 0.6 require only 100 cases, communalities of approximately 0.5 require 100 to 200 cases, and communalities lower than 0.5 require 300 or more.

Exploratory Factor Analyses

An exploratory factor analytic (EFA) strategy using maximum likelihood estimation with direct oblimin rotation was used to classify the organization support of collaboration items. The purpose of EFA is to identify the structure among a set of variables by defining a set of common underlying dimensions (Hair, Anderson, Tatham, & Black, 1995). Maximum likelihood estimation is a form of common factor analysis; the objective is to identify the latent dimensions represented in the original variables when the researcher has little knowledge about the amount of unique error variance (Hair, Anderson, Tatham, & Black, 1995). Direct oblimin is an oblique rotation method that is appropriate for obtaining theoretically meaningful factors from correlated variables; whereas orthogonal rotation assumes that underlying dimensions are not correlated (Hair, Anderson, Tatham, & Black, 1995). If variables are correlated, then an oblique rotation will produce a better estimate of the true factors and a better simple structure than will an orthogonal rotation (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Oblique rotation is

appropriate in this analysis because the factors are expected to be correlated. Factors with an eigenvalue (the variance accounted for by a factor) greater than or equal to 1.0 were extracted, applying the Kaiser (1960) rule that states that a factor should extract at least as much as the equivalent of one original variable.

A series of Exploratory Factor Analyses (EFAs) using SPSS v11.0 was performed to examine the original 56 items (see Appendix H) and remove items until all remaining items loaded on a factor, did not cross-load on more than one factor, and had acceptable communalities. The goal of this process of removing items from the analysis is to retain only the items that are significantly represented in the factor solution (Hair, Anderson, Tatham, & Black, 1995) while achieving a simple factor structure (Fabrigar, Wegener, MacCallum, & Strahan, 1999), meaning that items load significantly on only one factor. First, items that did not load (a loading is the correlation between the item and the factor) on a factor above 0.33 were removed from the analysis. Then, items that loaded on more than one factor (referred to as cross-loading) above 0.33 were removed from the analysis. Finally, items with communalities (the proportion of the variance in the original items that is accounted for in the factor solution) less than 0.40 were eliminated. This process of removing items was repeated until a clean factor model was obtained.

A total of twenty-two items were removed due to a failure to load on a factor above 0.33 (13 items), cross-loading above 0.33 on two or more factors (3 items), and low communalities (6 items); a total of 34 of the original 56 items were retained. See Table 20 for a summary of each of the eight EFA runs, including the number of items analyzed, number of factors extracted, number of items per factor, and list of items that were removed in subsequent analyses. Details of each EFA run are described below.

Table 20

Summary of Exploratory Factor Analyses for Organization Support of Collaboration

EFA Run	Total # Items	# Factors (Eigenvalue ≥ 1.0)	# Items per Factor		Items Loading < 0.33	Items Cross-Loading > 0.33	Items with Communalities < 0.40
1	56	8	Factor 1 = 9 Factor 2 = 8 Factor 3 = 7 Factor 4 = 2	Factor 5 = 4 Factor 6 = 7 Factor 7 = 4 Factor 8 = 4	O_EMP3 O_EMP5 O_EMP6 O_EMP7 O_EMP8 O_STR1 O_STR7 O_CUL6 O_WRK1 O_WRK7 O_LDR8 O_SYS8	N/A	N/A
2	44	7	Factor 1 = 10 Factor 2 = 8 Factor 3 = 7 Factor 4 = 8	Factor 5 = 8 Factor 6 = 3 Factor 7 = 2	None	O_ENV3 O_CUL1	N/A
3	42	7	Factor 1 = 9 Factor 2 = 7 Factor 3 = 7 Factor 4 = 6	Factor 5 = 8 Factor 6 = 2 Factor 7 = 4	None	O_WRK5	N/A
4	41	7	Factor 1 = 9 Factor 2 = 7 Factor 3 = 7 Factor 4 = 6	Factor 5 = 7 Factor 6 = 2 Factor 7 = 3	None	None	O_ENV4 O_WRK4 O_STR5 O_STR8
5	37	6	Factor 1 = 9 Factor 2 = 7 Factor 3 = 6	Factor 4 = 6 Factor 5 = 2 Factor 6 = 6	O_STR6	N/A	N/A
6	36	6	Factor 1 = 9 Factor 2 = 7 Factor 3 = 6	Factor 4 = 6 Factor 5 = 2 Factor 6 = 6	None	None	O_ENV7
7	35	6	Factor 1 = 9 Factor 2 = 7 Factor 3 = 5	Factor 4 = 6 Factor 5 = 2 Factor 6 = 6	None	None	O_ENV5
8	34	6	Factor 1 = 9 Factor 2 = 7 Factor 3 = 4	Factor 4 = 6 Factor 5 = 2 Factor 6 = 6	None	None	None

Note. Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization.

Results of the first EFA indicated an eight factor model. Twelve items (O_EMP3, O_EMP5, O_EMP6, O_EMP7, O_EMP8, O_STR1, O_STR7, O_CUL6, O_WRK1, O_WRK7, O_LDR8, and O_SYS8) were removed due to a failure to load on a factor.

A second EFA was run on the remaining 44 items, resulting in a seven factor model. Two items (O_ENV3 and O_CUL1) were removed due to cross-loading on two factors above 0.33. Results of a third EFA on the remaining 42 items indicated another seven factor model. One item (O_WRK5) was removed due to cross-loading on two factors above 0.33. A fourth EFA (41 items) resulted in a seven factor model. While no items failed to load or cross-loaded on two factors, four items (O_ENV4, O_WRK4, O_STR5, and O_STR8) were removed due to communalities lower than the cut-off point of 0.40.

A six factor model with 37 items was extracted in the fifth EFA. One item (O_STR6) was removed due to a failure to load on a factor above the cut-off value of 0.33. The sixth EFA resulted in another six factor model (36 items). One item (O_ENV7) was removed due to communality lower than the cut-off point of 0.40. The seventh EFA again resulted in a six factor model (35 items). One item (O_ENV5) was removed due to communality lower than the cut-off point of 0.40.

An eighth and final EFA was run on the remaining 34 items, resulting in a clean six factor model. Table 21 presents the factor loadings and rotation eigenvalues of the final EFA. The revised dimensions are defined in Table 22 and the items within the factors are in Appendix J. Overall, 64.60% of the variance was accounted for by the factor loadings. Chi-square analysis ($\chi^2 = 9858.468$, $df = 561$, $p < 0.001$) indicates that the model was significant, while the Kaiser-Meyer-Olkin measure of sampling adequacy (0.97) shows that the matrix was factorable at a “marvelous” level. Communalities range from 0.41 to 0.72 with a mean of 0.57.

Table 21

Organization Support of Collaboration EFA Factor Loadings for the Remaining 34 Items

Item	Factor					
	Build Shared Leadership	Align Support Systems	Connect to the Environment	Craft a Culture of Collaboration	Bring Together Essential Skills	Enhance Work & Structure
O_LDR1	.709					
O_LDR3	.704					
O_LDR6	.696					
O_LDR5	.634					
O_LDR2	.620					
O_EMP1	.620					
O_EMP2	.536					
O_LDR4	.528					
O_LDR7	.504					
O_SYS7		-.755				
O_SYS2		-.715				
O_SYS6		-.663				
O_SYS4		-.650				
O_SYS1		-.565				
O_SYS3		-.538				
O_SYS5		-.483				
O_ENV2			.745			
O_ENV6			.645			
O_ENV1			.571			
O_ENV8			.463			
O_CUL4				-.761		
O_CUL8				-.690		
O_CUL5				-.639		
O_CUL2				-.612		
O_CUL3				-.482		
O_CUL7				-.474		
O_WRK3					.604	
O_EMP4					.531	
O_STR3						.662
O_WRK8						.495
O_WRK6						.436
O_STR2						.427
O_WRK2						.405
O_STR4						.405
Percent of Variance Accounted for	44.86%	4.77%	4.46%	3.71%	3.55%	3.25%

Note. Extraction Method: Maximum Likelihood; eigenvalues ≥ 1.0 .

Rotation Method: Oblimin with Kaiser Normalization; Rotation converged in 11 iterations.

22 of the original 56 items failed to load above .33, cross-loaded, and/or had communalities below .40.

Table 22

Dimensions for Measuring Organization Support of Collaboration after Phase 1.

Dimension	Overview
Build Shared Leadership	In a collaborative environment, employees and leaders work together to create a system of shared leadership. Employees (front-line workers) take on leadership roles both formally by taking on extra roles (such as starpoints) and informally by making decisions about their work that may have traditionally done by the “boss.” Leaders become coaches who establish direction and set the tone through their actions and words.
Align Support Systems	The context of the organization can be defined in terms of support systems. Support systems are the infrastructure created to support the work and the people doing the work within the organization. Common support systems include: the manner in which people are evaluated and compensated for their performance, the training and development that people receive, and the physical environment in which they perform their tasks. Systems must support collaboration if true collaboration is desired.
Connect to the Environment	The environment is the world outside the organization. This world includes customers, suppliers, competitors, government regulators, the community and other parts of the larger organization. No matter how well the organization appears to work internally, if the environment shifts and organization does not move accordingly, success will be threatened.
Craft a Culture of Collaboration	Culture represents what happens in the day-to-day work life, the shared values and assumptions of the people in the organization. True culture change is difficult and slow, but can be accomplished through changing the more tangible parts of the organization (structure, systems, employee and leader behavior).
Bring Together Essential Skills	Groups or teams must have members with the right collection of skills and abilities to get the job done. These skills and abilities can also be developed in existing members.
Enhance Work & Structure	The work encompasses the tasks, processes, and performance goals that must be achieved to accomplish the business of the organization. Organizational structure includes the way people are organized to carry out the work, including functional and program segments and connections. Different types of structures (such as individuals, work teams, and project teams) are needed because the work and the environment demand it.

Tests of Reliability

Tests of reliability were run on the resulting six scales. Reliability is the correlation of an item, scale, or instrument with a hypothetical one which truly measures what it is supposed to measure. Since the true instrument is not available, reliability is estimated via various statistics. A correlation matrix on the items indicated that the items were significantly correlated, which indicates that the majority of the items were homogeneous. Item-total correlations were generated to determine the discriminating power of the items. All items within each of the six factors correlated with the sum of the factor, indicating the existence of a base correlation.

Alpha coefficients were generated to determine the internal-consistency reliability of the questionnaire. Alpha measures the extent to which item responses obtained at the same time correlate highly with each other. Cronbach's alpha can be interpreted as the percent of variance the observed scale would explain in the hypothetical true scale composed of all possible items in the universe. The widely accepted social science cut-off is that alpha should be 0.70 or higher for a set of items to be considered a scale (Nunnally, 1983), while others are as lenient as 0.60. The alpha coefficients for five of the six factors were good according to the widely accepted social science cut-off of 0.70: 0.92 for Build Shared Leadership; 0.90 for Align Support Systems; 0.81 for Connect to the Environment; 0.88 for Craft a Culture of Collaboration; and 0.84 for Enhance Work & Structure. At 0.67, the alpha for Bring Together Essential Skills is slightly below the standard cut-off of 0.70 but above the lesser used cut-off of 0.60. Further analysis of the data reveals that deletion of individual items would not appreciably improve the alpha coefficients.

Table 23 presents the descriptive statistics, intercorrelations of dimensions, and internal reliability estimates of the dimensions. Note that some of the scales are highly intercorrelated, particularly Build Shared Leadership with Align Support Systems (0.715), Build Shared

Leadership with Craft a Culture of Collaboration (0.725), and Build Shared Leadership with Enhance Work & Structure (0.712). The remaining intercorrelations range from a low of 0.391 to a high of 0.691.

Table 23

Organization Support of Collaboration EFA Descriptive Statistics, Intercorrelations, and Internal Reliability Estimates

	Dimension	# Items	M	SD	1	2	3	4	5	6
1	Build Shared Leadership	9	3.444	.94	(.92)					
2	Align Support Systems	7	3.364	.92	.715	(.90)				
3	Connect to the Environment	4	3.576	.90	.593	.559	(.81)			
4	Craft a Culture of Collaboration	6	3.544	.94	.725	.663	.610	(.88)		
5	Bring Together Essential Skills	2	3.911	.79	.530	.481	.391	.481	(.67)	
6	Enhance Work & Structure	6	3.597	.87	.712	.691	.608	.673	.476	(.84)

Note. $N = 475$; all correlations significant at $p < .01$. Alphas are enclosed in parentheses.

To determine normality, skewness and kurtosis were evaluated. One factor, Bring Together Essential Skills (-6.04) was skewed, since it was outside the normal range of 3 and -3. The Bring Together Essential Skills factor was also kurtotic, as the kurtosis statistic (2.77) fell outside the normal range of 2 and -2. Therefore, the Bring Together Essential Skills factor is to be interpreted with caution.

Reliability estimates indicate that overall the resulting questionnaire scales are reliable.

The deletion of additional items to maximize internal consistency was not carried out, as the reliability analysis revealed that removing items would not improve reliability.

Review of Hypotheses

Based on qualitative research, literature review, and experience with companies, the author predicted seven factors of organization support of collaboration (Hypothesis 1A) with items creating predicted factors as seen in Figure 9 (Hypotheses 1B, 1C, 1D, 1E, 1F, 1G, and 1H). A comparison of the originally hypothesized dimensions with the factors resulting from analysis in Phase 1 of the study can be seen in Figure 10. The arrows indicate how the original factors (on the left) were supported, combined with others, or split to form the Phase 1 dimensions (on the right). Please refer to Figure 10 as each of the hypotheses is reviewed below.

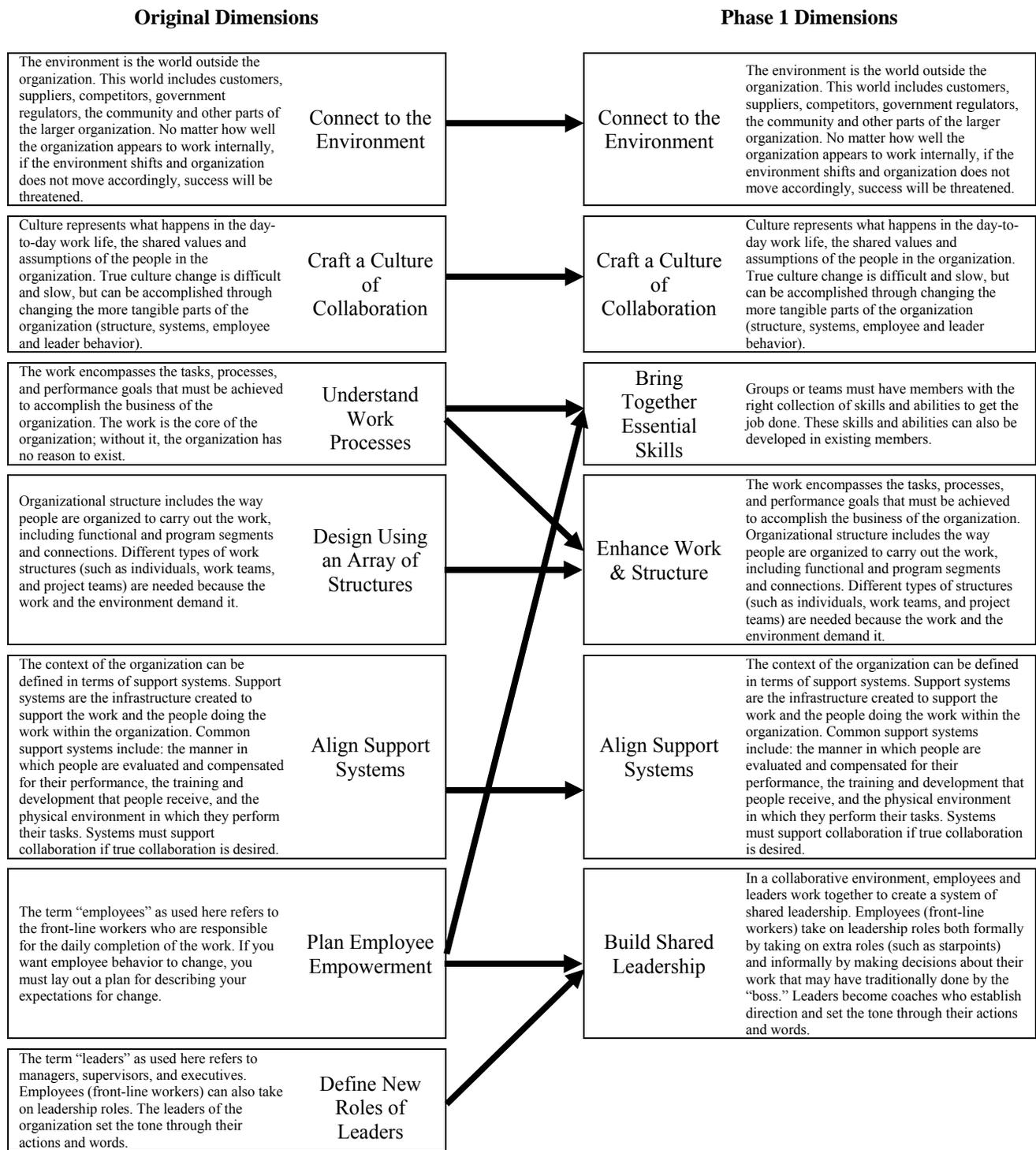


Figure 10. Comparison of original and Phase 1 dimensions for organization support of collaboration.

Note: Arrows indicate how the original (hypothesized) dimensions combined or stayed separate in the Phase 1 analysis.

Hypothesis 1A rejected. Results of Phase 1 (see Table 21) indicated a six factor model of organization support of collaboration. Therefore, Hypothesis 1A, which predicted seven factors, is rejected. See Figure 10 for a comparison of the original seven dimensions with the six factors resulting from Phase 1 analysis.

Hypotheses 1B, 1C, and 1H supported. The results (see Table 21 and Figure 10) provided support for the hypothesized factors Align Support Systems (Hypothesis 1H), Connect to the Environment (Hypothesis 1B), and Craft a Culture of Collaboration (Hypothesis 1C). Therefore, Hypotheses 1B, 1C, and 1H are accepted.

Hypotheses 1D, 1E, 1F, and 1G rejected. Two combinations of hypothesized factors and a merger of two items from different factors represent unexpected findings (see Table 21 and Figure 10). The factors Design Using an Array of Structures (Hypothesis 1E) and Understand Work Processes (Hypothesis 1D) combined into one. Two items from Plan Employee Empowerment (Hypothesis 1F) combined with seven items from Define New Roles of Leaders (Hypothesis 1G) to create a new factor named Build Shared Leadership. Another unexpected result was the combination of an Understand Work Processes item (O_WRK3) and a Plan Employee Empowerment item (O_EMP4) into one factor. Both items relate to having the appropriate skills sets to do the work. This new factor was named Bring Together Essential Skills. Because of these unexpected findings where original factors merged or split, Hypotheses 1D, 1E, 1F, and 1G are rejected.

Summary

The goal of Phase 1: Empirical Model Development was to explore the Perceptions of Organization Support of Collaboration questionnaire to determine what factor structure was derived from empirical data. After screening data for missing data and outliers, 475 cases were

included in the analysis, which is considered an adequate sample size for the analysis (Cattell, 1978; Guilford, 1954; Hinkin, 1995; Comrey & Lee, 1992; Bryant & Yarnold, 1995; MacCallum, Widaman, Zhang, & Hong, 1999). A series of Exploratory Factor Analyses (maximum likelihood, rotation method oblimin with Kaiser normalization) was performed to examine the original 56 items. The end result was a five factor model with 34 items that accounted for 64.60% of the variance. The tests of reliability run on the factor structure indicated that overall the resulting questionnaire scales were reliable.

Based on the results of exploratory factor analysis, the hypothesis (1A) predicting seven factors of organization support of collaboration was rejected. Three factors (Connect to the Environment, Craft a Culture of Collaboration, and Align Support Systems) formed as expected (Hypotheses 1B, 1C, and 1H). Two sets of two factors (Design Using an Array of Structures and Understand Work Processes, Define New Roles of Leaders and Plan Employee Empowerment) merged together to form new factors (Enhance Work & Structure, Build Shared Leadership). An unexpected factor (Bring Together Essential Skills) formed between one Employees item (O_EMP4) and one Work item (O_WRK3). Because of these unexpected findings where original factors merged or split, Hypotheses 1D, 1E, 1F, and 1G were rejected.

A total of 22 items were removed from the analysis due to failure to load on a factor, cross-loading on more than one factor, or low communalities. The result is a 34 item measure of organization support for collaboration.

Organization Effectiveness

Data Screening

A total of nine hundred, ninety-two participants responded to the organization effectiveness questionnaire; however, only 520 cases were included in the analysis based on the

following screening criteria: no missing data, no univariate outliers, and no multivariate outliers. The following data were deleted: 414 respondents for missing data², 20 respondents for univariate outliers, and 38 respondents for multivariate outliers. To determine univariate outliers, scores for each variable were standardized into z-scores. Cases falling above 3.29 or below -3.29 standard deviations from the mean for any variable were removed as univariate outliers from the dataset. Mahalanobis distance was used to determine the removal of multivariate outliers greater than the critical value $\chi^2(37) = 69.35$, $p < 0.001$ (Tabachnick & Fidell, 1996).

Sample Size Adequacy

The sample size is adequate, as the 520 cases exceed the recommended 150 to 250 (Cattell, 1978; Guilford, 1954; Hinkin, 1995). The sample size was considered very good when the Comrey & Lee (1992) categorization was applied (100 = poor; 200 = fair; 300 = good; 500 = very good). The criteria of subjects-to-variables ratio no lower than 5 (Bryant and Yarnold, 1995) was met. The suggested minimum sample size was also met according to the newer recommendations of MacCallum, Widaman, Zhang, and Hong (1999). These findings indicate that communalities greater than 0.6 require only 100 cases, communalities of approximately 0.5 require 100 to 200 cases, and communalities lower than 0.5 require 300 or more.

Exploratory Factor Analysis

An exploratory factor analytic (EFA) strategy using maximum likelihood estimation with direct oblimin rotation was used to classify the organization support of collaboration items. The purpose of EFA is to identify the structure among a set of variables by defining a set of common underlying dimensions (Hair, Anderson, Tatham, & Black, 1995). Maximum likelihood estimation is a form of common factor analysis; the objective is to identify the latent dimensions

² The large amount of missing data was attributed to participants failing to complete the questionnaire, perhaps due to a loss of interest to continue or perception of excessive length of the questionnaire.

represented in the original variables when the researcher has little knowledge about the amount of unique error variance (Hair, Anderson, Tatham, & Black, 1995). Direct oblimin is an oblique rotation method that is appropriate for obtaining theoretically meaningful factors from correlated variables; whereas orthogonal rotation assumes that underlying dimensions are not correlated (Hair, Anderson, Tatham, & Black, 1995). If variables are correlated, then an oblique rotation will produce a better estimate of the true factors and a better simple structure than will an orthogonal rotation (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Oblique rotation is appropriate in this analysis because the factors are expected to be correlated. Factors with an eigenvalue (the variance accounted for by a factor) greater than or equal to 1.0 were extracted, applying the Kaiser (1960) rule that states that a factor should extract at least as much as the equivalent of one original variable.

A series of Exploratory Factor Analyses (EFAs) using SPSS v11.0 was performed to examine the original 38 items (see Appendix I) and remove items until all remaining items loaded on a factor, did not cross-load on more than one factor, and had acceptable communalities. The goal of this process of removing items from the analysis is to retain only the items that are significantly represented in the factor solution (Hair, Anderson, Tatham, & Black, 1995) while achieving a simple factor structure (Fabrigar, Wegener, MacCallum, & Strahan, 1999), meaning that items load significantly on only one factor. First, items that did not load (a loading is the correlation between the item and the factor) on a factor above 0.33 were removed from the analysis. Then, items that loaded on more than one factor (referred to as cross-loading) above 0.33 were removed from the analysis. Finally, items with communalities (the proportion of the variance in the original items that is accounted for in the factor solution) less than 0.40 were eliminated. This process of removing items was repeated until a clean factor model was obtained.

A total of eight items were removed due to a failure to load on a factor above 0.33 (4 items), and low communalities (4 items); a total of 30 of the original 38 items were retained. See Table 24 for a summary of each of the four EFA runs, including the number of items analyzed, number of factors extracted, number of items per factor, and list of items that were removed in subsequent analyses. Details of each EFA run are described below.

Table 24

Summary of Exploratory Factor Analyses for Organization Effectiveness

EFA Run	Total # Items	# Factors (Eigenvalue ≥ 1.0)	# Items per Factor		Items Loading < 0.33	Items Cross-Loading > 0.33	Items with Communalities < 0.40
1	38	7	Factor 1 = 11 Factor 2 = 4 Factor 3 = 2 Factor 4 = 3	Factor 5 = 2 Factor 6 = 9 Factor 7 = 3	E_INV3 E_OUT2 E_PRF4 E_PRF6	N/A	N/A
2	34	7	Factor 1 = 11 Factor 2 = 4 Factor 3 = 2 Factor 4 = 3	Factor 5 = 2 Factor 6 = 9 Factor 7 = 3	None	None	E_INV2 E_OUT1
3	32	6	Factor 1 = 11 Factor 2 = 2 Factor 3 = 5	Factor 4 = 3 Factor 5 = 2 Factor 6 = 9	None	None	E_PRF5 E_FLX3
4	30	6	Factor 1 = 11 Factor 2 = 2 Factor 3 = 3	Factor 4 = 3 Factor 5 = 2 Factor 6 = 9	None	None	None

Note. Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization.

Results of the first EFA indicated a seven factor model. Four items (E_INV3, E_OUT2, E_PRF4, and E_PRF6) were removed due to a failure to load on a factor above the cut-off value of 0.33. A second EFA was run on the remaining 34 items, resulting in another seven factor model. No items failed to load on a factor above 0.33 or cross-load on two factors. However, two items (E_INV2 and E_OUT1) were removed due to communalities lower than the cut-off point of 0.40. Results of a third EFA on the remaining 32 items indicated a six factor model. No items failed to load on a factor above 0.33. However, two items (E_PRF5 and E_FLX3) were removed due to communalities lower than the cut-off point of 0.40.

A fourth and final EFA on the remaining 30 items indicated a six factor model with all items loading on a factor above 0.33 and communalities above 0.40. Table 25 presents the factor loadings and rotation eigenvalues of the final EFA. The revised dimensions are defined in Table

26 and the items within the factors are in Appendix K. Overall, 69.56% of the variance was accounted for by the factor loadings. Chi-square analysis ($\chi^2 = 10628.187$, $df = 435$, $p < 0.001$) indicates that the model was significant, while the Kaiser-Meyer-Olkin measure of sampling adequacy (0.94) shows that the matrix was factorable at a “marvelous” level. Communalities range from 0.40 to 0.90 with a mean of 0.63.

Table 25

Organization Effectiveness EFA Factor Loadings for the Remaining 30 Items

Item	Factor					
	Treatment of People	Connection to Larger Organization	New Customer Development	Customer Satisfaction	Work/Life Balance	Performance, Flexibility, & Involvement
E_PPL4	.864					
E_PPL2	.794					
E_PPL7	.789					
E_PPL6	.784					
E_PPL5	.770					
E_PPL3	.769					
EPPL10	.727					
E_PPL9	.628					
E_PPL1	.610					
E_PPL8	.582					
E_INV1	.388					
E_OUT5		.969				
E_OUT6		.797				
E_CST5			.908			
E_CST4			.906			
E_CST6			.454			
E_CST2				.888		
E_CST1				.712		
E_CST3				.580		
E_OUT4					-.879	
E_OUT3					-.851	
E_FLX4						.743
E_PRF3						.709
E_PRF2						.679
E_FLX2						.622
E_INV5						.545
E_PRF7						.536
E_PRF1						.494
E_FLX1						.439
E_INV4						.419
Percent of Variance Accounted for	42.22%	7.99%	6.30%	5.09%	4.32%	3.65%

Note. Extraction Method: Maximum Likelihood; eigenvalues ≥ 1.0 .

Rotation Method: Oblimin with Kaiser Normalization; Rotation converged in 11 iterations.

8 of the original 38 items failed to load above .33, cross-loaded, and/or had communalities below .40.

Table 26

Dimensions for Measuring Organization Effectiveness after Phase 1.

Dimension	Definition
Treatment of People	Treatment of people includes items that relate to how employees perceive they are being treated by the organization. Elements of trust, satisfaction, respect, and commitment are included here.
Connection to Larger Organization	Connection to the larger organization includes items that relate to how the organization connects to the larger organization (such as corporate office and other sites).
New Customer Development	New customer development includes items that relate to how well the organization is able to develop new customers and markets.
Customer Satisfaction	Customer satisfaction includes items that relate to how existing customers are treated by the organization.
Work/Life Balance	Work/life balance includes items relating to the balance of work demands with non-work demands, such as family and personal life.
Performance, Flexibility & Involvement	Performance includes the traditional elements of organization effectiveness such as cost and quality. Flexibility refers to the organization's ability to adapt and change to meet the needs of its environment. Employee involvement measures the extent that the organization involves employees in decision making.

Tests of Reliability

Tests of reliability were run on the resulting six scales. Reliability is the correlation of an item, scale, or instrument with a hypothetical one which truly measures what it is supposed to measure. Since the true instrument is not available, reliability is estimated via various statistics. A correlation matrix on the items indicated that the items were significantly correlated, which indicates that the majority of the items were homogeneous. Item-total correlations were generated to determine the discriminating power of the items. All items within each of the six factors correlated with the sum of the factor, indicating the existence of a base correlation.

Alpha coefficients were generated to determine the internal-consistency reliability of the questionnaire. Alpha measures the extent to which item responses obtained at the same time correlate highly with each other. Cronbach's alpha can be interpreted as the percent of variance the observed scale would explain in the hypothetical true scale composed of all possible items in the universe. The widely accepted social science cut-off is that alpha should be 0.70 or higher for a set of items to be considered a scale (Nunnally, 1983). The alpha coefficients for all six factors were good according to the widely accepted social science cut-off of 0.70: 0.95 for Treatment of People; 0.86 for Connection to Larger Organization; 0.82 for New Customer Development; 0.84 for Customer Satisfaction; 0.85 for Work/Life Balance; and 0.91 for Performance, Flexibility, & Involvement. Further analysis of the data reveals that deletion of individual items would not appreciably improve the alpha coefficients.

Table 27 presents the descriptive statistics, intercorrelations of dimensions, and internal reliability estimates of the scales. Note that the scales are only moderately intercorrelated, with only one pair highly correlated (Treatment of People and Performance, Flexibility, & Involvement, 0.778). The remaining intercorrelations range from a low of .094 to a high of .601.

Table 27

Organization Effectiveness EFA Descriptive Statistics, Intercorrelations, and Internal Reliability Estimates

	Dimension	# Items	M	SD	1	2	3	4	5	6
1	Treatment of People	11	3.514	1.01	(.95)					
2	Connection to Larger Organization	2	2.953	1.46	.135	(.86)				
3	Customer Satisfaction	3	3.300	.86	.257	.241	(.82)			
4	New Customer Development	3	4.080	1.44	.508	.100*	.318	(.84)		
5	Work/Life Balance	2	3.429	1.11	.524	.129	.094*	.241	(.85)	
6	Performance, Flexibility, & Involvement	9	3.456	1.06	.778	.157	.258	.601	.395	(.91)

Note. $N = 520$; all correlations significant at $p < .01$ unless indicated, * = significant at $p < .05$. Alphas are enclosed in parentheses.

Reliability estimates indicate that overall the resulting questionnaire scales are reliable.

The deletion of additional items to maximize internal consistency was not carried out, as the reliability analysis revealed that removing items would not improve reliability.

Review of Hypotheses

Based on qualitative research, literature review, and experience with companies, the author predicted six factors of organization effectiveness (Hypothesis 2A) with items loading on predicted factors as seen in Figure 9 (Hypotheses 2B, 2C, 2D, 2E, 2F, and 2G). A comparison of the originally hypothesized dimensions with the factors resulting from analysis in Phase 1 of the study can be seen in Figure 11. The arrows indicate how the original factors (on the left) were

supported, combined with others, or split to form the Phase 1 dimensions (on the right). Please refer to Figure 11 as each of the hypotheses is reviewed below.

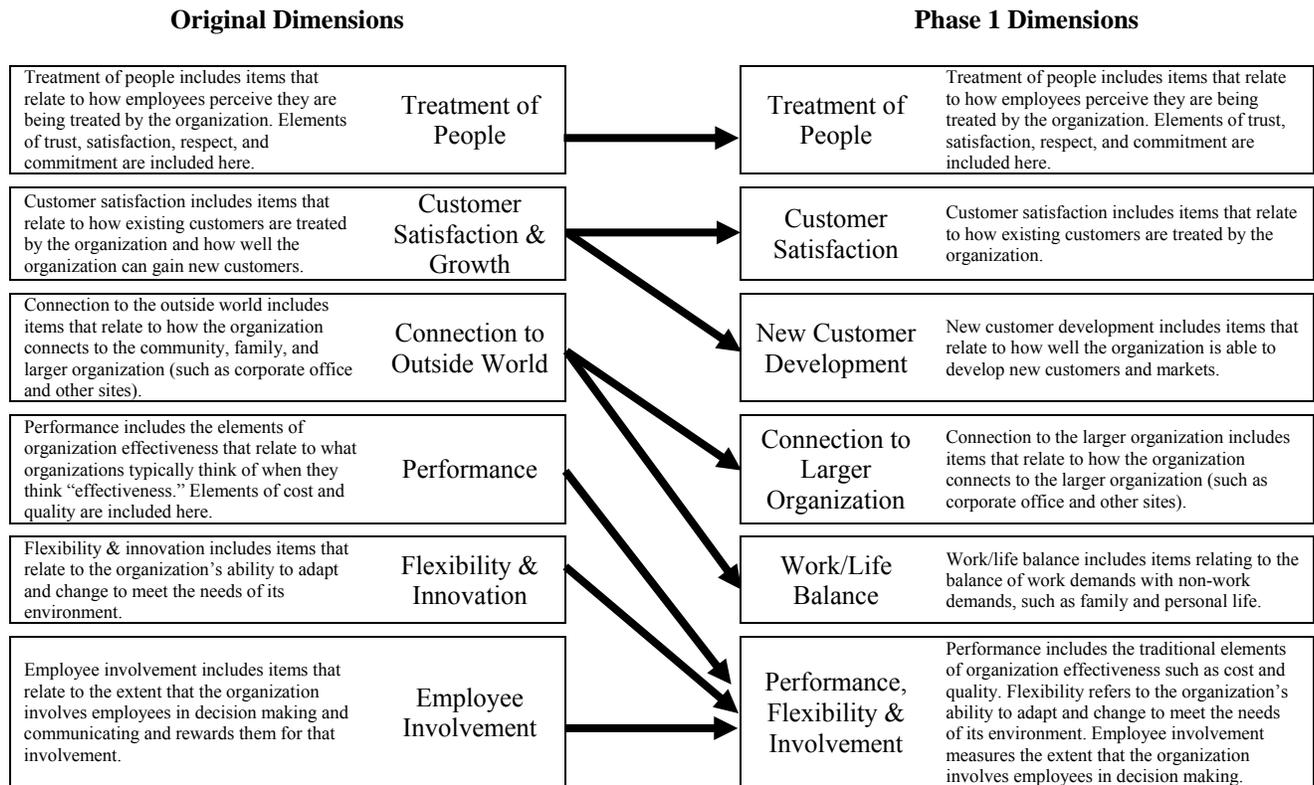


Figure 11. Comparison of original and Phase 1 dimensions for organization effectiveness.

Note: Arrows indicate how the original (hypothesized) dimensions combined or stayed separate in the Phase 1 analysis.

Hypothesis 2A supported. Results of Phase 1 (see Table 25) indicated a six factor model of organization effectiveness. Therefore, Hypothesis 2A, which predicted six factors, is accepted. See Figure 11 for a comparison of the original six dimensions with the six factors resulting from Phase 1 analysis.

Hypothesis 2G supported. The results (see Table 25 and Figure 11) only provided support for one of the original factors, Treatment of People, with the addition of one Employee Involvement item (E_INV1). Therefore, Hypothesis 2G is supported.

Hypotheses 2B, 2C, 2D, 2E, and 2F rejected. One combination of factors and a split of two factors represent unexpected findings (see Table 25 and Figure 11). The factors Performance (Hypothesis 2B), Flexibility (Hypothesis 2D), and Employee Involvement (Hypothesis 2C) combined into one factor, labeled Performance, Flexibility, & Involvement. Customer Satisfaction & Growth (Hypothesis 2E) divided into two factors, renamed Customer Satisfaction for one and New Customer Development for the other. Finally, the hypothesized Connection to the Outside World factor (Hypothesis 2F) also separated into two factors, renamed Connection to Larger Organization for one and Work/Life Balance for the other. The items comprising Connection to Larger Organization ask about the organization's connection to the corporate office or whatever larger organization may be relevant. Work/Life Balance items inquire about the balance of work with family demands. Due to these unexpected findings where original factors merged or split, Hypotheses 2B, 2C, 2D, 2E, and 2F are rejected.

Summary

The objective of Phase 1: Empirical Model Development was to explore the organization effectiveness questionnaire to determine what factor structure was derived from empirical data. After screening for missing data and outliers, 520 cases were included in the analysis, which is considered an adequate sample size for the analysis (Cattell, 1978; Guilford, 1954; Hinkin, 1995; Comrey & Lee, 1992; Bryant & Yarnold, 1995; MacCallum, Widaman, Zhang, & Hong, 1999). A series of EFAs (maximum likelihood, rotation method oblimin with Kaiser normalization) was performed to examine the original 38 items. The end result was a six factor model with 30 items

that accounted for 69.56% of the variance. The tests of reliability run on the factor structure indicated that overall the resulting scales were reliable.

Based on the results of exploratory factor analysis, the hypothesis (2A) predicting six factors of organization effectiveness was rejected. One factor (Treatment of People) formed as expected (Hypothesis 2G). Three factors (Performance, Flexibility, and Involvement) merged together into one factor. Two factors (Customer Satisfaction & Growth and Connection to Outside World) split into two factors each (Customer Satisfaction and New Customer Development, Connection to Larger Organization and Work/Life Balance). Due to these unexpected findings where original factors merged or split, Hypotheses 2B, 2C, 2D, 2E, and 2F were rejected.

A total of 8 items were removed from the analysis due to failure to load on a factor, cross-loading on more than one factor, or low communalities. The result is a 30 item measure of organization effectiveness.

Phase 2: Select Best Fit Models

The purpose of Phase 2: Select Best Fit Models is to examine the revised models of organization support of collaboration and organization effectiveness created in Phase 1: Generate Empirical Models and theoretical alternatives to determine which model best fits the data. Comparing the proposed model with a number of alternatives in a “competing models strategy” is important because a model can be shown only to have acceptable fit, but acceptable fit alone does not guarantee that another model will not fit better (Hair, Anderson, Tatham, & Black, 1995).

First, the data were screened for missing data and outliers and sample size adequacy was addressed. Then the empirical models developed in Phase 1 for organization support of

collaboration and organization effectiveness and their theoretical alternatives were tested to determine which model best fits the data using confirmatory factor analyses (CFAs).

Confirmatory factor analysis procedures provide goodness-of-fit indicators which show the degree to which the actual input matrix created by the data is predicted by the estimated model (Hair, Anderson, Tatham, & Black, 1995). These goodness-of-fit indicators were used to select one model of best fit for organization support of collaboration and one model of best fit for organization effectiveness. Descriptive statistics and tests of reliability were run on the scales in each of the models selected for best fit. Finally, results were compared to study hypotheses.

Data Screening and Sample Size Adequacy

Unfortunately, there was not enough data to warrant a completely separate second sample for Phases 2 and 3 of the study as was originally planned in the research design. To provide adequate sample size for analysis, the total study sample was included. The data for both parts of the questionnaire, organization support of collaboration and organization effectiveness, were cleaned together for the purposes of Phases 2 and 3.

A total of nine hundred, ninety-two participants responded to the questionnaire; however, only 478 cases were included in the analysis based on the following screening criteria: no missing data, no univariate outliers, and no multivariate outliers. The following data were deleted: 441 respondents for missing data³, 19 respondents for univariate outliers, and 54 respondents for multivariate outliers. To determine univariate outliers, scores for each variable were standardized into z-scores. Cases falling above 3.29 or below -3.29 standard deviations from the mean for any variable were removed as univariate outliers from the dataset.

³ The large amount of missing data was attributed to participants failing to complete the questionnaire, perhaps due to a loss of interest to continue or perception of excessive length of the questionnaire.

Mahalanobis distance was used to determine the removal of multivariate outliers greater than the critical value $\chi^2(57) = 95.75$ (Tabachnick & Fidell, 1996).

The sample size was adequate, as the 478 cases exceed the recommended 150 to 200 (Anderson & Gerbing, 1988; Chou & Bentler, 1995; Hoyle & Kenny, 1999). While the “rule of 5” (Bentler & Chou, 1987) recommends at least five cases for every estimated parameter, stable parameter estimates have been found with a 4:1 ratio of sample size to number of estimated parameters (Tanaka, 1987), suggesting that a ratio of less than 5:1 may yield stable estimates. The number of cases per parameter for the current study was 4:1 (approximately 4 cases for each of the 109 estimated parameters).

Organization Support of Collaboration

Proposed Models

The result of the exploratory factor analysis work done in Phase One was a six factor model with 36 items (see Appendix J for items comprising the factors and Table 22 for dimension definitions). One factor (Bring Together Essential Skills) consisting of two items (O_WRK3 and O_EMP4) was dropped for subsequent analysis due to research guidelines stating that two items are not sufficient to create a factor (Anderson & Gerbing, 1984) and the statistical package used in the analysis (LISREL 8.52, Jöreskog & Sörbom, 1996) requiring three items or more to measure each dimension. The result is a 32 item measure of organization support of collaboration.

In this section, each of the seven alternate models created from the 32 item measure of organization support of collaboration is reviewed. The models were either theory driven or based upon the results of the exploratory work done in Phase 1: Generate Empirical Models. The proposed models and the items comprising the factors are summarized in Table 28.

Table 28

Composition of Proposed Models for Organization Support of Collaboration

Proposed Models	Factor Composition					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Model 1 EFA	O_CUL2	O_SYS1	O_ENV1	O_LDR1	O_STR2	
	O_CUL3	O_SYS2	O_ENV2	O_LDR2	O_STR3	
	O_CUL4	O_SYS3	O_ENV6	O_LDR3	O_STR4	
	O_CUL5	O_SYS4	O_ENV8	O_LDR4	O_WRK2	
	O_CUL7	O_SYS5		O_LDR5	O_WRK6	
	O_CUL8	O_SYS6		O_LDR6	O_WRK8	
		O_SYS7		O_LDR7		
				O_EMP1		
				O_EMP2		
Model 2 Theory	O_CUL2	O_SYS1	O_ENV1	O_LDR1	O_STR2	O_WRK2
	O_CUL3	O_SYS2	O_ENV2	O_LDR2	O_STR3	O_WRK6
	O_CUL4	O_SYS3	O_ENV6	O_LDR3	O_STR4	O_WRK8
	O_CUL5	O_SYS4	O_ENV8	O_LDR4		
	O_CUL7	O_SYS5		O_LDR5		
	O_CUL8	O_SYS6		O_LDR6		
		O_SYS7		O_LDR7		
				O_EMP1		
				O_EMP2		
Model 3 Theory	O_CUL2	O_SYS1	O_ENV1	O_WRK2	O_STR2	
	O_CUL3	O_SYS2	O_ENV2	O_WRK6	O_STR3	
	O_CUL4	O_SYS3	O_ENV6	O_WRK8	O_STR4	
	O_CUL5	O_SYS4	O_ENV8			
	O_CUL7	O_SYS5				
	O_CUL8	O_SYS6				
		O_SYS7				
		O_LDR1				
		O_LDR2				
		O_LDR3				
	O_LDR4					
	O_LDR5					
	O_LDR6					
	O_LDR7					
	O_EMP1					
	O_EMP2					
Model 4 Theory	O_CUL2	O_SYS1	O_ENV1	O_STR2		
	O_CUL3	O_SYS2	O_ENV2	O_STR3		
	O_CUL4	O_SYS3	O_ENV6	O_STR4		
	O_CUL5	O_SYS4	O_ENV8	O_WRK2		
	O_CUL7	O_SYS5		O_WRK6		
	O_CUL8	O_SYS6		O_WRK8		
		O_SYS7				
		O_LDR1				
		O_LDR2				
		O_LDR3				
	O_LDR4					
	O_LDR5					
	O_LDR6					
	O_LDR7					
	O_EMP1					
	O_EMP2					

(table continues)

Table 28 (continued).

Proposed Models	Factor Composition					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Model 5 Theory	O_CUL2	O_LDR1	O_ENV1	O_SYS1		
	O_CUL3	O_LDR2	O_ENV2	O_SYS2		
	O_CUL4	O_LDR3	O_ENV6	O_SYS3		
	O_CUL5	O_LDR4	O_ENV8	O_SYS4		
	O_CUL7	O_LDR5		O_SYS5		
	O_CUL8	O_LDR6		O_SYS6		
		O_LDR7		O_SYS7		
		O_EMP1		O_WRK2		
		O_EMP2		O_WRK6		
				O_WRK8		
				O_STR2		
				O_STR3		
				O_STR4		
Model 6 Theory	O_CUL2	O_SYS1	O_STR2			
	O_CUL3	O_SYS2	O_STR3			
	O_CUL4	O_SYS3	O_STR4			
	O_CUL5	O_SYS4	O_WRK2			
	O_CUL7	O_SYS5	O_WRK6			
	O_CUL8	O_SYS6	O_WRK8			
	O_ENV1	O_SYS7				
	O_ENV2	O_LDR1				
	O_ENV6	O_LDR2				
	O_ENV8	O_LDR3				
		O_LDR4				
		O_LDR5				
		O_LDR6				
		O_LDR7				
		O_EMP1				
		O_EMP2				
	Model 7 Theory	O_CUL2	O_SYS1	O_ENV1		
O_CUL3		O_SYS2	O_ENV2			
O_CUL4		O_SYS3	O_ENV6			
O_CUL5		O_SYS4	O_ENV8			
O_CUL7		O_SYS5	O_WRK2			
O_CUL8		O_SYS6	O_WRK6			
		O_SYS7	O_WRK8			
		O_LDR1	O_STR2			
		O_LDR2	O_STR3			
		O_LDR3	O_STR4			
		O_LDR4				
		O_LDR5				
		O_LDR6				
		O_LDR7				
		O_EMP1				
		O_EMP2				

Note: All models use the same 32 items.

The first model with five factors reflects the modified Phase 1 model derived from exploratory factor analysis minus the two items comprising the 2-item factor. The second model with six factors was exclusively driven by the original theoretical model of organization support of collaboration. The 32 items were configured to approximate as closely as possible the original

seven factor, 56-item model. Since only two items from the original Employees dimension (O_EMP1 and O_EMP2) remain, these items were kept with the Leaders dimension and the Employees dimension was dropped.

The remaining models were created to transition to smaller factor models by combining conceptually congruent dimensions. In the third model, Systems, Leaders, and Employees are combined into one factor as these elements theoretically must be congruent for empowerment to occur. The fourth model with four factors continues the consolidation of factors by putting Structure and Work into one factor based on theoretical (the appropriate structure should be created around the appropriate kind of work) and empirical reasons (Structure and Work held together in one factor in the EFA work). Model 5 moves the original Systems factor items to combine with Work and Structure items. Theoretically, Work, Structure, and Systems are the parts that are the most concrete, so they are placed together in this model. The sixth model collapses the items into three factors by combining Culture and Environment items into one factor. Finally, Model 7 takes a different look at three factors by keeping Culture as a separate factor; combining Systems, Leaders, and Employees; and combining Environment, Work, and Structure.

Model of Best Fit

LISREL 8.52 was used to perform confirmatory factor analysis on all proposed models. To determine model fit, appropriate fit indices, item loadings, squared multiple correlations of the items, and modification indices were reviewed for each proposed model. The following goodness-of-fit indices were used based on the recommendations of Hu and Bentler (1999): root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and non-normed fit index (NNFI). The lower bound of good fit for

the CFI and NNFI is considered to be 0.90, while the upper bounds for good fit are considered to be 0.08 and 0.10 for the RMSEA and the SRMR, respectively (Vandenberg & Lance, 2000).

Using maximum likelihood estimation, the seven proposed models converged in 22 to 27 iterations. All items loaded significantly, at the 0.01 level, on the designated factor in each of the models. Squared multiple correlations had a range of variance from 0.283 to 0.710 for the different models. All the models except Model 5 had squared multiple correlations for all items above 0.3 with the majority of them above 0.4, indicating that each item accounted for a significant amount of the variance in its respective model. Modification indices indicated insignificant cross loading of items in the models. Table 29 presents the fit indices for each of the seven proposed models.

Table 29

Fit Statistics for the Proposed Organization Support of Collaboration Models

Proposed Model	# Factors	# Items	χ^2	<i>df</i>	<i>RMSEA</i>	<i>NNFI</i>	<i>CFI</i>	<i>SRMR</i>
1	5	32	1009.815	454	.0527	.989	.990	.0370
2	6	32	974.023	449	.0518	.989	.990	.0363
3	5	32	1540.863	454	.0886	.978	.980	.0468
4	4	32	1574.706	458	.0888	.977	.979	.0472
5	4	32	1280.290	458	.0687	.983	.984	.0452
6	3	32	1800.229	461	.0959	.973	.975	.0512
7	3	32	1742.292	461	.0945	.974	.976	.0501

Note. *N* = 478 cases; *RMSEA* = root mean square error of approximation; *NNFI* = non-normed fit index; *CFI* = comparative fit index; *SRMR* = standardized *RMR*.

Review of the fit indices reveals that Models 1 and 2 most closely fit the data. However, fit indices for Model 2 were slightly better than those for Model 1. The root mean square error was reasonable to excellent (below 0.05 is excellent, 0.05 to 0.08 is reasonable, 0.08 to 0.10 is mediocre). The non-normed fit index and comparative fit index were both good, as they exceed the indicator of 0.90. Additionally, standardized *RMR* was good, as it was significantly below the cut-off value of 0.08 (Vandenberg & Lance, 2000).

While both Models 1 and 2 had essentially identical fit statistics, Model 2 was selected due to its closer proximity to the theoretically proposed model (see Appendix L for the revised dimensions and items and Table 30 for definitions of dimensions). This model closely reflects the originally proposed theoretical model with seven factors. The two remaining items from the original Employees dimension combined with the seven Leaders items to form a factor renamed Build Shared Leadership. Table 31 presents the parameter estimations and squared multiple correlations for each item in the model.

Table 30

Dimensions for Measuring Organization Support of Collaboration after Phase 2.

Dimension	Overview
Connect to the Environment	The environment is the world outside the organization. This world includes customers, suppliers, competitors, government regulators, the community and other parts of the larger organization. No matter how well the organization appears to work internally, if the environment shifts and organization does not move accordingly, success will be threatened.
Craft a Culture of Collaboration	Culture represents what happens in the day-to-day work life, the shared values and assumptions of the people in the organization. True culture change is difficult and slow, but can be accomplished through changing the more tangible parts of the organization (structure, systems, employee and leader behavior).
Understand Work Processes	The work encompasses the tasks, processes, and performance goals that must be achieved to accomplish the business of the organization. The work is the core of the organization; without it, the organization has no reason to exist.
Design Using an Array of Structures	Organizational structure includes the way people are organized to carry out the work, including functional and program segments and connections. Different types of work structures (such as individuals, work teams, and project teams) are needed because the work and the environment demand it.
Build Shared Leadership	In a collaborative environment, employees and leaders work together to create a system of shared leadership. Employees (front-line workers) take on leadership roles both formally by taking on extra roles (such as starpoints) and informally by making decisions about their work that may have traditionally done by the “boss.” Leaders become coaches who establish direction and set the tone through their actions and words.
Align Support Systems	The context of the organization can be defined in terms of support systems. Support systems are the infrastructure created to support the work and the people doing the work within the organization. Common support systems include: the manner in which people are evaluated and compensated for their performance, the training and development that people receive, and the physical environment in which they perform their tasks. Systems must support collaboration if true collaboration is desired.

Table 31

Standardized Parameter Estimates for Organization Support of Collaboration Model 2

Item	Factor						<i>R</i> ²
	Craft a Culture of Collaboration	Align Support Systems	Connect to the Environment	Build Shared Leadership	Design Using an Array of Structures	Understand Work Processes	
O_CUL2	.705						.497
O_CUL3	.823						.677
O_CUL4	.775						.600
O_CUL5	.700						.490
O_CUL7	.784						.615
O_CUL8	.797						.635
O_SYS1		.839					.703
O_SYS2		.814					.662
O_SYS3		.718					.516
O_SYS4		.774					.599
O_SYS5		.620					.384
O_SYS6		.802					.643
O_SYS7		.838					.702
O_ENV1			.758				.575
O_ENV2			.727				.528
O_ENV6			.768				.590
O_ENV8			.700				.490
O_LDR1				.843			.710
O_LDR2				.744			.554
O_LDR3				.826			.682
O_LDR4				.729			.531
O_LDR5				.795			.632
O_LDR6				.810			.657
O_LDR7				.798			.637
O_EMP1				.732			.536
O_EMP2				.705			.497
O_STR2					.736		.542
O_STR3					.622		.387
O_STR4					.768		.590
O_WRK2						.732	.536
O_WRK6						.730	.533
O_WRK8						.808	.653

Note. *N* = 478 cases; all loadings were significant at *p* < .01; *R*² = squared multiple correlations.

Tests of Reliability

Tests of reliability were run on the six scales of the model. Reliability is the correlation of an item, scale, or instrument with a hypothetical one which truly measures what it is supposed to measure. Since the true instrument is not available, reliability is estimated via various statistics.

A correlation matrix on the items indicated that the items were significantly correlated, which indicates that the majority of the items were homogeneous. Item-total correlations were generated to determine the discriminating power of the items. All items within each of the six factors correlated with the sum of the factor, indicating the existence of a base correlation.

Alpha coefficients were generated to determine the internal-consistency reliability of the questionnaire. Alpha measures the extent to which item responses obtained at the same time correlate highly with each other. Cronbach's alpha can be interpreted as the percent of variance the observed scale would explain in the hypothetical true scale composed of all possible items in the universe. The widely accepted social science cut-off is that alpha should be 0.70 or higher for a set of items to be considered a scale (Nunnally, 1983). The alpha coefficients for all six factors were good according to the widely accepted social science cut-off of 0.70: 0.89 for Factor 1; 0.91 for Factor 2; 0.83 for Factor 3; 0.93 for Factor 4; 0.75 for Factor 5; and 0.80 for Factor 6. Further analysis of the data reveals that deletion of individual items would not appreciably improve the alpha coefficients.

Table 32 presents the descriptive statistics, intercorrelations of dimensions, and internal reliability estimates of the dimensions. Note that many of the scales are highly intercorrelated, particularly Craft a Culture of Collaboration with Build Shared Leadership (0.819), Build Shared Leadership with Understand Work Processes (0.804), and Design Using an Array of Structures with Understand Work Processes (0.867). The remaining intercorrelations range from a low of 0.689 to a high of 0.796.

Table 32

Organization Support of Collaboration Model 2 Descriptive Statistics, Intercorrelations, and Internal Reliability Estimates

	Dimension	# Items	M	SD	1	2	3	4	5	6
1	Craft a Culture of Collaboration	6	3.500	.979	(.89)					
2	Align Support Systems	7	3.320	.953	.776	(.91)				
3	Connect to the Environment	4	3.533	.934	.744	.689	(.83)			
4	Build Shared Leadership	9	3.405	.995	.819	.780	.692	(.93)		
5	Design Using an Array of Structures	3	3.570	.935	.760	.796	.730	.795	(.75)	
6	Understand Work Processes	3	3.550	.885	.796	.763	.755	.804	.867	(.80)

Note. $N = 478$; all correlations significant at $p < .01$. Alphas are enclosed in parentheses.

To determine normality, skewness and kurtosis were evaluated. Five factors, Environment (-4.45), Culture (-4.07), Work (-3.31), Structure (-4.64), and Leaders (-3.16) were skewed, since they were outside the normal range (3 and -3) of the skewness statistic. None of the factors were kurtotic, since all fell within the normal range (2 and -2) of the kurtosis statistic.

Reliability estimates indicate that overall the resulting questionnaire scales are reliable. The deletion of additional items to maximize internal consistency was not carried out, as the reliability analysis revealed that removing items would not improve reliability.

Review of Hypotheses

Based on qualitative research, literature review, and experience with companies, the author predicted seven factors of organization support of collaboration (Hypothesis 3A) with items remaining after Phase 1 loading on predicted factors as seen in Figure 9 (Hypotheses 3B,

3C, 3D, 3E, 3F, 3G, and 3H). A comparison of the originally hypothesized dimensions with the factors resulting from analysis in Phase 2 of the study can be seen in Figure 12. The arrows indicate how the original factors (on the left) were supported, combined with others, or split to form the Phase 2 dimensions (on the right). Please refer to Figure 12 as each of the hypotheses is reviewed below.

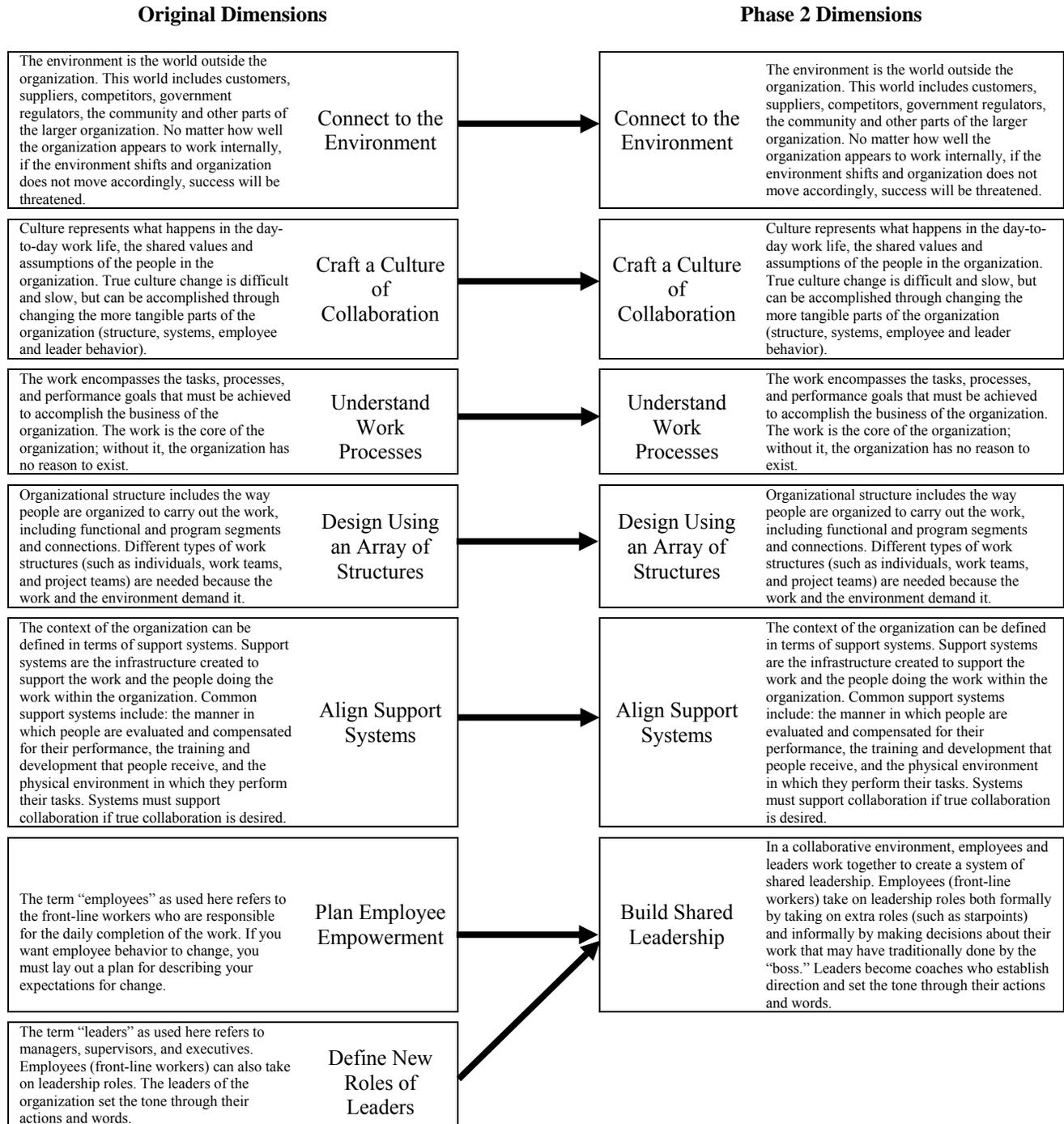


Figure 12. Comparison of original and Phase 2 dimensions for organization support of collaboration.

Note: Arrows indicate how the original (hypothesized) dimensions combined or stayed separate in the Phase 2 analysis.

Hypothesis 3A rejected. Results of Phase 2 (see Table 28) indicated a six factor model of organization support of collaboration. Therefore, Hypothesis 3A, which predicted seven factors, is rejected. See Figure 12 for a comparison of the original seven dimensions with the six factors resulting from Phase 1 analysis.

Hypotheses 3B, 3C, 3D, 3E and 3H supported. The results (see Table 28 and Figure 12) provided support for the hypothesized factors Connect to the Environment (Hypothesis 3B), Craft a Culture of Collaboration (Hypothesis 3C), Understand Work Processes (Hypothesis 3D), Design Using an Array of Structures (Hypothesis 3E), and Align Support Systems (Hypothesis 3H). Therefore, Hypotheses 3B, 3C, 3D, 3E and 3H are accepted.

Hypotheses 3F and 3G rejected. The combination of Plan Employee Empowerment (Hypothesis 3F) with Define New Roles of Leaders (Hypothesis 3G) was unexpected. Therefore, Hypotheses 3G and 3F are rejected.

Summary

In Phase 2: Select Best Fit Models, seven proposed models for organization support of collaboration derived from a combination of exploratory factor analysis and theoretical development were analyzed for best fit to the data using confirmatory factor analysis. Each of the proposed models used the 32 item measure derived from Phase 1 (34 items) minus the two items from the 2-item factor. Models ranged from three to six factors. The sample size (478) was considered adequate for the analysis. The model with six factors (Model 2) derived from a combination of empirical and theoretical development was selected as the model of best fit due to superior fit indices. Tests of reliability on the six factor model indicate that overall the resulting factor structure was reliable.

Because the results of confirmatory factor analysis supported a six factor model, the hypothesis (3A) predicting seven factors of organization support of collaboration was rejected. Five factors (Connect to the Environment, Craft a Culture of Collaboration, Understand Work Processes, Design Using an Array of Structures, and Align Support Systems) were supported as expected (Hypotheses 3B, 3C, 3D, 3E, and 3H). Two factors (Define New Roles of Leaders and Plan Employee Empowerment) merged together to form a new factor (Build Shared Leadership). Therefore, Hypotheses 3F and 3G stating that these are stand-alone factors are rejected.

Organization Effectiveness

Proposed Models

The result of the exploratory factor analysis work done in Phase One was a six factor model with 30 items (see Appendix J for items comprising the factors and Table 26 for dimension definitions). Two of the six factors consisted of only 2 items each. Research guidelines state that two items are not sufficient to create a factor (Anderson & Gerbing, 1984) and the statistical package used in the analysis (LISREL 8.52, Jöreskog & Sörbom, 1996) requires three items or more to measure each dimension. In an effort to produce a factor structure without 2-item factors, a sequence of forced factor EFAs was run on the 30 remaining items at the end of the original EFA. The findings from the forced factor EFAs provided support that the items from the original 2-item factors were robust enough to not be easily forced on another factor. Therefore, the decision was made to remove the 4 items from the two 2-item factors from further analysis in Phases 2 and 3 of the present study. The result is a 26 item measure of organization effectiveness. Each of the alternative models uses the same 26 items.

In this section, each of the ten alternate models created from the 26 item measure of organization effectiveness is reviewed. The models were either theory driven or based upon the

results of the exploratory work done in Phase 1: Generate Empirical Models. The proposed models and the items comprising the factors are summarized in Table 33.

Table 33

Composition of Proposed Models for Organization Effectiveness

Proposed Models	Factor Composition					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Model 1	E_PPL1	E_CST1	E_CST4	E_PRF1		
EFA	E_PPL2	E_CST2	E_CST5	E_PRF2		
	E_PPL3	E_CST3	E_CST6	E_PRF3		
	E_PPL4			E_PRF7		
	E_PPL5			E_FLX1		
	E_PPL6			E_FLX2		
	E_PPL7			E_FLX4		
	E_PPL8			E_INV4		
	E_PPL9			E_INV5		
	EPPL10					
	E_INV1					
Model 2	E_PPL1	E_CST1	E_FLX1	E_PRF1	E_INV1	
Theory	E_PPL2	E_CST2	E_FLX2	E_PRF2	E_INV4	
	E_PPL3	E_CST3	E_FLX4	E_PRF3	E_INV5	
	E_PPL4	E_CST4		E_PRF7		
	E_PPL5	E_CST5				
	E_PPL6	E_CST6				
	E_PPL7					
	E_PPL8					
	E_PPL9					
	EPPL10					
Model 3	E_PPL1	E_CST1	E_CST4	E_FLX1	E_PRF1	E_INV1
Theory +	E_PPL2	E_CST2	E_CST5	E_FLX2	E_PRF2	E_INV4
EFA	E_PPL3	E_CST3	E_CST6	E_FLX4	E_PRF3	E_INV5
	E_PPL4				E_PRF7	
	E_PPL5					
	E_PPL6					
	E_PPL7					
	E_PPL8					
	E_PPL9					
	EPPL10					
Model 4	E_PPL1	E_CST1	E_FLX1			
Theory	E_PPL2	E_CST2	E_FLX2			
	E_PPL3	E_CST3	E_FLX4			
	E_PPL4	E_CST4	E_INV1			
	E_PPL5	E_CST5	E_INV4			
	E_PPL6	E_CST6	E_INV5			
	E_PPL7	E_PRF1				
	E_PPL8	E_PRF2				
	E_PPL9	E_PRF3				
	EPPL10	E_PRF7				

(table continues)

Table 33 (continued).

Proposed Models	Factor Composition					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Model 5 Theory	E_PPL1 E_PPL2 E_PPL3 E_PPL4 E_PPL5 E_PPL6 E_PPL7 E_PPL8 E_PPL9 EPPL10 E_FLX1 E_FLX2 E_FLX4 E_INV1 E_INV4 E_INV5	E_CST1 E_CST2 E_CST3 E_CST4 E_CST5 E_CST6 E_PRF1 E_PRF2 E_PRF3 E_PRF7				
Model 6 Theory	All items					
Model 7 Theory + EFA	E_PPL1 E_PPL2 E_PPL3 E_PPL4 E_PPL5 E_PPL6 E_PPL7 E_PPL8 E_PPL9 EPPL10	E_CST1 E_CST2 E_CST3	E_CST4 E_CST5 E_CST6	E_FLX1 E_FLX2 E_FLX4 E_INV1 E_INV4 E_INV5	E_PRF1 E_PRF2 E_PRF3 E_PRF7	
Model 8 Theory + EFA	E_PPL1 E_PPL2 E_PPL3 E_PPL4 E_PPL5 E_PPL6 E_PPL7 E_PPL8 E_PPL9 EPPL10	E_CST1 E_CST2 E_CST3	E_CST4 E_CST5 E_CST6	E_FLX1 E_FLX2 E_FLX4 E_PRF1 E_PRF2 E_PRF3 E_PRF7	E_INV1 E_INV4 E_INV5	
Model 9 Theory + EFA	E_PPL1 E_PPL2 E_PPL3 E_PPL4 E_PPL5 E_PPL6 E_PPL7 E_PPL8 E_PPL9 EPPL10	E_CST1 E_CST2 E_CST3	E_CST4 E_CST5 E_CST6	E_FLX1 E_FLX2 E_FLX4	E_PRF1 E_PRF2 E_PRF3 E_PRF7 E_INV1 E_INV4 E_INV5	
Model 10 Theory + EFA	E_PPL1 E_PPL2 E_PPL3 E_PPL4 E_PPL5 E_PPL6 E_PPL7 E_PPL8 E_PPL9 EPPL10 E_INV1	E_CST1 E_CST2 E_CST3	E_CST4 E_CST5 E_CST6	E_FLX1 E_FLX2 E_FLX4 E_INV4 E_INV5	E_PRF1 E_PRF2 E_PRF3 E_PRF7	

Note. Each model used the same 26 items.

The first three models illustrate the modified empirical results, a purely theoretical model, and a combination of the two. The first model consisting of four factors reflects the empirical model generated by exploratory factor analysis in Phase 1 modified by dropping the two factors with 2 items each. Model 2 is a five-factor model that was exclusively driven by the original theoretical model of organization effectiveness. The 26 items were configured to approximate as closely as possible the original six-factor, 38-item model. One of the original six factors (Outside World) was not included due to the removal of all items from that scale, either from the original EFA or through the elimination of the two factors with 2 items each. Model 3 is a six factor model that reflects a combination of the original theoretical model of organization effectiveness and the results of the exploratory work which supported the division of the original Customers dimension into two factors.

The next three models transition from the four factor model (Model 1) generated in the exploratory work to create three, two, and one factor models by combining conceptually congruent concepts. The fourth model keeps the People items in its own factor, and then combines Customer and Performance in one factor and Flexibility and Involvement in another as these pairs theoretically seem to be linked. The fifth model consists of two factors: one that is focused on treatment of people, involvement, and flexibility, constructs that are congruent with empowerment oriented organizations; and one that is centered on traditional concepts of organization effectiveness (customers and performance). Finally, the sixth model explores a unitary factor of organization effectiveness.

The final four models were created as alternatives to Model 3, which combined the original hypothesized dimensions with exploratory work that supported the split of the original Customers dimension into two factors. Since Flexibility, Performance, and Involvement factored

together in the exploratory factor analysis, it seemed reasonable to test different combinations of these three factors. The seventh model brings together Flexibility and Involvement into one factor. The eighth model combines Flexibility and Performance into one factor. Model 9 joins Performance and Involvement into one factor. Finally, Model 10 takes Model 3 and moves one item (E_INV1) from the Involvement factor to the People factor, as this item clustered with the People dimension in the model created in Phase 1 of this study.

Model of Best Fit

LISREL 8.52 was used to perform confirmatory factor analysis on all proposed models. To determine model fit, appropriate fit indices, item loadings, squared multiple correlations of the items, and modification indices were reviewed for each proposed model. The following goodness-of-fit indices were used based on the recommendations of Hu and Bentler (1999): root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and non-normed fit index (NNFI). The lower bound of good fit for the CFI and NNFI is considered to be 0.90, while the upper bounds for good fit are considered to be 0.08 and 0.10 for the RMSEA and the SRMR, respectively (Vandenberg & Lance, 2000).

Using maximum likelihood estimation, the ten proposed models converged in 15 to 29 iterations. All items loaded significantly, at the 0.01 level, on the designated factor in each of the models. Squared multiple correlations had a wide range of variance (from 0.034 to 0.830) for the different models. Models 1, 3, and 7-10 had squared multiple correlations for all items above 0.3 with the majority of them above 0.4, indicating that each item accounted for a significant amount of the variance in its respective model. Modification indices indicated some cross loading of items in Models 4 and 5. Table 34 presents the fit indices for each of the ten proposed models.

Table 34

Fit Statistics for the Proposed Organization Effectiveness Models

Proposed Model	# Factors	# Items	χ^2	<i>df</i>	<i>RMSEA</i>	<i>NNFI</i>	<i>CFI</i>	<i>SRMR</i>
1	4	26	919.319	293	.0699	.978	.981	.0558
2	5	26	1415.157	289	.0899	.961	.965	.0639
3	6	26	832.526	284	.0671	.981	.983	.0508
4	3	26	1731.702	296	.102	.951	.955	.0722
5	2	26	2034.318	298	.116	.941	.946	.0843
6	1	26	2454.784	299	.143	.927	.933	.0890
7	5	26	873.957	289	.0687	.980	.982	.0524
8	5	26	864.670	289	.0687	.980	.982	.0524
9	5	26	910.626	289	.0711	.978	.981	.0553
10	5	26	875.001	289	.0679	.980	.982	.0531

Note. *N* = 478 cases; *RMSEA* = root mean square error of approximation; *NNFI* = non-normed fit index; *CFI* = comparative fit index; *SRMR* = standardized *RMR*.

Review of the fit indices reveals that Models 1, 3, 7, 8, and 10 most closely fit the data. In each of these models, the first three factors (Treatment of People, Customer Satisfaction, and New Customer Development) were stable, which provides excellent support for those three factors. The difference between the models was the way they separated or merged different combinations of the other three factors (Performance, Flexibility, and Employee Involvement). Since the fit statistics were essentially identical, Model 3, which most closely approximated the originally hypothesized theoretical model by treating Performance, Flexibility, and Employee Involvement as three separate factors, was chosen. For Model 3, the root mean square error was reasonable (below 0.05 is excellent, 0.05 to 0.08 is reasonable, 0.08 to 0.10 is mediocre). The non-normed fit index and comparative fit index were both good, as they exceed the indicator of 0.90. Additionally,

standardized *RMR* was good, as it was significantly below the cut-off value of 0.08 (Vandenberg & Lance, 2000).

The proposed Model 3 was chosen for best fit and theoretical reasons (see Appendix M for the revised dimensions and items and Table 35 for an overview of the dimensions). This model closely reflects the originally proposed theoretical model with six factors, with one modification discovered in exploratory work done in Phase 1 of the current study. The original Outside World factor was eliminated due to items being dropped in exploratory work and removal of the two 2-item factors. The original factor regarding Customers split into two factors (Customer Satisfaction and New Customers). Table 36 presents the parameter estimations and squared multiple correlations for each item in the model.

Table 35

Dimensions for Measuring Organization Effectiveness after Phase 2.

Dimension	Definition
Performance	Performance includes the traditional elements of organization effectiveness such as cost and quality.
Customer Satisfaction	Customer satisfaction includes items that relate to how existing customers are treated by the organization
New Customer Development	New customer development includes items that relate to how well the organization is able to develop new customers and markets.
Treatment of People	Treatment of people includes items that relate to how employees perceive they are being treated by the organization. Elements of trust, satisfaction, respect, and commitment are included here.
Flexibility	Flexibility refers to the organization's ability to adapt and change to meet the needs of its environment.
Employee Involvement	Employee involvement measures the extent that the organization involves employees in decision making.

Table 36

Standardized Parameter Estimates for Organization Effectiveness Model 3

Item	Factor					R^2	
	Treatment of People	Customer Satisfaction	New Customer Development	Flexibility	Performance		Employee Involvement
E_PPL1	.807					.651	
E_PPL2	.853					.728	
E_PPL3	.767					.588	
E_PPL4	.858					.736	
E_PPL5	.858					.736	
E_PPL6	.894					.800	
E_PPL7	.751					.564	
E_PPL8	.648					.420	
E_PPL9	.762					.580	
EPPL10	.842					.708	
E_CST1		.792				.627	
E_CST2		.861				.742	
E_CST3		.770				.593	
E_CST4			.911			.830	
E_CST5			.880			.774	
E_CST6			.578			.334	
E_FLX1				.722		.521	
E_FLX2				.740		.548	
E_FLX4				.718		.515	
E_PRF1					.724	.524	
E_PRF2					.805	.648	
E_PRF3					.813	.661	
E_PRF7					.594	.352	
E_INV1						.733	.537
E_INV4						.768	.590
E_INV5						.762	.581

Note. $N = 478$ cases; all loadings were significant at $p < .01$; $R^2 =$ squared multiple correlations.

Tests of Reliability

Tests of reliability were run on the six scales of the model. Reliability is the correlation of an item, scale, or instrument with a hypothetical one which truly measures what it is supposed to measure. Since the true instrument is not available, reliability is estimated via various statistics. A correlation matrix on the items indicated that the items were significantly correlated, which indicates that the majority of the items were homogeneous. Item-total correlations were

generated to determine the discriminating power of the items. All items within each of the six factors correlated with the sum of the factor, indicating the existence of a base correlation.

Alpha measures the extent to which item responses obtained at the same time correlate highly with each other. Cronbach's alpha can be interpreted as the percent of variance the observed scale would explain in the hypothetical true scale composed of all possible items in the universe. The widely accepted social science cut-off is that alpha should be 0.70 or higher for a set of items to be considered a scale (Nunnally, 1983). The alpha coefficients for all six factors were good according to the widely accepted social science cut-off of 0.70: 0.95 for Factor 1; 0.84 for Factor 2; 0.83 for Factor 3; 0.77 for Factor 4; 0.81 for Factor 5; and 0.80 for Factor 6. Further analysis of the data reveals that deletion of individual items would not appreciably improve the alpha coefficients.

Table 37 presents the descriptive statistics, intercorrelations of dimensions, and internal reliability estimates of the dimensions. Note that many of the scales are highly intercorrelated, particularly Performance with Flexibility (0.955), Employee Involvement with Flexibility (0.931), and Employee Involvement with Performance (0.902). The remaining intercorrelations range from a low of 0.184 to a high of 0.804.

Table 37

Organization Effectiveness Model 3 Descriptive Statistics, Intercorrelations, and Internal Reliability Estimates

	Dimension	# Items	M	SD	1	2	3	4	5	6
1	Treatment of People	10	3.538	1.011	(.95)					
2	Customer Satisfaction	3	4.120	.690	.537	(.84)				
3	New Customer Development	3	3.294	2.227	.197	.262	(.83)			
4	Flexibility	3	3.550	1.123	.804	.642	.305	(.77)		
5	Performance	4	3.572	.941	.743	.705	.184	.955	(.81)	
6	Employee Involvement	3	3.627	1.131	.886	.634	.169	.931	.902	(.80)

Note. $N = 478$; all correlations significant at $p < .01$. Alphas are enclosed in parentheses.

To determine normality, skewness and kurtosis were evaluated. All six factors, People (-3.46) Customer Satisfaction (-10.06), New Customers (-9.96), Flexibility (-4.57), Performance (-4.98), and Involvement (-4.54) were skewed, since they were outside the normal range (3 and -3) of the skewness statistic. Two factors, Customer Satisfaction (9.91) and New Customers (3.43) were kurtotic, since both were outside of the normal range (2 and -2) of the kurtosis statistic.

Reliability estimates indicate that overall the resulting questionnaire scales are reliable. The deletion of additional items to maximize internal consistency was not carried out, as the reliability analysis revealed that removing items would not improve reliability.

Review of Hypotheses

Based on qualitative research, literature review, and experience with companies, the author predicted six factors of organization effectiveness (Hypothesis 4A) with items remaining after Phase 1 loading on predicted factors as seen in Figure 9 (Hypotheses 4B, 4C, 4D, 4E, 4F, and 4G). A comparison of the originally hypothesized dimensions with the factors resulting from analysis in Phase 2 of the study can be seen in Figure 13. The arrows indicate how the original factors (on the left) were supported, combined with others, or split to form the Phase 2 dimensions (on the right). Please refer to Figure 13 as each of the hypotheses is reviewed below.

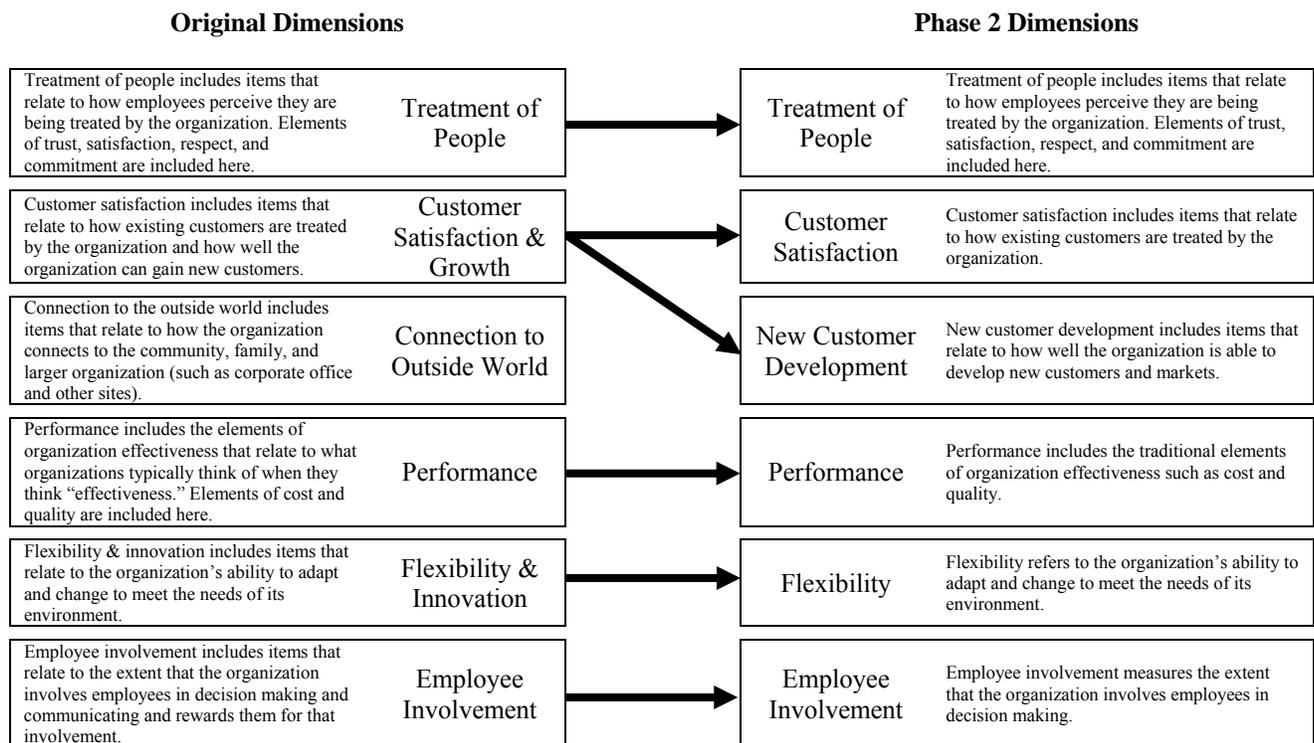


Figure 13. Comparison of original and Phase 2 dimensions for organization effectiveness.
Note: Arrows indicate how the original (hypothesized) dimensions combined or stayed separate in the Phase 2 analysis.

Hypothesis 4A supported. Results show that the most theoretically relevant model (2) was not supported as the best fit of the data. Instead, a model that combined the theory-driven model

with empirical results of Phase 1 that suggested that Customer Satisfaction & Growth items create two factors (Customer Satisfaction and New Customer Development) was supported. Results of Phase 2 (see Table 36) indicated a six factor model of organization effectiveness. Therefore, Hypothesis 4A, which predicted six factors, is accepted. See Figure 13 for a comparison of the original six dimensions with the six factors resulting from Phase 2 analysis.

Hypothesis 4B, 4C, 4D, and 4G supported. The results (see Table 36 and Figure 13) provided support for four of the original factors: Performance (Hypothesis 4B), Employee Involvement (Hypothesis 4C), Flexibility (Hypothesis 4D), and Treatment of People (Hypothesis 4G).

Hypotheses 4E and 4F rejected. Phase 2 results supported the division of the original factor Customer Satisfaction & Growth (Hypothesis 4E) into two factors, renamed Customer Satisfaction for one and New Customer Development for the other. Because all items from the Connection to the Outside World (Hypothesis 4F) factor were eliminated either through Phase 1 of the study or because resulting factors had only 2 items and had to be removed from analysis, this factor no longer exists. Therefore, Hypotheses 4E and 4F are rejected.

Summary

In Phase 2: Select Best Fit Models, ten proposed models for organization effectiveness derived from a combination of exploratory factor analysis and theoretical development were analyzed for best fit to the data using confirmatory factor analysis. Each of the proposed models used the same 26 items. Models ranged from one to six factors. The sample size (478) was considered adequate for the analysis. The model with six factors (Model 3) derived from a combination of empirical and theoretical development was selected as the model of best fit due

to superior fit indices. Tests of reliability on the six factor model indicate that overall the resulting factor structure was reliable.

Because the results of confirmatory factor analysis supported a six factor model, the hypothesis (4A) predicting six factors of organization effectiveness was supported. Four factors (Performance, Employee Involvement, Flexibility, and Treatment of People) were supported as expected (Hypotheses 4B, 4C, 4D, and 4G). Results supported the split of original factor Customer Satisfaction & Growth (Hypothesis 4E) into two factors (Customer Satisfaction and New Customer Development). The items from original factor Connection the Outside World (Hypothesis 4F) were removed from the analysis, so the factor no longer exists. Therefore, Hypotheses 4E and 4F were rejected.

Phase 3: Relationship Between Models

The purpose of Phase 3: Relationship Between Models was to examine the links between the measurement models of organization support of collaboration and organization effectiveness selected for “best fit” in Phase 2. In a measurement model, the researcher specifies which variables are indicators of each construct, with variables having no loadings other than those on its specified construct. The links between the models were analyzed using structural equation modeling (SEM), a multivariate technique combining aspects of multiple regression (examining dependence relationships) and factor analysis (representing unmeasured concepts – factors – with multiple variables) to estimate a series of interrelated dependence relationships simultaneously (Hair, Anderson, Tatham, & Black, 1995).

First, data screening procedures and sample size adequacy were addressed. Then the original model of expected relationships was revised to account for the results of Phase 2: Select

Best Fit Models. The links between the models were analyzed using structural equation modeling. Finally, results were compared with the revised study hypotheses.

Data Screening and Sample Size Adequacy

Unfortunately, there was not enough data to warrant a separate second sample for Phases 2 and 3 of the study as was originally planned in the research design. To provide adequate sample size for analysis, the total study sample was included. The data for both parts of the questionnaire, organization support of collaboration and organization effectiveness, were cleaned together for the purposes of Phases 2 and 3.

A total of nine hundred, ninety-two participants responded to the questionnaire; however, only 478 cases were included in the analysis based on the following screening criteria: no missing data, no univariate outliers, and no multivariate outliers. The following data were deleted: 441 respondents for missing data⁴, 19 respondents for univariate outliers, and 54 respondents for multivariate outliers. To determine univariate outliers, scores for each variable were standardized into z-scores. Cases falling above 3.29 or below -3.29 standard deviations from the mean for any variable were removed as univariate outliers from the dataset. Mahalanobis distance was used to determine the removal of multivariate outliers greater than the critical value $\chi^2(57) = 95.75$ (Tabachnick & Fidell, 1996).

The sample size was adequate, as the 478 cases exceed the recommended 150 to 200 (Anderson & Gerbing, 1988; Chou & Bentler, 1995; Hoyle & Kenny, 1999). While the “rule of 5” (Bentler & Chou, 1987) recommends at least five cases for every estimated parameter, stable parameter estimates have been found with a 4:1 ratio of sample size to number of estimated parameters (Tanaka, 1987), suggesting that a ratio of less than 5:1 may yield stable estimates.

⁴ The large amount of missing data was attributed to participants failing to complete the questionnaire, perhaps due to a loss of interest to continue or perception of excessive length of the questionnaire.

The number of cases per parameter for the current study was 3:1 (approximately 3 cases for each of the 167 estimated parameters).

Revised Model of Expected Relationships

The expected model of relationships between organization support of collaboration and organization effectiveness (Figure 9 at the end of Chapter 1) was revised to account for the exclusion of items that resulted from Phase 1: Generate Empirical Models and affirmation of most suitable models from Phase 2: Select Best Fit Models. The revised expected relationships model (see Figure 14) presents the hypothesized significant links between organization support of collaboration and organization effectiveness. The results of structural equation modeling will be compared to this revised model. Each of the revised hypotheses is reviewed below (see Table 38 for a summary).

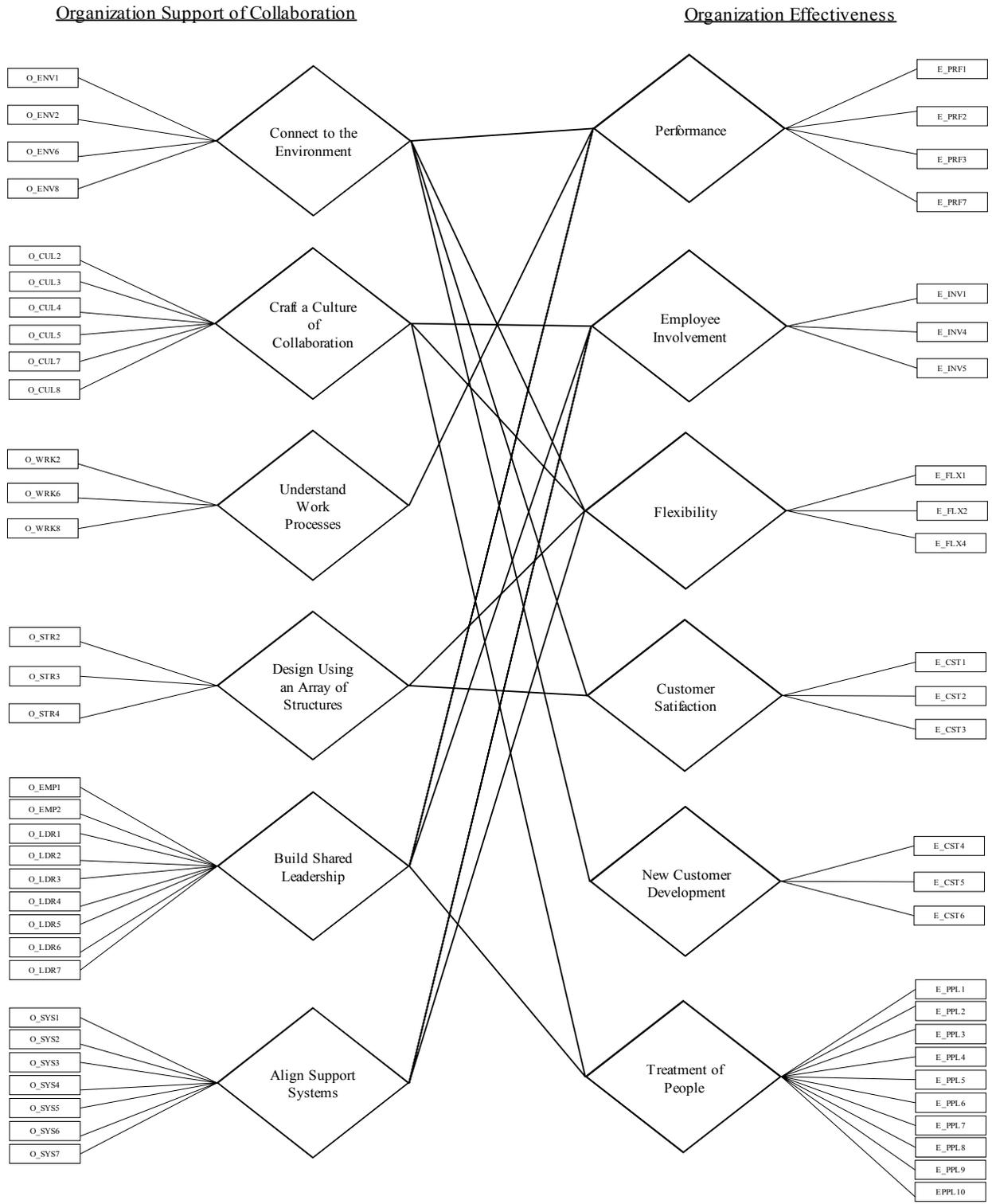


Figure 14. Revised model of expected relationships.

Note. The original hypothesized model was revised to incorporate the results of Phases 1 and 2 of the current study. Lines between factors represent hypothesized significant relationships.

Table 38

Revised Hypotheses for Relationships between Organization Support of Collaboration and Organization Effectiveness

Organization Support of Collaboration	Organization Effectiveness					
	Performance	Employee Involvement	Flexibility	Customer Satisfaction	New Customer Development	Treatment of People
Connect to the Environment	H5A		H5B	H5C – 1	H5C – 2	
Craft a Culture of Collaboration		H6A	H6B			H6C
Understand Work Processes	H7					
Design Using an Array of Structures			H8A	H8B		
Build Shared Leadership (Formerly Plan Employee Empowerment and Define New Roles of Leaders)	H9/10A	H9/10B				H9/10C
Align Support Systems		H11A	H11B			

Revised Hypothesis 5. The Connect to the Environment factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Performance, (b) Flexibility, (c-1) Customer Satisfaction, and (c-2) New Customer Development.

Revised Hypothesis 6. The Craft a Culture of Collaboration factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Employee Involvement, (b) Flexibility, and (c) Treatment of People.

Revised Hypothesis 7. The Understand Work Processes factor of organization support of collaboration will be most strongly related to organization effectiveness factor Performance.

Revised Hypothesis 8. The Design Using an Array of Structures factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Flexibility and (b) Customer Satisfaction.

Revised Hypothesis 9/10. The Build Shared Leadership (a new factor composed of original Plan Employee Empowerment and Define New Roles of Leaders dimensions) factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Performance, (b) Employee Involvement, and (c) Treatment of People.

Revised Hypothesis 11. The Align Support Systems factor of organization support of collaboration will be most strongly related to organization effectiveness factors (a) Employee Involvement and (b) Flexibility.

Actual Relationships

LISREL 8.52 was used to perform structural equation modeling (SEM) on the selected best fit measurement models for organization support of collaboration (6 factors and 32 items) and organization effectiveness (6 factors and 26 items). First, model fit was assessed via the same indicators as used in the confirmatory factor analyses in Phase 2 of the study. Then,

significant relationships between the scales of the two measurement models and the loadings of the items onto the scales were identified.

The following goodness-of-fit indices were used based on the recommendations of Hu and Bentler (1999): root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and non-normed fit index (NNFI). The lower bound of good fit for the CFI and NNFI is considered to be 0.90, while the upper bounds for good fit are considered to be 0.08 and 0.10 for the RMSEA and the SRMR, respectively (Vandenberg & Lance, 2000). The solution converged in 20 iterations. Global fit indices indicated that the structural model fit the data reasonably well ($\chi^2[2911] = 3209.62, p < .01$, RMSEA = .052, SRMR = .043, CFI = .99, NNFI = .99).

SEM results indicate that there were several significant relationships between the models of organization support of collaboration and organization effectiveness. Figure 15 displays the standardized parameter estimates for significant relationships in the structural model and for items in the measurement models. See Tables 30 and 35 for definitions of the dimensions and Appendices L and M for revised dimensions with questionnaire items comprising them. Figure 16 presents the correlations between the factors of the two models. Examining the pattern of correlations will be helpful in future research to study the indirect paths of the factors, particularly the factors with no significant relationships in the current study (Understand Work Processes and Design Using an Array of Structures).

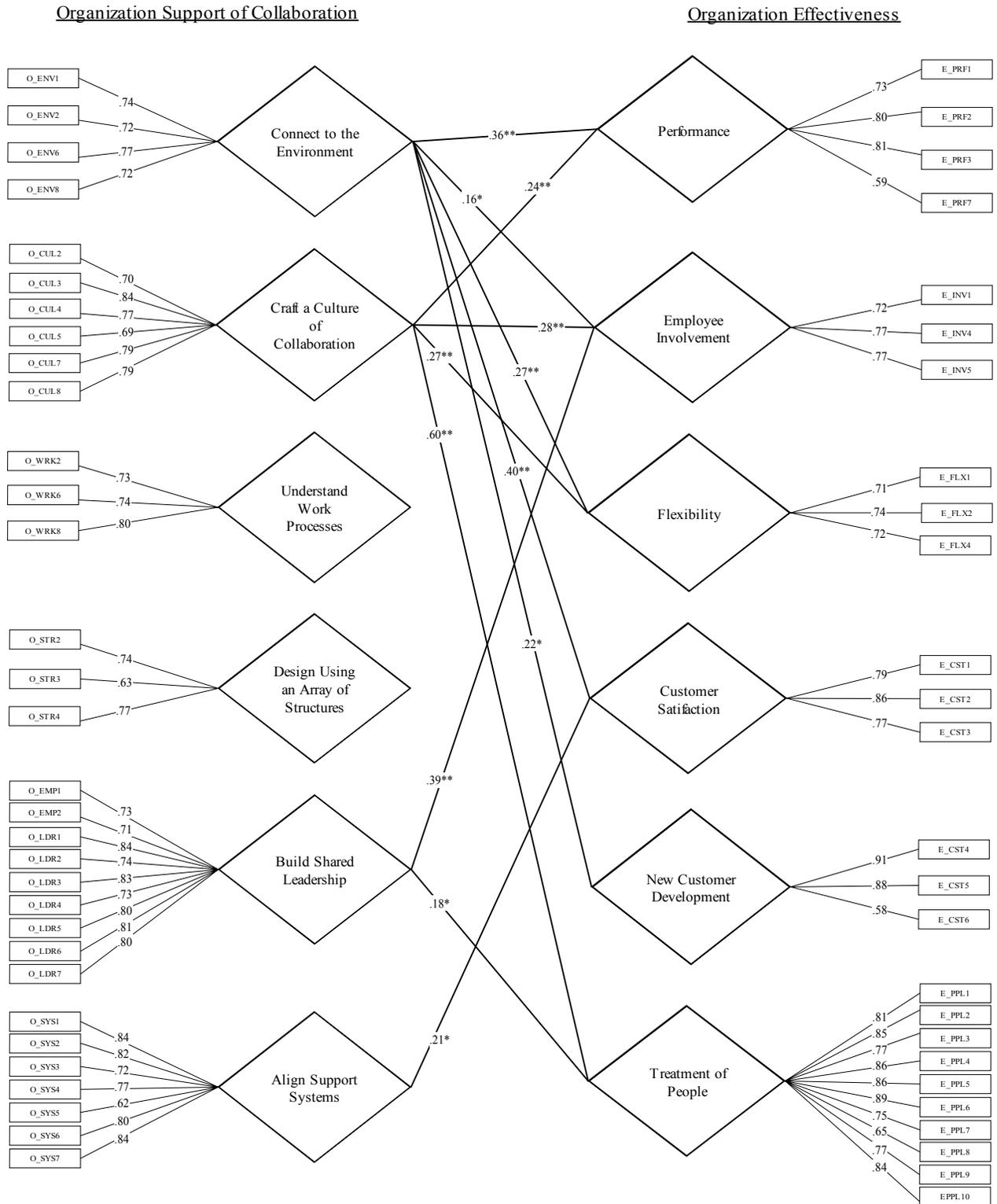


Figure 15. Full structural model of organization support of collaboration and organization effectiveness.

Note. All paths were free in the analysis; only significant relationships are shown here.

* $p < .05$, two-tailed; ** $p < .01$, two-tailed.

All items in measurement models loaded onto respective factors at $p < .01$.

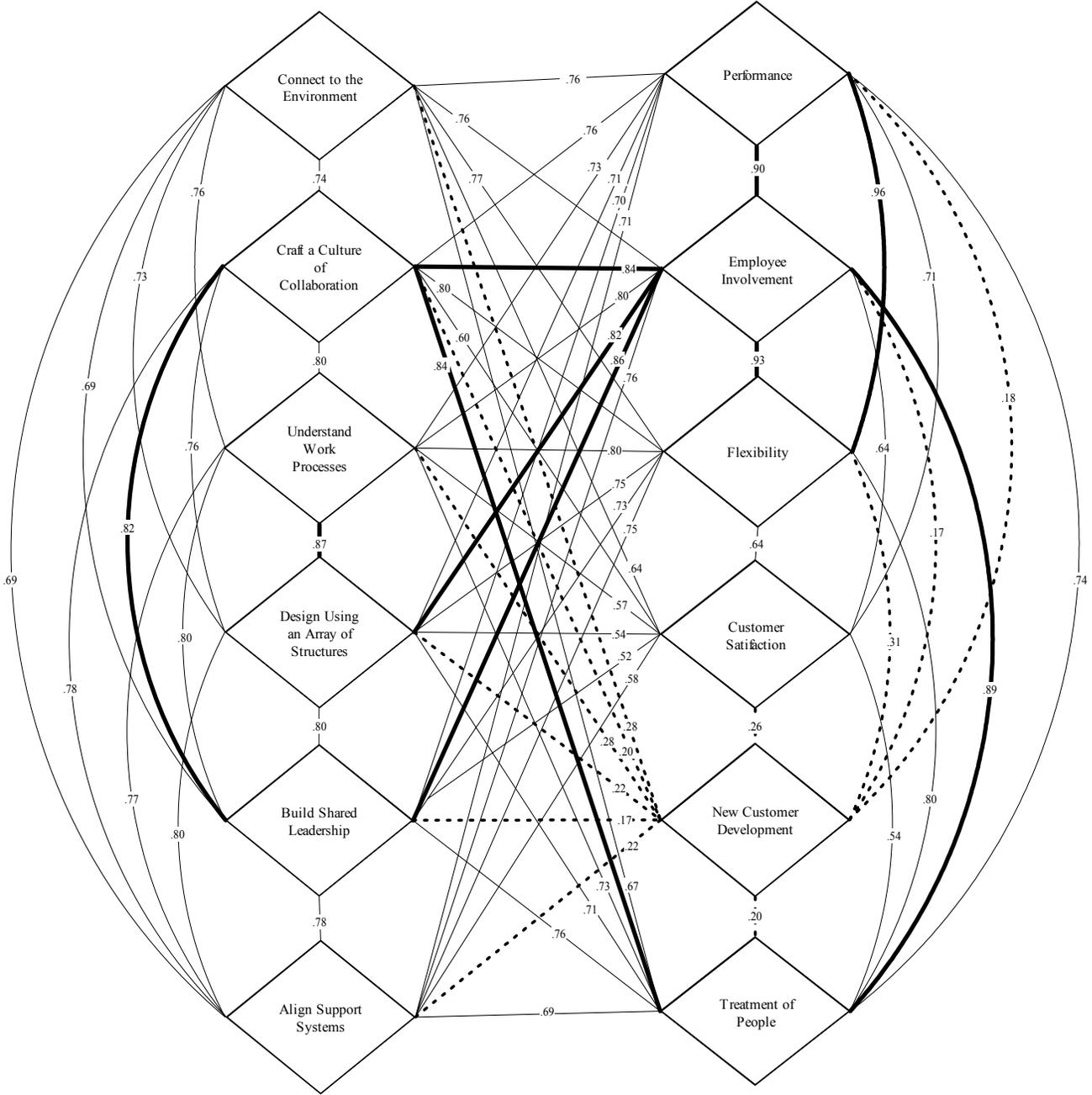


Figure 16. Correlations between factors of organization support of collaboration and organization effectiveness.

Note. Numbers indicate the correlations between factors. Bold lines represent correlations greater than 0.80, light lines represent correlations 0.40 to 0.80, and dotted lines represent correlations less than 0.40.

Review of Hypotheses

Table 39 presents the SEM significant relationships in conjunction with hypotheses. The predictor variables (organization support of collaboration scales) are in the left column and the outcome variables (organization effectiveness scales) are across the top. Standardized parameter estimates for significant relationships between variables are in the cells of the table. Underlined standardized parameter estimates indicate a significant expected relationship while non-underlined standardized parameter estimates indicate a significant relationship that was not expected. Expected relationships that were not supported are designated with “ns” for not significant. As can be seen in the table, many of the hypothesized relationships between organization support of collaboration and organization effectiveness were supported. A few unexpected results occurred as well. Each set of hypotheses is reviewed in light of the results below.

Table 39

Significant Relationships between Organization Support of Collaboration and Organization Effectiveness

Organization Support of Collaboration	Organization Effectiveness					
	Performance	Employee Involvement	Flexibility	Customer Satisfaction	New Customer Development	Treatment of People
Connect to the Environment	<u>.36**</u>	.16*	<u>.27**</u>	<u>.40**</u>	<u>.22*</u>	
Craft a Culture of Collaboration	.24**	<u>.28**</u>	<u>.27**</u>			<u>.60**</u>
Understand Work Processes	<i>ns</i>					
Design Using an Array of Structures			<i>ns</i>	<i>ns</i>		
Build Shared Leadership	<i>ns</i>	<u>.39**</u>				<u>.18*</u>
Align Support Systems		<i>ns</i>	<i>ns</i>	.21*		

Note. $N = 478$ cases; ** = relationships were significant at $p < .01$; * = relationships were significant at $p < .05$; *ns* = non significant expected relationship; underlined = significant expected relationship; no underline = significant non-expected relationship.

The organization support of collaboration factor Connect to the Environment was predicted to have significant relationships with organization effectiveness factors Performance (H5A), Flexibility (H5B), Customer Satisfaction (H5C-1), and New Customer Development (H5C-2). The results of structural equation modeling support all four hypotheses (Performance $\beta = .36, p < .01$; Flexibility $\beta = .27, p < .01$; Customer Satisfaction $\beta = .40, p < .01$; and New Customer Development $\beta = .22, p < .05$). The significant relationship between Connect to the Environment and Employee Involvement ($\beta = .16, p < .05$) was unexpected.

The organization support of collaboration dimension Craft a Culture of Collaboration was predicted to relate significantly to organization effectiveness dimensions Employee Involvement (H6A), Flexibility (H6B), and Treatment of People (H6C). All three hypotheses were supported (Employee Involvement $\beta = .28, p < .01$; Flexibility $\beta = .27, p < .01$; Treatment of People $\beta = .60, p < .01$). The significant relationship of Craft a Culture of Collaboration with Performance ($\beta = .24, p < .01$) was unexpected.

The organization support of collaboration factor Understand Work Processes was expected to relate significantly to organization effectiveness factor Performance (H7). This hypothesis was not supported by the results. Understand Work Processes did not have significant relationships with any of the organization effectiveness factors. However, it did show moderate correlations (range of 0.76 to 0.80) with other organization support of collaboration factors.

Significant relationships between organization support of collaboration factor Design Using an Array of Structures and organization effectiveness factors Flexibility (H8A) and Customer Satisfaction (H8B) were predicted by the hypotheses of this study. Neither of these hypotheses was supported by the results. Design Using an Array of Structures did not have significant relationships with any of the organization effectiveness factors. However, it did show moderate correlations (range of 0.73 to 0.80) with other organization support of collaboration factors.

The new factor Build Shared Leadership (formerly Plan Employee Empowerment and Define New Roles of Leaders) was expected to have significant relationships to Performance (H9/10A), Employee Involvement (H9/10B), and Treatment of People (H9/10D). Two of the three hypotheses (Employee Involvement $\beta = .39, p < .01$; Treatment of People $\beta = .18, p < .05$)

were supported. Build Shared Leadership did not have the predicted significant relationship with Performance.

Finally, Align Support Systems was predicted to be significantly related to Employee Involvement (H11A) and Flexibility (H11B). Neither of the hypotheses was supported. However, results indicate a significant relationship between Align Support Systems and Customer Satisfaction ($\beta = .21, p < .05$).

Summary

The objective of Phase 3: Relationship Between Models was to examine the links between the measurement models of organization support of collaboration and organization effectiveness selected for “best fit” in Phase 2 using structural equation modeling. The sample size (478) was adequate for the analysis. The model of expected relationships (see Figure 9) and associated table of hypotheses (see Table 17) were revised to account for changes in the models as a result of Phases 1 and 2 of the study (see Figure 14 and Table 38). The structural model fit the data reasonably well ($\chi^2[2911] = 3209.62, p < .01$, RMSEA = .052, SRMR = .043, CFI = .99, NNFI = .99). The significant relationships were reviewed in light of the revised hypotheses (see Figure 14 and Table 39). In all, nine hypotheses were supported, six were not supported, and three unexpected significant relationships were found.

CHAPTER 4

DISCUSSION

This study is the capstone of a stream of research that spans a decade of exploration of collaborative environments in the workplace. The research includes a team leadership study using interviews of team members and leaders, a study of team-based support systems, an interview study of experts in the area of team-based organizations, literature review, and experience of the author working with organizations implementing collaborative practices. Research milestones were shared in various ways: book chapters geared towards academics (Harris & Beyerlein, 2003a; Harris & Beyerlein, 2003b) and practitioners (Beyerlein & Harris, 2003; Harris & Bodner, 2003), a workbook guiding practitioners through the journey to collaborative work systems (Beyerlein & Harris, 2004), and various conference presentations through the years. At least ten organizations have used aspects of the practical ideas that come from the research and provided learning opportunities for the researcher. This study extends the line of research by providing empirical investigation of the concepts of collaboration.

The purpose of this study was threefold: (1) understand what organizations need to do to support collaboration, (2) explore the elements of organization effectiveness, and (3) investigate the relationship between organization support of collaboration and organization effectiveness. Data were collected via a web-based questionnaire from a wide variety of individuals representing a broad spectrum of organizations from diverse industries, of numerous sizes, in different types of organizations (from Traditional Organization to Collaborative Organization), and in organizations planning and undertaking collaborative change efforts and those that were not. The three phases of the study created a framework for empirical investigation of the models

measuring organization support of collaboration and organization effectiveness. The next sections discuss the findings for organization support of collaboration, organization effectiveness, and the links between the two concepts. Then some implications, limitations, and future directions of the research are conveyed.

Organization Support of Collaboration

The organization support of collaboration model was created to explain a broad, holistic view of the elements of the organization that need to be considered when developing an environment that supports collaboration as a means to achieving results. The model is the result of an interview study of experts in the field, experience by the author with organizations using aspects of the model, and literature review (see Appendix A for more details of model development). The original model has seven factors (see descriptions in Table 15) and 56 items (see Appendix H for items that compose each factor). Phases 1 and 2 of the study represent the first empirical tests of the model; the objectives were scale development and validation.

Phase 1: Generate Empirical Models

In Phase 1, the first set of hypotheses proposing seven factors (Hypothesis 1A) with items creating the predicted factors (Hypotheses 1B, 1C, 1D, 1E, 1F, 1G, and 1H; see Figure 9) were tested. The first empirical test of the model yielded six factors (see descriptions in Table 22 and comparison with originally hypothesized factors in Figure 10) with 34 items (see Appendix J for items that compose each factor), which caused Hypothesis 1A to be rejected. The removal of non-loading and cross-loading items improved the questionnaire by retaining only the items that were significantly represented in the factor solution.

The hypothesized factors Align Support Systems, Connect to the Environment, and Craft a Culture of Collaboration were supported, with only one to four items dropping out of each one.

Therefore, Hypotheses 1B, 1C, and 1H were accepted. The implication is that these are valid factors for measuring support of collaboration in the organization. Each of these factors are discussed below.

The concept of understanding support systems and their influence on teams by providing a context for team success or failure remains misunderstood by many organizations. Some research (Mohrman et al., 1995) suggest that ninety percent of team failure results from problems in the team context rather than from within the team itself. Support systems such as rewards and recognition, learning, and performance management create a strong message about what the organization truly values. This creates a climate that either supports or hinders collaboration. Unfortunately, what the organization says it values and what it actually does through its support systems are often incongruent.

Connecting to the environment is crucial to understanding the needs of customers, suppliers, regulators, competitors, and other elements of the world outside the organization. Without these connections, the organization can accidentally go a direction contrary to the demands of the environment. A mismatch between the organization and its environment can lead to “small” failures such as losing customers, not having enough supplies to achieve business goals, and fines levied for failing to comply with government regulations, and “large” failures such as having to close the business.

A culture of collaboration creates an atmosphere for the people of the organization that promotes ownership and responsibility of the work. Culture is a fuzzy term that relates to the way things “really get done” in an organization beyond the formal rules and policies. While culture is difficult to pinpoint and describe in words, the people in the organization have a “feeling” for it. Remaining items in this scale relate to different job functions working together

without conflict, a feeling of partnership and working together in the organization, understanding and meeting customer needs, and dealing with problems open and honestly.

Items from the original factors Define New Roles of Leaders and Plan Employee Empowerment merged together to form a new factor named Build Shared Leadership. While this was not a predicted result (therefore Hypotheses 1F and 1G were rejected), the combination is logical given that leaders and employees must work hand in hand in a collaborative environment. Employees are expected to take on leadership roles from the old traditional system, thereby creating a system of shared leadership. This result suggests that the distinction between leaders and employees when considering new roles in collaborative situations is perhaps one that should be eliminated. Instead, the conceptualization of the roles of employees and leaders as a system of shared leadership removes old “us versus them” barriers between the groups and enhances the idea of transition of responsibilities as each group becomes more empowered. According to shared leadership theory, leadership can exist as a shared group level phenomenon and can be an important determinant of group outcomes (Pearce & Sims, 1999). Whereas the traditional idea of leadership describes one individual influencing subordinates, shared leadership depicts the process of shared influence between and among individuals.

Another set of factors that merged in analysis is Design Using an Array of Structures and Understand Work Processes. While this was not a predicted result (therefore Hypotheses 1D and 1E were rejected), it makes sense given the highly interdependent nature of these factors; using the correct type of structure is dependent on the nature of the work. The new factor, named Enhance Work & Structure, highlights the need for thoroughly integrating the demands of the work and the type of structure applied to it. Organizations often make the mistake of creating structure (such as departments and teams) primarily to aid managers understanding of who

belongs to whom in the reporting structure of the organization. As a result, employees often find themselves going to meetings with little relevance because there is no real “need” for employees in these structures of convenience to talk to each other. Instead, the “right” type of structure (such as individuals, groups, project teams, long-term teams; for more see Figure 4 and Tables 6, 7, and 8) should be applied to match the needs of the work. Ask questions such as, “Can we structure around a process, product, or customer? Which skill sets are needed to achieve the work? Where are the interdependencies or handoffs where people must rely on each other to get the job done?”

An unexpected factor named Bring Together Essential Skills came together around two items that previously belonged to Understand Work Processes and Plan Employee Empowerment. Both of these items related to the skills and abilities of the people doing the work. The implication is that skills and abilities to accomplish the work must be available either through the existing members of the group or developmental opportunities for members to create those skills and abilities. A limitation of this study was the inability to study this new factor beyond Phase 1 as the factor had only two items and was not amenable to the analysis procedures used in Phases 2 and 3. Future research should investigate this factor further to determine what role it plays both in organization support of collaboration and the links to organization effectiveness.

Phase 2: Select Best Fit Models

In Phase 2: Select Best Fit Models, another set of hypotheses again proposing seven factors (Hypothesis 3A) with items creating the predicted factors (Hypotheses 3B, 3C, 3D, 3E, 3F, 3G, and 3H; see Figure 9) were tested. The investigation of the model created in Phase 1 and proposed alternatives (see Table 28) to determine which model best fit the data supported two

models with equivalent fit statistics. Based on a better fit with the theory, the model with six factors (see descriptions in Table 30 and comparison to original dimensions in Figure 12) with 32 items (see Appendix L for items that compose each factor) was chosen. Therefore, Hypothesis 3A predicting seven factors was rejected.

In this second empirical test, the factors Connect to the Environment, Craft a Culture of Collaboration, and Align Support Systems from the original model again were supported (therefore Hypotheses 3B, 3C, and 3H were accepted). The newly created factor Build Shared Leadership (formerly two separate factors Define New Roles of Leaders and Plan Employee Empowerment) was also supported by the results of Phase 2 (hence Hypotheses 3F and 3G posing these as separate factors were rejected).

However, this time the original factors Understand Work Processes and Design Using an Array of Structures were supported as separate factors (Hypotheses 3D and 3E were accepted) rather than a collapsed one that was held up in Phase 1. Although they were supported as separate factors, the scales were highly correlated (.867). Clearly the factors are closely related, but whether they should stand separately or together is debatable. Upon further review of the remaining items in these scales (see Appendix M), the three Understand Work Processes items relate to work process improvement and redesign, topics that are critical to quality improvement programs such as LEAN, Six Sigma, and others. These programs represent a trend in understanding that businesses must be able to do more with less to survive in the current competitive environment. The remaining Design Using an Array of Structures items relate to using the appropriate structure for the situation rather than a “one-size-fits-all” approach, the use of teams and other formal collaborative structures, and integration of the organization. These items relate to the current trend towards collaborative organizations. Some (e.g., Devane, 2004)

in the field of organization development are beginning to realize the importance of integrating quality improvement approaches such as LEAN and collaboration improvement strategies through teams and collaborative organization. While these initiatives can each stand alone, the power seems to increase exponentially when they are combined. Whether or not the separate scales of Understand Work Processes and Design Using an Array of Structures stand alone or combine into one scale, the concepts are highly interdependent and must be aligned from a practical standpoint in organizations. This is a question for further debate, and will be further discussed in the Future Directions section at the end of this paper.

Finally, the new factor of Bring Together Essential Skills from Phase 1 could not be tested in Phase 2 due to having only two items. This factor should be considered in future research as well as its impact on the question of whether Understand Work Processes and Design Using an Array of Structures should remain two separate factors or become one. Again, this will be further discussed in the Future Directions section at the end of this paper.

Organization Effectiveness

The intent of the organization effectiveness model is to describe the different elements that comprise organization success. It attempts to summarize a general target that a broad spectrum of organizations tries to hit to consider themselves a success. The model is the result of a review of team and organization effectiveness in the literature; responses of experts in the field to the questions, “what makes team-based organizations effective” and “what are the financial and non-financial benefits of effective collaboration;” and experience by the author (see Appendix B for more details of model development). The original model has six factors (see descriptions in Table 16) and 38 items (see Appendix I for items that compose each factor).

Phases 1 and 2 of the study represent the first empirical tests of the model; the objectives were scale development and validation.

Phase 1: Generate Empirical Models

In Phase 1: Generate Empirical Models, the first set of hypotheses for this model proposing six factors (Hypothesis 2A) with items creating the predicted factors (Hypotheses 2B, 2C, 2D, 2E, 2F, and 2G; see Figure 9) were tested. The first empirical test of the model yielded six factors (see descriptions in Table 26 and comparison with original dimensions in Figure 11) with 30 items (see Appendix K for items that compose each factor). Therefore, Hypothesis 2A was accepted. The removal of non-loading and cross-loading items improved the questionnaire by retaining only the items that were significantly represented in the factor solution.

The original factor Treatment of People held up to the first empirical test of the study (Hypothesis 2G was accepted). This factor relates to how employees perceive they are treated by the organization; do they feel trusted and respected, do they trust and respect others, do they feel supported by the organization, and are they satisfied by how they are treated? How employees are treated by the organization often affects both retention of those employees and the reputation heard by potential new employees that may affect their decision to join the organization. A clear limitation of this scale is that the participant is asked to answer about how “most” people in their organization feel, which is a judgment that is speculative. In the future, changing the scale to ask only what the participant feels would be a better measure.

The original three dimensions of Performance, Flexibility, and Involvement merged together into one factor in Phase 1 (Hypotheses 2B, 2C, and 2D were rejected). This suggests that the three concepts are very highly related. It may be that involving employees in decision

making improves flexibility and therefore performance, or that these are related in other ways. Future research should investigate the connections between these concepts.

The original dimension of Customer Satisfaction & Growth split into two components in the first empirical test of the model (therefore Hypothesis 2E was rejected). Three items clustered together to form a new factor called Customer Satisfaction. These items relate to how existing customers are treated by the organization. The remaining three items clustered together to form a new factor called New Customer Development. This factor conveys the need to deliberately focus attention and resources on developing new customers and markets. It seems that satisfying current customers and developing new ones are perceived as different concepts. The separation of this factor seems to indicate the different requirements for satisfying existing customers versus developing new ones. It also may be that while all organizations seem to have the need to satisfy current customers, not all may be focused on finding new customers. For example, a portion of the organizations assessed in this study were public primary and secondary education institutions. Through talking with various individuals in these professions, it seems that they are not focused on finding more students as the students will attend the school where they are required to go according to the government rules where they live (although this may be short-sighted as many parents move to areas where the schools are perceived to be “good”). Instead, they focus on adjusting to the demands of the environment that gives them varying numbers of students.

The original dimension of Connection to Outside World also split into two factors in Phase 1 of the analysis (therefore Hypothesis 2F was rejected). The first new factor, Connection to Larger Organization, relates to how well the organization being assessed connects to its larger organization (such as the corporate office and other sites). How well the smaller organization

unit (such as a plant or a school) connects to the larger organization (such as the corporate office or the school district administration offices) can determine the leeway the smaller organization unit has in doing things the way they think things should be done and ultimately, in some cases, can mean the difference between small organization life and death when cutbacks are made.

The second new factor, Work/Life Balance, describes the connection between work life and family and personal life. This factor not only affects the personal well-being and perhaps productivity levels of employees, but it also could improve retention of existing employees and attractiveness of the organization to potential employees. A limitation of this study was the inability to study these new factors beyond Phase 1 as the factors had only two items each and therefore were not amenable to the analysis procedures used in Phases 2 and 3. Future research should investigate these factors further to determine what roles they play both in organization effectiveness and the links to organization support of collaboration. See further discussion of this in the Future Directions section at the end of this paper.

Phase 2: Select Best Fit Models

In Phase 2: Select Best Fit Models, a second set of hypotheses investigating organization effectiveness again proposing six factors (Hypothesis 4A) with items creating the predicted factors (Hypotheses 4B, 4C, 4D, 4E, 4F, and 4G; see Figure 9) were tested. The investigation of the model created in Phase 1 and proposed alternatives (see Table 33) to determine which model best fit the data supported several models. For theoretical reasons, the model that combined theory with Phase 1 results composed of six factors (see descriptions in Table 35 and comparison with original dimensions in Figure 13) with 26 items (see Appendix M for items that compose each factor) was selected. Therefore, Hypothesis 4A was accepted.

In this second empirical test, the factor Treatment of People from the original model again was supported (Hypothesis 4G accepted). The newly created factor Customer Satisfaction and New Customer Development (formerly in one factor called Customer Satisfaction & Growth; therefore Hypothesis 4E was rejected) was also supported by the results of Phase 2.

However, this time the original factors Performance, Flexibility, and Employee Involvement were maintained as separate factors rather than the collapsed one that was created in Phase 1 (Hypotheses 4B, 4C, and 4D were accepted). While they were kept as separate factors, they were highly intercorrelated (correlations between factors ranged from 0.90 to 0.96). Clearly the factors are closely related, but whether they should stand separately or together is a question for further debate. Looking at the remaining items for each scale, Performance items are the more traditional measures of effectiveness related to the organization meeting goals, solving problems, and not having to do things more than once to get it right. Employee Involvement items relate to more modern concepts of involving employees in making decisions and communicating effectively. Flexibility items link to the concept of adaptability, which posits that organizations must be able to understand its environment and be able to change rapidly to meet the needs of the rapidly changing world. Theoretically, an organization may be able to achieve effectiveness from the Performance perspective without Employee Involvement and Flexibility. The author believes that Employee Involvement leads to Flexibility which leads to enhanced Performance. While the items from these three scales are clearly interrelated, the author believes they are different enough to remain as separate scales. This question will be discussed further in the Future Directions section at the end of this paper.

Finally, the new factors of Connection to the Larger Organization and Work/Life Balance from Phase 1 could not be tested in Phase 2 due to having only two items each. These factors

should be considered in future research as well their impact on the question of whether Performance, Flexibility, and Employee Involvement should remain three separate factors or become one.

Links between Support of Collaboration and Effectiveness

A major question in the world of organization design and development is whether organizations that support collaboration are effective. Anecdotal and case research exists to support that claim, but it is mixed – possibly due to the quality of implementation. This study attempted to provide empirical support for the link between perceived support of collaboration and perceived effectiveness by relating the models of organization support of collaboration and organization effectiveness using an analysis methodology (structural equation modeling) that identifies the significant relationships.

The originally hypothesized relationships between organization support of collaboration and organization effectiveness can be seen in Figure 9 (hypotheses are summarized in Table 17). After empirical models were generated in Phase 1 and models of best fit to the data were selected in Phase 2 of the current study, the hypothesized relationships were adjusted to fit the new models. See Figure 14 for the revised model of relationships, and Table 38 for a summary of the revised hypotheses. The hypotheses, results, and implications of the results are summarized below.

The factor Connect to the Environment was significantly related to organization effectiveness factors Performance, Flexibility, Customer Satisfaction, and New Customer Development, and Employee Involvement. This factor had most direct relationships (five out of the six organization effectiveness factors) of all the organization support of collaboration factors. The implication is that improving organizational connections to the environment is vital to

organization success. The significant relationship with Employee Involvement was unexpected. This suggests that involving employees in conducting the work results in better connections to elements of the environment such as customers, suppliers, and regulators.

Craft a Culture of Collaboration had significant relationships with organization effectiveness factors Employee Involvement, Flexibility, and Treatment of People, as well as with Performance. This factor had the second most direct relationships (four out of six organization effectiveness factors) of the organization support of collaboration factors. The unexpected connection between culture and performance suggests that organizations with collaborative cultures perform better than those with traditional cultures. This has provided some much needed empirical support to the common belief that an atmosphere of people working together well leads to improved organization performance.

Understand Work Processes and Design Using an Array of Structures did not have significant relationships with any of the organization effectiveness factors. However, both factors had moderate correlations to other organization support of collaboration factors. Future work is required to determine whether Understand Work Processes and Design Using an Array of Structures might have an indirect effect on organization effectiveness. One challenge with dealing with structure is the lack of common understanding of language such as “team.” With such differences, it is difficult to develop common terms that all people understand to mean the same thing, which causes problems when rating such concepts.

Build Shared Leadership related significantly to organization effectiveness factors Employee Involvement and Treatment of People. This seems to make sense given that building shared leadership is one way of involving employees. Also, leaders and employees working more closely together in a shared leadership capacity likely results in a better relationship that

creates a perception of better treatment. While Build Shared Leadership does not directly relate to the more “traditional” effectiveness measures conceptualized by the Performance and Customer Satisfaction factors, there is likely an indirect relationship that should be explored in future research.

Finally, Align Support Systems had a significant relationship with the organization effectiveness factor Customer Satisfaction. This was an unexpected, yet interesting, result. Perhaps some of the same systems that support employees in their work also have a positive impact on customers through their use of similar systems (if applicable) or their indirect use of these systems by talking to employees who use them to get information for the customer. This finding definitely warrants further research.

Implications for Practice

For practitioners, the results of this study provide a new way to look at the parts of the organization that need to support collaboration and their connections to organization effectiveness. A new conceptual model of Collaboration for organization success can be seen in Figure 17. Using the metaphor of throwing darts at a target, the target is success (or effectiveness) and the dart is the organization.

Aiming the dart (the organization) at the target depends on the components of the dart, which represent organization support of collaboration. The numbers on the dart indicate the number of statistically significant relationships that each component has with the six dimensions of organization effectiveness. The organization support of collaboration elements closer to the tip of the dart, such as Connect to the Environment and Craft a Culture of Collaboration, have the most direct connections to the target (organization effectiveness). The factors at the end of the

dart such as Understand Work Processes and Design Using an Array of Structures do not have direct impact, but most likely have indirect impact on achieving the target.

The validated dimensions of organization effectiveness are displayed on the target. The numbers on the target indicate the number of statistically significant relationships that each component has with the six dimensions of organization support of collaboration. In the center of the target is Flexibility, which has the most relationships with the components of organization support of collaboration (4). More peripheral elements of the target such as Treatment of People and Employee Involvement may not be the most central elements of effectiveness, but certainly have an influence.

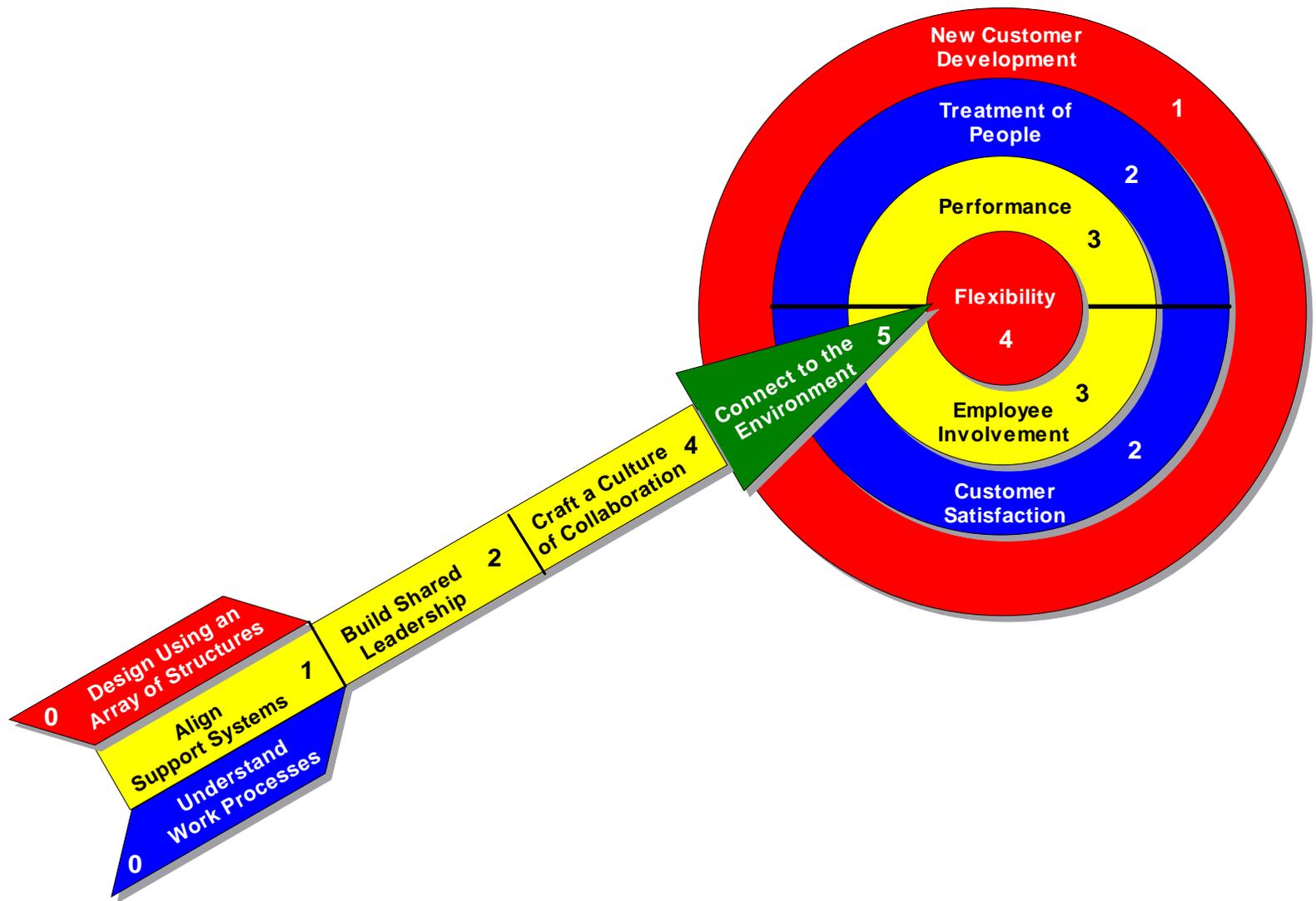


Figure 17. Collaboration for organization success model.

A major implication for practitioners is the significant connection between Connect to the Environment and Craft a Culture of Collaboration to most of the organization effectiveness elements. This suggests that practitioners focus on these elements for the most “bang for the buck.” Connecting to the environment is fairly concrete in that there are some direct strategies (such as taking employees to visit customers, asking suppliers to come in to communicate with members of the organization, and creating communications systems between members of the organization and important elements of the environment) that can be implemented to achieve these connections. However, changing culture directly is difficult if not impossible to achieve. Culture is emergent as people look for ways to get along in the new environment. Instead, expectations for behavior and systems reinforcing the new behavior help build new habits that turn into culture change. In this way, the Craft a Culture of Collaboration dimension also incorporates the other dimensions of organization support of collaboration.

This model may be useful as an assessment tool for groups leading change efforts in organizations to review as part of their planning. The organization-level feedback report promised to organizations who met a minimum level of participation (at least 30) in the questionnaire will be one such mechanism for assessment. This will be further developed and improved for use within other organizations. Over time, as data is collected from various organizations, the hope is to have enough data to create norms for different industries by which organizations can compare themselves.

Limitations

As with any study, there are limitations that should be considered when reviewing the results. These are summarized below.

First, the size of the sample was limited, which required the use of a single sample across all three phases of the study rather than the split sample approach planned in the original research design. Replicating the study on a larger overall sample that would allow for two separate samples would improve the generalizability of the results. The broad range of types of organizations represented by survey participants adds generalizability to findings. However, the ability to determine whether the results differ by type of work organization is not possible without concentrated samples within single industries.

Second, several of the scales did not meet the required assumptions of normality. Five of the six organization support of collaboration and all six of the organization effectiveness factors were skewed. Also, two of the six organization effectiveness scales were kurtotic. Future work should be done to find ways to deal with these problems.

Third, as with any self-report measure, the responses are subjective, so results should be interpreted with caution, especially for the performance measures. The development of objective measures to compare to subjective would be helpful. Collecting data from multiple sources such as from customers and suppliers would provide additional evidence that is more objective than self-report measures.

Fourth, in both the organization support of collaboration and the organization effectiveness models one or more factors consisted of only two items in Phase 1 of the current study. These factors had to be dropped in Phases 2 and 3. Whether this affects the outcome of the other factors is unknown.

Finally, despite intense work improving the readability of individual items, participants reported some to be difficult. Finding a common language for use across all organizations and levels is problematic, as the same words often translate differently for people in different roles.

This creates a conflict between understandability of the items by members of each organization versus generalizability across all organizations.

Future Directions

This study is the next step in a continuing program of research on collaboration and organization success. Some future directions are reviewed here; additional suggestions were mentioned earlier in this chapter. Future directions of the research include questions requiring further exploration of the current data set, questions requiring additional data, and new approaches to the research.

Questions Requiring Further Exploration of the Current Data Set

The current study has accomplished the initial exploration of the current data set. Some questions have been answered; while many new ones have been created. Answering the new questions requires further research on the current data set.

First, some questions surfaced regarding whether factors in both the organization support of collaboration and organization effectiveness models should remain as separate factors or merge into one or two factors. Exploratory factor analysis conducted in Phase 1 merged Understand Work Processes and Design Using an Array of Structures into a single factor while confirmatory factor analysis in Phase 2 supported these as separate factors. Similarly, Phase 1 work merged Performance, Flexibility, and Employee Involvement into a single factor while Phase 2 showed similar fit statistics for models keeping these as separate factors or merging them into one or two factors. Future work should further explore whether these should remain as separate factors or come together as one. One approach would be to investigate the effect of organization type across the factors (both separate and combined) to determine whether the separate or combined factors are better supported. I

Second, if evidence supports merging of factors, the structural equation model should be run again to determine whether fit statistics improve and examine what happens with the significant relationships between factors. Also, the original factors with all items should be tested using structural equation modeling as a comparison to the other structural models. The goal is to find the best structural model to explain the data.

Third, many items (24 for organization support of collaboration and 12 for organization effectiveness) were removed from the exploratory factor analysis procedure employed in Phase 1 of the study. These items should be examined to look for patterns of responses to determine whether it would be useful to use these items again.

Finally, only the direct paths between the factors of the organization support of collaboration and organization effectiveness models were studied in Phase 3 using structural equation modeling. Paths between factors within each model were not examined. Testing of indirect paths should result in a structural model that more closely represents reality. The pattern of correlations between factors shown in Figure 16 should provide some information to develop hypotheses for those indirect paths. The factors without any direct relationships to any other factor, Understand Work Processes and Design Using an Array of Structures, should be part of the indirect path analysis.

Questions Requiring Additional Data

Some research questions require additional data to be collected in order to have enough of a sample for adequate analysis. The original intent of this study was to have separate samples for Phase 1 and Phases 2 and 3, and ideally separate samples for each of the three phases. Collecting additional data and replicating the research design of the current study using the

separate samples approach would lend greater support and generalizability to the findings should they match those discovered here.

Another benefit of a larger sample size would be the ability to study additional variables that may moderate results. When the sample is large enough, investigation of interaction effects of organization characteristics such as organization type, organization size, and industry may be warranted. The effects of characteristics of the individual taking the questionnaire, such as level in the organization, type of job, and gender should also be studied.

Finally, collecting data from the same organizations over time would add a new layer of questions regarding the growth of organizations over time. Can progress on organization support of collaboration be tracked over time? Do change interventions in the organizations provide some impact on effectiveness? These and many other questions warrant further work.

New Approaches to the Research

First, the improvement of item wording and development of common language that is both understandable by individuals in each organization and generalizable across organizations would improve the validity of the results. The lack of a common language is a problem across the field of organization design and development. One approach to consider is providing standard definitions and then asking the lead contact at each organization to translate these into the language of their organization. These organization-specific terms and definitions would be shared with all participants of that organization to better ensure that all participants are responding to the same concepts.

Second, finding ways to validate the organization effectiveness model using objective data collected from organizations would add weight to the findings. Multi source data from

sources outside of the organization such as from customers and suppliers would also be interesting to use.

Third, exploratory factor analysis conducted in Phase 1 revealed three unexpected 2-item factors named Bring Together Essential Skills, Connection to Outside World, and Work/Life Balance. These findings warrant further literature review in these areas to explore existing measures. Additional items should be developed so these dimensions can be further studied to determine their places in the models.

Finally, existing models and research in the areas of team effectiveness and organization effectiveness should be further reviewed. Existing research may provide additional items to add to the current measures. These existing measures could also be used to provide multiple measure validity to the measures developed in this study.

Conclusion

What does it take for organizations to support collaboration? Developing collaboration in organizations requires attention to many elements. A holistic view of the elements needed to support collaboration in organizations examined in this study revealed six elements: connecting to the environment at every level of the organization, crafting an organization culture that supports collaboration, understanding and improving work processes, designing using an array of collaborative structures to meet the needs of the work, building a system of shared leadership that empowers people at all levels, and developing systems such as learning and performance management that support collaboration.

What does it mean for organizations to be effective? organization effectiveness means more than traditional measurements of cost, quality, and speed. A big-picture view of organization effectiveness developed in this study revealed six elements: the traditional elements

of performance such as cost and quality, the satisfaction of existing customers, the development of new customers and markets, treating people in the organization in a way that they feel respected and trusted, the organization's ability to adapt and change to meet the needs of its environment, and the extent that the organization involves employees in decision making.

Does supporting collaboration in the organization impact organization effectiveness?

While there is a general belief that people working together better improves organization effectiveness, little empirical research has been conducted to prove that belief. The results of this study provide empirical links between supporting collaboration in the organization and organization effectiveness. Connecting for the environment has the most "bang for the buck" as it is linked to five of the six measures of organization effectiveness. Clearly, improving connections to the outside world is vital to organization success. Creating a culture of collaboration relates to improved performance, flexibility, and treatment of employees. Building shared leadership results in improved employee involvement and treatment of people. Developing systems to support collaboration is linked to customer satisfaction.

Based on the results of this study, the answer is yes, supporting collaboration does positively impact organization effectiveness.

APPENDIX A
DEVELOPMENT OF PERCEPTIONS OF ORGANIZATION SUPPORT OF
COLLABORATION QUESTIONNAIRE

Before shifting to a broader focus of collaborative work systems, the topic of Team-Based Organizations (TBOs) was the focal point of foundational research. To gain a real-time, more practically oriented view of TBO, Harris and Beyerlein (2003a) created a qualitative study of professionals in the area (the TBO Interview Study). From March to July 2001, phone interviews were conducted with 20 participants, who each had a minimum of five years of experience with TBOs, and a mean of 13 years experience. The majority of participants held doctoral degrees (52%), with degree areas in a wide variety of fields, the majority being organization development related. The majority of participants were external consultants (57%), with the next largest group being internal consultants/human resources (29%), then professors/researchers (14%). Given their educational credentials, organizational level focal point, combination of theoretical and implementation focuses with a leaning towards the implementation side, years of experience with TBO, and proportion of current TBO clients, this subject population can be considered a credible source of data for the topic of TBO (Harris & Beyerlein, 2003a).

Interviews were transcribed and analyzed using a combination of the qualitative analysis software NUD*IST, quantitative software SPSS, and conceptual clustering via post-it notes and flipcharts. The results of the TBO Interview Study were used to create the first version of the Critical Success Factors for Collaborative Work Systems model. Detailed results of the TBO Interview Study can be found in an unpublished report (Harris, 2001).

The model became the outline and integrating mechanism for *Guiding the Journey to Collaborative Work Systems: A Strategic Design Workbook* (Beyerlein & Harris, 2004). The model went through significant development through the book writing process. In addition to the extensive development and refinement by the authors, a group of professional editors and

graduate students reviewed and improved the workbook – and the model – multiple times. The Critical Success Factors of Collaborative Work Systems questionnaire was created to accompany the workbook and measure the model. It is published in the workbook, and acts as a guide to various parts of the workbook.

An early version of the Critical Success Factors of Collaborative Work Systems questionnaire was piloted using members of a steering committee and two design teams from a chemical processing company as participants. Another group of graduate students reviewed the items a final time for clarity of wording, reading level, lack of confusing terms, answerability, fit with scale, and items asking more than one question. Wording was improved based on the comments of the pilot groups and again after the graduate student review.

The Critical Success Factors of Collaborative Work Systems questionnaire consists of two parts: the foundation for change and alignment of the organization to collaboration. The current study examines the alignment of the organization to collaboration part of questionnaire, which is called here the *Perceptions of Organization Support of Collaboration Questionnaire*.

APPENDIX B
DEVELOPMENT OF PERCEPTIONS OF ORGANIZATION EFFECTIVENESS
QUESTIONNAIRE

The initial items created for the *Perceptions of Organization Effectiveness Questionnaire* were adapted from the *Perceptions of Team Performance Survey* (Hall, 1998; see Appendix N). This survey was created in a prior study to evaluate individual perceptions of team performance. For the purposes of the current study, items were modified to reflect the “organization” instead of “group” level analysis.

Additional items were added based on the results of the *Team-Based Organizations Interview Study* (Harris, 2001). Twenty-one experts in the field of team-based organization were asked the question, “how did you know the team-based organization effort was successful (or unsuccessful)?” Responses to this question were categorized to find themes. Themes were compared to the items adapted from the *Perceptions of Team Performance Survey*. New items were created to reflect the themes that were not covered in the *Perceptions of Team Performance* items.

Another contributor to the *Perceptions of Organization Effectiveness Questionnaire* was responses to a question emailed to subject matter experts (participants of the Center for Collaborative Organizations “TeamNet” electronic discussion list, associates of the Center for Collaborative Organizations, and current and former clients of the author) in December 2003. That question was, “What are the financial and non-financial benefits of effective collaboration, particularly at the organization level?” Responses from 13 people to the question led to the addition of a few items to the questionnaire.

At this point, questionnaire items were reviewed in light of the literature and the author’s experience. A few additional items were added. Then the 38 items were clustered into categories. These categories were named and became the 6 dimensions being evaluated in the current study.

APPENDIX C
RECRUITING EMAIL #1

Hello, my name is Cheryl Harris. I am a doctoral candidate in Industrial/Organizational Psychology at the University of North Texas.

I am currently in the process of completing my dissertation research on *Collaboration in Organizations* and I'm looking for people to complete a survey. Please consider participating if you are currently employed by an organization, firm, school, or other organizational entity.

For more information about this study - including an overview of the model being studied, Frequently Asked Questions, and sample email text to send to others in your organization who you would like to invite to participate - go to www.collaborativeorganization.com/study.htm.

How Do I Participate?

Individuals are asked to complete a *confidential* survey. Participation in the study is anonymous and your responses will not be linked to you in any way. Completing the survey will take from 30-45 minutes. To complete the web-based survey, click on the following link (or copy and paste it into your web browser).

<http://www.surveymonkey.com/s.asp?u=1493951570>

What Is the Purpose of the Study?

The purpose of the study is to understand how organizations can better support people working together effectively to get the job done. I have created a model of the organization design elements necessary to support collaboration in organizations. The current study will help improve this model and begin establishing links between collaboration in organizations and organizational effectiveness.

Why Am I Asking You to Participate?

I am looking for a variety of individuals from a wide spectrum of organizations to complete the survey. Whether or not your organization uses teams or other ways to improve collaboration, your input is valuable to the study!

Can I Get the Results?

FREE! Feedback reports summarizing the results of this survey are available at two levels:

- *Study-level report.* Any individual participating in this survey is eligible to receive a report summarizing the compiled results of everyone participating in the study
- *Organization-level report.* If 30 or more people take the survey (special arrangements may be made for smaller organizations) and select the same organization in the demographics section of the survey they are eligible to receive a feedback report summarizing the compiled results of the organization.

Please note that no information identifying individual participants will be included in any report. Please contact Cheryl Harris using the information below to request study-level or organization-level reports. At the end of the survey, you will be reminded to contact Cheryl for a feedback report and given her contact information again.

Thank you!

Cheryl Harris
Industrial/Organizational Psychology Doctoral Candidate
University of North Texas
cheryl-harris@comcast.net
214-455-7476

APPENDIX D
RECRUITING EMAIL #2

Collaboration For Organization Success – Dissertation Research

Are you maximizing collaboration in your organization? Is collaboration paying off in business results? Are you paying attention to all of the elements necessary for supporting collaboration?

Check your organization’s collaborative “pulse” by participating in this study!

Hello, my name is Cheryl Harris. I am a PhD candidate in Industrial/Organizational Psychology at the University of North Texas. I would like to invite your participation in a web-based survey (see link below) as part of my dissertation research investigating the relationship between collaboration and organization success.

Though organizations rely more and more on teams and collaborative groups to be effective, surprisingly little research has examined the link between collaboration and effectiveness. I have created a model of the organization design elements necessary to support collaboration in organizations. The study will help improve this model and establish links between collaboration in organizations and organization success.

FREE! Feedback reports summarizing the results of this survey are available at two levels:

-- *Study-level report.* Any individual participating in this survey is eligible to receive a report summarizing the compiled results of everyone participating in the study

-- *Organization-level report.* If 30 or more people take the survey (special arrangements may be made for smaller organizations) and select the same organization in the demographics section of the survey they are eligible to receive a feedback report summarizing the compiled results of the organization.

Please note that no information identifying individual participants will be included in any report. Please contact Cheryl Harris using the information below to request study-level or organization-level reports. At the end of the survey, you will be reminded to contact Cheryl for a feedback report and given her contact information again.

Individuals are asked to complete a *confidential* survey – your responses will not be linked to you in any way. Completing the survey will take from 15-30 minutes. To access the web-based survey, please click on the link provided below (or copy and paste it into your web browser). Due to the restrictions of the study, members who are self-employed, retired, or currently without employment are not eligible to participate in the study.

<http://www.surveymonkey.com/s.asp?u=1493951570>

For more information about this study - including an overview of the model being investigated, Frequently Asked Questions, and sample email text to send to others in your organization who you would like to invite to participate - go to

www.collaborativeorganization.com/study.htm.

Please feel free to forward this email to others you think might be interested in participating.

Thanks in advance for your time and participation!

Cheryl Harris
Industrial/Organizational Psychology Doctoral Candidate
University of North Texas
cheryl-harris@comcast.net
214-455-7476

APPENDIX E

ELECTRONIC DISCUSSION LISTS USED FOR RECRUITING PARTICIPANTS

	Email Discussion List	Description
1	Alliance-Network	Strategic collaboration around the world
2	ASSESS	Assessment professionals (University of Kentucky operated)
3	COGNET	Academy of Management Managerial & Organizational Cognition Division
4	DEOS-L	Distance Education Online Symposium (Penn State University operated)
5	EAWOP-L	European Association of Work and Organizational Psychologists
6	EDTECH	Educational Technology
7	EVALTALK	Evaluation Talk (American Evaluation Association operated)
8	HRDIV_NET	Human Resources Division Network (Academy of Management operated)
9	HRNET	Human Resources Network
10	IOOB-L	Industrial Psychology
11	LRN-ORG	Learning Organization
12	MG-ED-DV	Management Education & Development
13	ODCNET	Organizational Development and Change Network (Academy of Management operated)
14	ODNET	Organization Development Network
15	ODNET-global	Organization Development Network – global aspects
16	ODNET-internals	Organization Development Network – internal practitioners
17	ODNET-nplg	Organization Development Network New Professionals Learning Group
18	OMT-L	Academy of Management Organization and Management Theory Division
19	Online Facilitation	Online facilitators
20	ORGDESIGN	Organization Design Forum
21	ORGDYNE	Organizational Dynamics
22	POD	Professional and Organizational Development Network in Higher Education
23	ROINET	Return on Investment Network
24	TEAMNET	Teamwork Network (Center for Collaborative Organizations operated)
25	TRAINING IDEAS	Coaching & Training Ideas
26	TRDEV	Training and Development
27	WBTOLL-L	Web-Based Training Online Learning Discussion

APPENDIX F
STUDY CONSENT FORM

Informed Consent

Before agreeing to complete the survey, it is important that you read and understand the following information. Please feel free to print a copy of this information for your records.

I understand that I am about to complete a survey that will ask me about my perceptions related to various components of collaboration in my organization. The survey should not take more than 45 minutes to complete.

I understand that any information obtained will be completely anonymous. My responses will not be able to be identified by any person. I have the right to discontinue participation and can exit the survey at any time without any negative consequences.

I understand that the purpose of this research is to further the understanding of collaboration in organizations. The data obtained from this research may be used for scholarly publication and educational purposes.

I understand that participants in the study can receive reports summarizing the results of the entire study if a request is sent to the email address below. Reports summarizing my organization's level of support of collaboration are available to participants of my organization only, and only if the minimum criteria is met. Neither report will identify individual responses, only a compilation of responses.

If I have any questions, comments, or problems regarding my participation, I should contact:

Cheryl Harris in the Psychology Department at the University of North Texas at (214) 455-7476 or at cheryl-harris@comcast.net, or you may contact Dr. Michael Beyerlein in the Psychology Department at the University of North Texas at (940) 565-2653 or at beyerlei@unt.edu.

This project has been reviewed and approved by the University of North Texas Institutional Review Board for the Protection of Human Subjects (940-565-3940).

By checking the "I Agree" box below, I acknowledge that I have read the information presented above and agree to participate in the following study.

I Agree to Participate

APPENDIX G

PAPER-AND-PENCIL VERSION OF QUESTIONNAIRE

Welcome to the Study of Collaboration in Organizations

You will be asked a series of questions about your organization.

- The survey consists of 10 pages. The page number at the bottom of each page will let you know your progress.
- You will be asked to define the organization being assessed on the next page of the survey and then consider this "organization being assessed" throughout the survey.

FREE! Feedback reports summarizing the results of this survey are available at two levels:

- *Study-level report.* Any individual participating in this survey is eligible to receive a report summarizing the compiled results of everyone participating in the study
- *Organization-level report.* If 30 or more people take the survey (special arrangements may be made for smaller organizations) and indicate the same "organization being assessed," they are eligible to receive a feedback report summarizing the compiled results of the organization.

Please note that no information identifying individual participants will be included in any report. Please contact Cheryl Harris using the information below to request study-level or organization-level reports. At the end of the survey, you will be reminded to contact Cheryl for a feedback report and given her contact information again.

If you have any questions, please contact Cheryl Harris at cheryl-harris@comcast.net or 214-455-7476.

Thanks for participating!

Informed Consent

Before agreeing to complete the survey, it is important that you read and understand the following information. Please feel free to print a copy of this information for your records.

I understand that I am about to complete a survey that will ask me about my perceptions related to various components of collaboration in my organization. The survey should not take more than 45 minutes to complete.

I understand that any information obtained will be completely anonymous. My responses will not be able to be identified by any person. I have the right to discontinue participation and can exit the survey at any time without any negative consequences.

I understand that the purpose of this research is to further the understanding of collaboration in organizations. The data obtained from this research may be used for scholarly publication and educational purposes.

I understand that participants in the study can receive reports summarizing the results of the entire study if a request is sent to the email address below. Reports summarizing my organization's level of support of collaboration are available to participants of my organization only, and only if the minimum criteria is met. Neither report will identify individual responses, only a compilation of responses.

If I have any questions, comments, or problems regarding my participation, I should contact:

Cheryl Harris in the Psychology Department at the University of North Texas at (214) 455-7476 or at cheryl-harris@comcast.net, or you may contact Dr. Michael Beyerlein in the Psychology Department at the University of North Texas at (940) 565-2653 or at beyerlei@unt.edu.

This project has been reviewed and approved by the University of North Texas Institutional Review Board for the Protection of Human Subjects (940-565-3940).

By checking the "I Agree" box below, I acknowledge that I have read the information presented above and agree to participate in the following study.

I Agree to Participate

Identify the Organization Being Assessed

Before you continue this survey, please decide on the *name of the organization being assessed*.

This "organization being assessed" might be:

- A site within a larger corporation
- A corporation encompassing multiple sites
- A department within a site
- A department crossing over several sites
- Or some other variation.

Any of these levels is appropriate for the assessment.

If you are part of a group leading a change effort, you might consider having your participants assess the organization undergoing change.

After you decide your organization being assessed, share that information with other assessment participants from your organization so you are all assessing the same thing. This is crucial to the integrity of the results you receive in your feedback report.

You may want to write down the name of the organization being assessed and refer to it throughout the survey. Whenever you see the word "organization," please think of your chosen "organization being assessed."

What is the name of organization being assessed in this survey? *For example, ABC Corporation - Dallas site, widget department in XYZ Inc., Smithville public library, etc.*

Information About the Organization Being Assessed

Please answer the following questions about the organization being assessed. Check the one most appropriate box to indicate your response.

<p>Which of these best describes the "organization being assessed"?</p> <p><input type="checkbox"/> A site within a larger corporation</p> <p><input type="checkbox"/> A corporation encompassing multiple sites</p> <p><input type="checkbox"/> A single-site corporation</p> <p><input type="checkbox"/> A department within a site</p> <p><input type="checkbox"/> A department crossing over several sites</p> <p><input type="checkbox"/> A small business</p> <p><input type="checkbox"/> Other (Please specify) _____</p>	<p>Which of these best describes your "organization being assessed"?</p> <p><input type="checkbox"/> For profit, publicly owned</p> <p><input type="checkbox"/> For profit, privately owned</p> <p><input type="checkbox"/> Not for profit, publicly owned</p> <p><input type="checkbox"/> Not for profit, privately owned</p> <p><input type="checkbox"/> Government</p> <p><input type="checkbox"/> Other (Please specify) _____</p>		
<p>Which of these best describes the industry of the "organization being assessed"?</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top; padding: 5px;"> <input type="checkbox"/> Communications <input type="checkbox"/> Construction <input type="checkbox"/> Consulting <input type="checkbox"/> Education <input type="checkbox"/> Energy and Utilities <input type="checkbox"/> Manufacturing - Basic Materials (for example, chemicals, metal mining) <input type="checkbox"/> Manufacturing - Capital Goods (for example, airplanes, mobile homes) <input type="checkbox"/> Manufacturing - Consumer Cyclical (for example, clothing, automobiles) <input type="checkbox"/> Manufacturing - Consumer Non-Cyclical (for example, food processing, office supplies) </td> <td style="width: 50%; border: none; vertical-align: top; padding: 5px;"> <input type="checkbox"/> Financial <input type="checkbox"/> Healthcare <input type="checkbox"/> Retailer <input type="checkbox"/> Services <input type="checkbox"/> Transportation <input type="checkbox"/> Technology <input type="checkbox"/> Wholesaler <input type="checkbox"/> Other (Please specify) _____ </td> </tr> </table>		<input type="checkbox"/> Communications <input type="checkbox"/> Construction <input type="checkbox"/> Consulting <input type="checkbox"/> Education <input type="checkbox"/> Energy and Utilities <input type="checkbox"/> Manufacturing - Basic Materials (for example, chemicals, metal mining) <input type="checkbox"/> Manufacturing - Capital Goods (for example, airplanes, mobile homes) <input type="checkbox"/> Manufacturing - Consumer Cyclical (for example, clothing, automobiles) <input type="checkbox"/> Manufacturing - Consumer Non-Cyclical (for example, food processing, office supplies)	<input type="checkbox"/> Financial <input type="checkbox"/> Healthcare <input type="checkbox"/> Retailer <input type="checkbox"/> Services <input type="checkbox"/> Transportation <input type="checkbox"/> Technology <input type="checkbox"/> Wholesaler <input type="checkbox"/> Other (Please specify) _____
<input type="checkbox"/> Communications <input type="checkbox"/> Construction <input type="checkbox"/> Consulting <input type="checkbox"/> Education <input type="checkbox"/> Energy and Utilities <input type="checkbox"/> Manufacturing - Basic Materials (for example, chemicals, metal mining) <input type="checkbox"/> Manufacturing - Capital Goods (for example, airplanes, mobile homes) <input type="checkbox"/> Manufacturing - Consumer Cyclical (for example, clothing, automobiles) <input type="checkbox"/> Manufacturing - Consumer Non-Cyclical (for example, food processing, office supplies)	<input type="checkbox"/> Financial <input type="checkbox"/> Healthcare <input type="checkbox"/> Retailer <input type="checkbox"/> Services <input type="checkbox"/> Transportation <input type="checkbox"/> Technology <input type="checkbox"/> Wholesaler <input type="checkbox"/> Other (Please specify) _____		
<p>Which of these best describes the work the "organization being assessed" performs?</p> <p><input type="checkbox"/> <i>Production</i> - Work with tools and materials to create products (Assembly, Construction, etc.)</p> <p><input type="checkbox"/> <i>Information Processing</i> - Process large amounts of information (Billing, Insurance claims, etc.)-</p> <p><input type="checkbox"/> <i>Individual Services</i> - One-on-one encounter with customers (Sales, Financial, Lawyers, etc.)</p> <p><input type="checkbox"/> <i>Collective Services</i> - Multiple individuals provide services to customers (Hospitals, Consulting, etc.)</p> <p><input type="checkbox"/> <i>Product Development</i> - Multiple individuals develop new products (Engineering, Architecture, etc.)</p> <p><input type="checkbox"/> <i>Other</i> (Please specify) _____</p>			
<p>How many people does the "organization being assessed" consist of?</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top; padding: 5px;"> <input type="checkbox"/> 1-10 <input type="checkbox"/> 11-50 <input type="checkbox"/> 51-100 <input type="checkbox"/> 101-200 <input type="checkbox"/> 201-300 </td> <td style="width: 50%; border: none; vertical-align: top; padding: 5px;"> <input type="checkbox"/> 301-400 <input type="checkbox"/> 401-500 <input type="checkbox"/> 501-1000 <input type="checkbox"/> 1001-2000 <input type="checkbox"/> 2001+ </td> </tr> </table>	<input type="checkbox"/> 1-10 <input type="checkbox"/> 11-50 <input type="checkbox"/> 51-100 <input type="checkbox"/> 101-200 <input type="checkbox"/> 201-300	<input type="checkbox"/> 301-400 <input type="checkbox"/> 401-500 <input type="checkbox"/> 501-1000 <input type="checkbox"/> 1001-2000 <input type="checkbox"/> 2001+	<p>Of the total number of people in your "organization being assessed," about what percent fall into each of the following categories? (Enter approximate percents, which should add to 100%.)</p> <p><input type="checkbox"/> Hourly/clerical</p> <p><input type="checkbox"/> Technical/professional</p> <p><input type="checkbox"/> Supervisors/managers</p> <p><input type="checkbox"/> Other</p>
<input type="checkbox"/> 1-10 <input type="checkbox"/> 11-50 <input type="checkbox"/> 51-100 <input type="checkbox"/> 101-200 <input type="checkbox"/> 201-300	<input type="checkbox"/> 301-400 <input type="checkbox"/> 401-500 <input type="checkbox"/> 501-1000 <input type="checkbox"/> 1001-2000 <input type="checkbox"/> 2001+		
<p>About what percent of the people of your "organization being assessed" are represented by labor union(s)? (Enter percent. If none, enter "0".)</p> <p><input type="checkbox"/> Percent</p>	<p>About what percent of the people of your "organization being assessed" are employed in countries other than the United States? (Enter percent. If none, enter "0".)</p> <p><input type="checkbox"/> Percent</p>		

Please answer the following questions about the organization being assessed. For each item, check the one most appropriate box to indicate your response.

My "organization being assessed":

Item	Little or no extent	Some extent	Moderate extent	Great extent	Very great extent	Not applicable
Has front-line workers working in teams						
Has supervisors and middle managers working in teams						
Has top managers and executives working in teams						
Uses teams when they are <i>not needed</i> to get the work done						
Supports informal working together (for example, talking around the water cooler is encouraged not punished, informal groups to discuss common issues are encouraged)						
Considers individuals to be the primary unit of accountability						
Considers teams to be the primary unit of accountability						
Has a "flat" organization structure (few levels of hierarchy)						
Has quick decision making						
Has complex, unstandardized work requiring constant changing of work processes to each situation						
Has a world outside the organization (customers, suppliers, technology, regulations, etc.) that changes frequently						
Uses collaborative practices now						
Wants to use collaborative practices in the future						

Please read the following descriptions to answer the questions below.

<p style="text-align: center;">Traditional organization</p> <ul style="list-style-type: none"> • No teams at any level • Little to no opportunity for people to get together informally to work on problems • Focus of systems (e.g., rewards and compensation, performance management) is on the individual • High level of hierarchy in reporting structure • Decision making is very slow because have to go up and down the chain of command (to my boss, his boss, her boss, etc.) 	<p style="text-align: center;">Spontaneous collaboration organization</p> <ul style="list-style-type: none"> • Little to no teams used at any level • Lots of opportunity for people to get together informally to work on problems (for example, common spaces like lounges are created and employees are encouraged to meet there to discuss issues) • Focus of systems (e.g., rewards and compensation, performance management) is on the individual, but has components to reinforce people working together informally to solve problems • Medium to low level of hierarchy in reporting structure • Decision making is relatively fast because often can go directly to the person who needs to make the decision
<p style="text-align: center;">Organization using teams</p> <ul style="list-style-type: none"> • Some teams used, but only at the worker level • Little to no opportunity for people to get together informally to work on problems • Focus of systems (e.g., rewards and compensation, performance management) is on the individual • Medium to high level of hierarchy in reporting structure • Decision making is slow because have to go up and down the chain of command (to my boss, his boss, her boss, etc.) 	<p style="text-align: center;">Team-based organization</p> <ul style="list-style-type: none"> • Everyone is on a team at all levels of the organization • Little to no opportunity for people to get together informally (outside of official team meetings) to work on problems • Focus of systems (e.g., rewards and compensation, performance management) is on individuals and teams • Low level of hierarchy in reporting structure (very flat) • Decision making is relatively fast because often can go directly to the team who needs to make the decision
<p style="text-align: center;">Collaborative organization</p> <ul style="list-style-type: none"> • A combination of both teams and individuals is used at all levels of the organization (some people are on teams, others are individual supporters) • Lots of opportunity for people to get together informally to work on problems (for example, common spaces like lounges are created and employees are encouraged to meet there to discuss issues) • Focus of systems (e.g., rewards and compensation, performance management) is on individual, team, and organization, depending on the needs of the situation • Low level of hierarchy in reporting structure (very flat) • Decision making is relatively fast because often can go directly to the person who needs to make the decision 	
<p>Which of these best describes what you consider the "organization being assessed" to be now?</p> <p><input type="checkbox"/> Traditional organization</p> <p><input type="checkbox"/> Organization using teams</p> <p><input type="checkbox"/> Spontaneous collaboration organization</p> <p><input type="checkbox"/> Team-based organization</p> <p><input type="checkbox"/> Collaborative organization</p>	<p>Which of these best describes you think your "organization being assessed" should be?</p> <p><input type="checkbox"/> Traditional organization</p> <p><input type="checkbox"/> Organization using teams</p> <p><input type="checkbox"/> Spontaneous collaboration organization</p> <p><input type="checkbox"/> Team-based organization</p> <p><input type="checkbox"/> Collaborative organization</p>

Information About You

Please answer the following questions about you. For each item, check the one most appropriate box to indicate your response.

<p>What is your gender?</p> <p><input type="checkbox"/> Male</p> <p><input type="checkbox"/> Female</p>	<p>What is the highest level of education you completed?</p> <p><input type="checkbox"/> Middle school</p> <p><input type="checkbox"/> High school</p> <p><input type="checkbox"/> College – associates degree</p> <p><input type="checkbox"/> College – bachelors degree</p> <p><input type="checkbox"/> Graduate school – master’s degree</p> <p><input type="checkbox"/> Graduate school – PhD</p> <p><input type="checkbox"/> Other (Please specify) _____</p>
<p>Which best describes your role in the organization?</p> <p><input type="checkbox"/> Full-time employee</p> <p><input type="checkbox"/> Part-time employee</p> <p><input type="checkbox"/> Contract worker</p> <p><input type="checkbox"/> Volunteer</p> <p><input type="checkbox"/></p>	<p>Which best describes your position with the organization?</p> <p><input type="checkbox"/> Hourly employee</p> <p><input type="checkbox"/> Salaried employee (non-supervisor)</p> <p><input type="checkbox"/> Supervisor</p> <p><input type="checkbox"/> Manager</p> <p><input type="checkbox"/> Executive</p>
<p>Which of these best describes the work <i>you</i> perform for your organization?</p> <p><input type="checkbox"/> <i>Production</i> – Work with tools and materials to create products (Assembly, Construction, etc.)</p> <p><input type="checkbox"/> <i>Information Processing</i> – Process large amounts of information (Billing, Insurance claims, etc.)</p> <p><input type="checkbox"/> <i>Individual Services</i> – One-on-one encounter with customers (Sales, Financial, Lawyers, etc.)</p> <p><input type="checkbox"/> <i>Collective Services</i> – Multiple individuals provide services to customers (Hospitals, Consulting, etc.)</p> <p><input type="checkbox"/> <i>Product Development</i> – Multiple individuals develop new products (Engineering, Architecture, etc.)</p> <p><input type="checkbox"/> <i>Other</i> (Please specify) _____</p>	<p>Do you work as part of a team?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>

Effectiveness of the Organization Being Assessed

Please respond to these items about the effectiveness of your organization being assessed. For each item, check the one most appropriate box to indicate your response.

My “organization being assessed” is effective at:

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
Meeting goals						
Solving problems						
Making decisions						
Controlling costs						
Believing employees are able to perform their jobs						
Coming up with new ideas						
Being profitable						
Increasing capacity						
Not having to do things more than once to get it right						
Being able to change						
Rewarding employees (financial)						
Rewarding employees (non-financial)						
Involving employees in decision making						
Developing new products or services						
Communicating effectively						
Moving quickly						
Providing a quality product or service to customers						
Satisfying customers						
Responding quickly to customers						
Gaining new customers for existing products or services						
Gaining new markets with new products or services						
Providing a good value for the price to the customer						
Contributing to the community financially						
Contributing to the community non-financially (volunteering, etc.)						
Supporting work/life balance						
Helping people put family first						
Getting financial support from larger organization (for example, corporate)						
Getting non-financial support from larger organization (for example, corporate)						

People in my “organization being assessed” seem to:

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
Trust management						
Be satisfied with their jobs						
Want to work with the organization in the future						
Be satisfied with the organization						
Feel respected						
Feel supported by the organization						
Be committed to the organization						
Have enough growth opportunities						
Be able to use their expertise fully						
Feel trusted						

Overall, my “organization being assessed” is effective.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<input type="checkbox"/>				

Organization Design Elements

Think about the “organization being assessed” that you identified earlier in the survey. Check one box for each item that best represents what you think about the “organization being assessed” today.

The Organization’s Environment					
The environment is the world outside the organization. This world includes customers, suppliers, competitors, government regulators, the community and other parts of the larger organization.					
Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We all share information we learn about the world outside our organization so all are informed.					
We actively seek information from the world outside of the organization.					
Members of our organization at all levels work together to respond to customer issues.					
We have open lines of communication with our suppliers.					
We have open lines of communication with our customers.					
We try to anticipate changes in the world outside our organization and respond proactively.					
We have open lines of communication with other parts of the larger organization (for example, corporate office, other sites).					
After the world outside our organization changes, our organization reacts rapidly to adjust.					

Overall, my organization has enough effective connections to the world outside the organization to support achieving its goals.				
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Organization’s Culture					
Culture represents what happens in the day-to-day work life, the shared values and assumptions of the people in the organization.					
Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We have an atmosphere of trust and respect in our organization.					
Different job functions work together without disruptive conflict.					
Employees feel as though they are partners in the organization.					
There is a general belief that people in the organization want to work together to solve problems.					
Anticipating and meeting customer needs are priorities for all employees.					
Our organization makes the most of the brainpower of all employees.					
Any problems that occur are dealt with openly and honestly in our organization.					
There is a sense of shared responsibility to get the job done in our organization.					

Overall, my organization’s culture helps it achieve its goals.				
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Think about the “organization being assessed” that you identified earlier in the survey. Check one box for each item that best represents what you think about the “organization being assessed” today.

The Organization’s Work					
The work encompasses the tasks, processes, and performance goals that must be achieved to accomplish the business of the organization.					
Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The key work processes of my organization (tasks absolutely necessary for the organization to thrive) are identified.					
Work processes are periodically improved.					
In my group, team, or department, we have individuals with all the skills and abilities needed to collectively get the job done effectively.					
Our work requires us to depend on each other to get the job done.					
Employees are organized around whole pieces of work (processes, products, or customers), instead of segmented work with many transitions between groups or departments.					
Organization change efforts result in improving the business.					
We understand customer requirements and how they relate to our work.					
Work processes are redesigned to enhance collaboration when possible.					

Overall, my organization’s focus on improving work processes supports achieving its goals.

Strongly Disagree Disagree Neutral Agree Strongly Agree

The Organization’s Structure					
Organizational structure includes the way people are organized to carry out the work, including functional and program segments and connections.					
Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My organization supports informal collaborative practices (for example, learning networks, discussions around the water cooler).					
My organization uses an appropriate variety of different types of structures (for example, groups, work teams, project teams, individual supporters) rather than choosing one type and applying it to everyone regardless of the situation.					
My organization uses formal collaborative structures (for example, work teams, project teams, quality improvement teams).					
Different parts of my organization are integrated to enhance communication and cooperation.					
Groups and teams are only formed when people actually need to work together to get the job done.					
We do not spend excessive time handing off our work back and forth between other groups, teams, or departments.					
We have a clear understanding of roles and responsibilities of the different groups, teams, or departments.					
The structure of my organization is flat, with minimal levels of hierarchy.					

Overall, my organization’s structure helps it achieve its goals.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Think about the “organization being assessed” that you identified earlier in the survey. Check one box for each item that best represents what you think about the “organization being assessed” today.

The Organization’s Employees					
The term “employees” as used here refers to the front-line workers who are responsible for the daily completion of the work.					
Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Decisions are made by the employee(s) closest to the work.					
Employees have the authority to get their assigned tasks completed.					
Employees are held accountable for accomplishing their assigned tasks.					
Employees have the skills and abilities required to accomplish assigned tasks.					
Employees have the information they need to make decisions about their work.					
Over time, employees take on tasks that used to be the sole domain of their boss.					
Decision-making responsibility (who makes what decisions and when decisions should be escalated to the next level) is clear.					
Employees have a clear understanding of how their job responsibilities will increase over time.					

Overall, my organization’s employees are effective enough to help it achieve its goals.

Strongly Disagree Disagree Neutral Agree Strongly Agree

The Organization’s Leaders					
The term “leaders” as used here refers to managers, supervisors, and executives. Employees (front-line workers) can also take on leadership roles.					
Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Our leaders are supportive coaches rather than micro-managers.					
Employees have informal leadership responsibilities (leading projects, making decisions about things where their expertise is most relevant).					
Leaders give employees freedom to take careful risks without fear of being punished for failure.					
Leaders understand how their roles will change over time as employees take on more of their old tasks.					
Our leaders involve employees in decision making when involvement is appropriate.					
Our leaders communicate the goals then get out of the way to let employees figure out how to achieve the goals.					
Our leaders create processes within teams or groups to support better collaboration and the accomplishment of work.					
Employees have formal leadership roles (for example, team leaders, starpoint leaders).					

Overall, my organization’s leaders are effective enough to help it achieve its goals.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Think about the “organization being assessed” that you identified earlier in the survey. Check one box for each item that best represents what you think about the “organization being assessed” today.

The Organization’s Support Systems					
The context of the organization can be defined in terms of support systems. Support systems are the infrastructure created to support the work and the people doing the work within the organization. Common support systems include: the manner in which people are evaluated and compensated for their performance, the training and development that people receive, and the physical environment in which they perform their tasks.					
Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Organizational systems support collaboration and cooperation.					
Our organization’s support systems are flexible and capable of quick change.					
Support systems are accessible to all in the organization, not just leaders.					
Support systems are tailored to meet the needs of each group.					
Employees have access to information systems to retrieve data they need to get the job done effectively.					
Systems support people working together to get the job done rather than acting as barriers forcing employees and groups to find ways to work around the obstacles that the systems present.					
Support systems create an umbrella so the organization can remain a cohesive whole, yet are flexible enough to meet the needs of various teams and individuals.					
Support systems emphasize following the rules rather than common sense.					

Overall, my organization’s support systems help it achieve its goals.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Does your “organization being assessed” currently have any change efforts related to improving collaboration underway or in the planning phase?

Yes No I don’t know

Thank you for completing the survey!

APPENDIX H
PERCEPTIONS OF ORGANIZATION SUPPORT OF COLLABORATION
QUESTIONNAIRE ITEMS AND DIMENSIONS

Dimension	Item	Variable Name
Connect to the Environment	We all share information we learn about the world outside our organization so all are informed.	O_ENV1
	We actively seek information from the world outside of the organization.	O_ENV2
	Members of our organization at all levels work together to respond to customer issues.	O_ENV3
	We have open lines of communication with our suppliers.	O_ENV4
	We have open lines of communication with our customers.	O_ENV5
	We try to anticipate changes in the world outside our organization and respond proactively.	O_ENV6
	We have open lines of communication with other parts of the larger organization (for example, corporate office, other sites).	O_ENV7
	After the world outside our organization changes, our organization reacts rapidly to adjust.	O_ENV8
Craft a Culture of Collaboration	We have an atmosphere of trust and respect in our organization.	O_CUL1
	Different job functions work together without disruptive conflict.	O_CUL2
	Employees feel as though they are partners in the organization.	O_CUL3
	There is a general belief that people in the organization want to work together to solve problems.	O_CUL4
	Anticipating and meeting customer needs are priorities for all employees.	O_CUL5
	Our organization makes the most of the brainpower of all employees.	O_CUL6
	Any problems that occur are dealt with openly and honestly in our organization.	O_CUL7
	There is a sense of shared responsibility to get the job done in our organization.	O_CUL8
Understand Work Processes	The key work processes of my organization (tasks absolutely necessary for the organization to thrive) are identified.	O_WRK1
	Work processes are periodically improved.	O_WRK2
	In my group, team, or department, we have individuals with all the skills and abilities needed to collectively get the job done effectively.	O_WRK3
	Our work requires us to depend on each other to get the job done.	O_WRK4
	Employees are organized around whole pieces of work (processes, products, or customers), instead of segmented work with many transitions between groups or departments.	O_WRK5
	Organization change efforts result in improving the business.	O_WRK6
	We understand customer requirements and how they relate to our work.	O_WRK7
	Work processes are redesigned to enhance collaboration when possible.	O_WRK8
Design Using an Array of Structures	My organization supports informal collaborative practices (for example, learning networks, discussions around the water cooler).	O_STR1
	My organization uses an appropriate variety of different types of structures (for example, groups, work teams, project teams, individual supporters) rather than choosing one type and applying it to everyone regardless of the situation.	O_STR2
	My organization uses formal collaborative structures (for example, work teams, project teams, quality improvement teams).	O_STR3
	Different parts of my organization are integrated to enhance communication and cooperation.	O_STR4
	Groups and teams are only formed when people actually need to work together to get the job done.	O_STR5
	We do not spend excessive time handing off our work back and forth between other groups, teams, or departments.	O_STR6
	We have a clear understanding of roles and responsibilities of the different groups, teams, or departments.	O_STR7
	The structure of my organization is flat, with minimal levels of hierarchy.	O_STR8

Dimension	Item	Variable Name
Plan Employee Empowerment	Decisions are made by the employee(s) closest to the work.	O_EMP1
	Employees have the authority to get their assigned tasks completed.	O_EMP2
	Employees are held accountable for accomplishing their assigned tasks.	O_EMP3
	Employees have the skills and abilities required to accomplish assigned tasks.	O_EMP4
	Employees have the information they need to make decisions about their work.	O_EMP5
	Over time, employees take on tasks that used to be the sole domain of their boss.	O_EMP6
	Decision-making responsibility (who makes what decisions and when decisions should be escalated to the next level) is clear.	O_EMP7
	Employees have a clear understanding of how their job responsibilities will increase over time.	O_EMP8
Define New Roles of Leaders	Our leaders are supportive coaches rather than micro-managers.	O_LDR1
	Employees have informal leadership responsibilities (leading projects, making decisions about things where their expertise is most relevant).	O_LDR2
	Leaders give employees freedom to take careful risks without fear of being punished for failure.	O_LDR3
	Leaders understand how their roles will change over time as employees take on more of their old tasks.	O_LDR4
	Our leaders involve employees in decision making when involvement is appropriate.	O_LDR5
	Our leaders communicate the goals then get out of the way to let employees figure out how to achieve the goals.	O_LDR6
	Our leaders create processes within teams or groups to support better collaboration and the accomplishment of work.	O_LDR7
	Employees have formal leadership roles (for example, team leaders, starpoint leaders).	O_LDR8
Align Support Systems	Organizational systems support collaboration and cooperation.	O_SYS1
	Our organization's support systems are flexible and capable of quick change.	O_SYS2
	Support systems are accessible to all in the organization, not just leaders.	O_SYS3
	Support systems are tailored to meet the needs of each group.	O_SYS4
	Employees have access to information systems to retrieve data they need to get the job done effectively.	O_SYS5
	Systems support people working together to get the job done rather than acting as barriers forcing employees and groups to find ways to work around the obstacles that the systems present.	O_SYS6
	Support systems create an umbrella so the organization can remain a cohesive whole, yet are flexible enough to meet the needs of various teams and individuals.	O_SYS7
	Support systems emphasize following the rules rather than common sense.	O_SYS8

APPENDIX I
PERCEPTIONS OF ORGANIZATION EFFECTIVENESS QUESTIONNAIRE ITEMS AND
DIMENSIONS

Dimension	Item	Variable Name
Performance	Meeting goals	E_PRF1
	Solving problems	E_PRF2
	Making decisions	E_PRF3
	Controlling costs	E_PRF4
	Being profitable	E_PRF5
	Increasing capacity	E_PRF6
	Not having to do things more than once to get it right	E_PRF7
Employee Involvement	Believing employees are able to perform their jobs	E_INV1
	Rewarding employees (financial)	E_INV2
	Rewarding employees (non-financial)	E_INV3
	Involving employees in decision making	E_INV4
	Communicating effectively	E_INV5
Flexibility & Innovation	Coming up with new ideas	E_FLX1
	Being able to change	E_FLX2
	Developing new products or services	E_FLX3
	Moving quickly	E_FLX4
Customer Satisfaction	Providing a quality product or service to customers	E_CST1
	Satisfying customers	E_CST2
	Responding quickly to customers	E_CST3
	Gaining new customers for existing products or services	E_CST4
	Gaining new markets with new products or services	E_CST5
	Providing a good value for the price to the customer	E_CST6
Connection to Outside World	Contributing to the community financially	E_OUT1
	Contributing to the community non-financially (volunteering, etc.)	E_OUT2
	Supporting work/life balance	E_OUT3
	Helping people put family first	E_OUT4
	Getting financial support from larger organization (for example, corporate)	E_OUT5
	Getting non-financial support from larger organization (for example, corporate)	E_OUT6
Treatment of People	Trust management	E_PPL1
	Be satisfied with their jobs	E_PPL2
	Want to work with the organization in the future	E_PPL3
	Be satisfied with the organization	E_PPL4
	Feel respected	E_PPL5
	Feel supported by the organization	E_PPL6
	Be committed to the organization	E_PPL7
	Have enough growth opportunities	E_PPL8
	Be able to use their expertise fully	E_PPL9
	Feel trusted	EPPL10

APPENDIX J

PERCEPTIONS OF ORGANIZATION SUPPORT OF COLLABORATION
QUESTIONNAIRE ITEMS AND DIMENSIONS AFTER PHASE 1 OF THE STUDY

Dimension	Item	Variable Name
Connect to the Environment	We all share information we learn about the world outside our organization so all are informed.	O_ENV1
	We actively seek information from the world outside of the organization.	O_ENV2
	We try to anticipate changes in the world outside our organization and respond proactively.	O_ENV6
	After the world outside our organization changes, our organization reacts rapidly to adjust.	O_ENV8
Craft a Culture of Collaboration	Different job functions work together without disruptive conflict.	O_CUL2
	Employees feel as though they are partners in the organization.	O_CUL3
	There is a general belief that people in the organization want to work together to solve problems.	O_CUL4
	Anticipating and meeting customer needs are priorities for all employees.	O_CUL5
	Any problems that occur are dealt with openly and honestly in our organization.	O_CUL7
	There is a sense of shared responsibility to get the job done in our organization.	O_CUL8
Build Shared Leadership	Our leaders are supportive coaches rather than micro-managers.	O_LDR1
	Employees have informal leadership responsibilities (leading projects, making decisions about things where their expertise is most relevant).	O_LDR2
	Leaders give employees freedom to take careful risks without fear of being punished for failure.	O_LDR3
	Leaders understand how their roles will change over time as employees take on more of their old tasks.	O_LDR4
	Our leaders involve employees in decision making when involvement is appropriate.	O_LDR5
	Our leaders communicate the goals then get out of the way to let employees figure out how to achieve the goals.	O_LDR6
	Our leaders create processes within teams or groups to support better collaboration and the accomplishment of work.	O_LDR7
	Decisions are made by the employee(s) closest to the work.	O_EMP1
	Employees have the authority to get their assigned tasks completed.	O_EMP2
Align Support Systems	Organizational systems support collaboration and cooperation.	O_SYS1
	Our organization's support systems are flexible and capable of quick change.	O_SYS2
	Support systems are accessible to all in the organization, not just leaders.	O_SYS3
	Support systems are tailored to meet the needs of each group.	O_SYS4
	Employees have access to information systems to retrieve data they need to get the job done effectively.	O_SYS5
	Systems support people working together to get the job done rather than acting as barriers forcing employees and groups to find ways to work around the obstacles that the systems present.	O_SYS6
	Support systems create an umbrella so the organization can remain a cohesive whole, yet are flexible enough to meet the needs of various teams and individuals.	O_SYS7
Enhance Work & Structure	Work processes are periodically improved.	O_WRK2
	Organization change efforts result in improving the business.	O_WRK6
	Work processes are redesigned to enhance collaboration when possible.	O_WRK8
	My organization uses an appropriate variety of different types of structures (for example, groups, work teams, project teams, individual supporters) rather than choosing one type and applying it to everyone regardless of the situation.	O_STR2
	My organization uses formal collaborative structures (for example, work teams, project teams, quality improvement teams).	O_STR3
	Different parts of my organization are integrated to enhance communication and cooperation.	O_STR4
Bring Together Essential Skills	In my group, team, or department, we have individuals with all the skills and abilities needed to collectively get the job done effectively.	O_WRK3
	Employees have the skills and abilities required to accomplish assigned tasks.	O_EMP4

APPENDIX K
PERCEPTIONS OF ORGANIZATION EFFECTIVENESS QUESTIONNAIRE ITEMS AND
DIMENSIONS AFTER PHASE 1 OF THE STUDY

Dimension	Item	Variable Name
Customer Satisfaction	Providing a quality product or service to customers	E_CST1
	Satisfying customers	E_CST2
	Responding quickly to customers	E_CST3
New Customer Development	Gaining new customers for existing products or services	E_CST4
	Gaining new markets with new products or services	E_CST5
	Providing a good value for the price to the customer	E_CST6
Treatment of People	Trust management	E_PPL1
	Be satisfied with their jobs	E_PPL2
	Want to work with the organization in the future	E_PPL3
	Be satisfied with the organization	E_PPL4
	Feel respected	E_PPL5
	Feel supported by the organization	E_PPL6
	Be committed to the organization	E_PPL7
	Have enough growth opportunities	E_PPL8
	Be able to use their expertise fully	E_PPL9
	Feel trusted	EPPL10
Believing employees are able to perform their jobs	E_INV1	
Performance, Flexibility, & Involvement	Involving employees in decision making	E_INV4
	Communicating effectively	E_INV5
	Coming up with new ideas	E_FLX1
	Being able to change	E_FLX2
	Moving quickly	E_FLX4
	Meeting goals	E_PRF1
	Solving problems	E_PRF2
	Making decisions	E_PRF3
	Not having to do things more than once to get it right	E_PRF7
Connection to Larger Organization	Getting financial support from larger organization (for example, corporate)	E_OUT5
	Getting non-financial support from larger organization (for example, corporate)	E_OUT6
Work/Life Balance	Supporting work/life balance	E_OUT4
	Helping people put family first	E_OUT3

APPENDIX L

PERCEPTIONS OF ORGANIZATION SUPPORT OF COLLABORATION
QUESTIONNAIRE ITEMS AND DIMENSIONS AFTER PHASE 2 OF THE STUDY

Dimension	Item	Variable Name
Connect to the Environment	We all share information we learn about the world outside our organization so all are informed.	O_ENV1
	We actively seek information from the world outside of the organization.	O_ENV2
	We try to anticipate changes in the world outside our organization and respond proactively.	O_ENV6
	After the world outside our organization changes, our organization reacts rapidly to adjust.	O_ENV8
Craft a Culture of Collaboration	Different job functions work together without disruptive conflict.	O_CUL2
	Employees feel as though they are partners in the organization.	O_CUL3
	There is a general belief that people in the organization want to work together to solve problems.	O_CUL4
	Anticipating and meeting customer needs are priorities for all employees.	O_CUL5
	Any problems that occur are dealt with openly and honestly in our organization.	O_CUL7
	There is a sense of shared responsibility to get the job done in our organization.	O_CUL8
Build Shared Leadership	Our leaders are supportive coaches rather than micro-managers.	O_LDR1
	Employees have informal leadership responsibilities (leading projects, making decisions about things where their expertise is most relevant).	O_LDR2
	Leaders give employees freedom to take careful risks without fear of being punished for failure.	O_LDR3
	Leaders understand how their roles will change over time as employees take on more of their old tasks.	O_LDR4
	Our leaders involve employees in decision making when involvement is appropriate.	O_LDR5
	Our leaders communicate the goals then get out of the way to let employees figure out how to achieve the goals.	O_LDR6
	Our leaders create processes within teams or groups to support better collaboration and the accomplishment of work.	O_LDR7
	Decisions are made by the employee(s) closest to the work.	O_EMP1
	Employees have the authority to get their assigned tasks completed.	O_EMP2
Align Support Systems	Organizational systems support collaboration and cooperation.	O_SYS1
	Our organization's support systems are flexible and capable of quick change.	O_SYS2
	Support systems are accessible to all in the organization, not just leaders.	O_SYS3
	Support systems are tailored to meet the needs of each group.	O_SYS4
	Employees have access to information systems to retrieve data they need to get the job done effectively.	O_SYS5
	Systems support people working together to get the job done rather than acting as barriers forcing employees and groups to find ways to work around the obstacles that the systems present.	O_SYS6
	Support systems create an umbrella so the organization can remain a cohesive whole, yet are flexible enough to meet the needs of various teams and individuals.	O_SYS7
Understand Work Processes	Work processes are periodically improved.	O_WRK2
	Organization change efforts result in improving the business.	O_WRK6
	Work processes are redesigned to enhance collaboration when possible.	O_WRK8
Design Using an Array of Structures	My organization uses an appropriate variety of different types of structures (for example, groups, work teams, project teams, individual supporters) rather than choosing one type and applying it to everyone regardless of the situation.	O_STR2
	My organization uses formal collaborative structures (for example, work teams, project teams, quality improvement teams).	O_STR3
	Different parts of my organization are integrated to enhance communication and cooperation.	O_STR4

APPENDIX M

PERCEPTIONS OF ORGANIZATION EFFECTIVENESS QUESTIONNAIRE ITEMS AND
DIMENSIONS AFTER PHASE 2 OF THE STUDY

Dimension	Item	Variable Name
Performance	Meeting goals	E_PRF1
	Solving problems	E_PRF2
	Making decisions	E_PRF3
	Not having to do things more than once to get it right	E_PRF7
Customer Satisfaction	Providing a quality product or service to customers	E_CST1
	Satisfying customers	E_CST2
	Responding quickly to customers	E_CST3
New Customer Development	Gaining new customers for existing products or services	E_CST4
	Gaining new markets with new products or services	E_CST5
	Providing a good value for the price to the customer	E_CST6
Treatment of People	Trust management	E_PPL1
	Be satisfied with their jobs	E_PPL2
	Want to work with the organization in the future	E_PPL3
	Be satisfied with the organization	E_PPL4
	Feel respected	E_PPL5
	Feel supported by the organization	E_PPL6
	Be committed to the organization	E_PPL7
	Have enough growth opportunities	E_PPL8
	Be able to use their expertise fully	E_PPL9
	Feel trusted	EPPL10
Employee Involvement	Believing employees are able to perform their jobs	E_INV1
	Involving employees in decision making	E_INV4
	Communicating effectively	E_INV5
Flexibility	Coming up with new ideas	E_FLX1
	Being able to change	E_FLX2
	Moving quickly	E_FLX4

APPENDIX N

PERCEPTIONS OF TEAM PERFORMANCE (HALL, 1998)

Directions: Rate your work group on the basis of the following: If 100% means the best that your group can do with all its current resources, how well is it actually doing now (write a percentage ranging from 0% to 100% on the line after each statement).

- 188 Controlling costs: _____
- 189 Meeting goals: _____
- 190 Cycle time: _____
- 191 Creating quality products: _____
- 192 Innovation: _____
- 193 Increased capacity: _____
- 194 Use of expertise on the group _____
- 195 Satisfying customers _____
- 196 Providing quality service to customers: _____
- 197 Responding to customer needs: _____
- 198 Group member's desire to work with the group in the future: _____

- 199 Group members are more satisfied with the group than frustrated: _____

- 200 Problem-solving: _____
- 201 Decision-making: _____
- 202 Belief in our ability to perform our jobs: _____
- 203 Increased production: _____
- 204 Group member growth opportunities: _____
- 205 Trust with leaders and management: _____
- 206 Commitment to the organization: _____
- 207 Satisfaction with the job: _____

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