Advances in Horizontal Interaction

Charles Allen Liedtke, Ph.D.
Strategic Improvement Systems, LLC
www.strategicimprovementsystems.com
charles@sisliedtke.com
Excelsior, Minnesota, USA

Executive Summary: *Horizontal interaction* occurs when a member of one organizational unit communicates with a member of another organizational unit located on the same level of an organizational hierarchy or on a different main branch of an organizational hierarchy. Those interactions are different than the *vertical* supervisor-to-supervisee interactions that routinely occur during day-to-day operations. Horizontal interactions are often necessary during strategic improvement initiatives to improve organizational performance in such areas as safety, quality, customer satisfaction, employee satisfaction, productivity, growth, and cost. Organizations that develop strong horizontal interaction capabilities have a potential new source of competitive advantage and/or a new core competence. My doctoral dissertation was published in 1997 and it is titled, "*Horizontal Interaction During Strategic Improvement Initiatives: A Study Involving Six Quality-Oriented Organizations*." That research (1) confirmed the importance of horizontal interaction during strategic improvement initiatives, (2) revealed new insights into the nature of horizontal interactions, and (3) identified organizational best practices. This research report explains the need for horizontal interaction; summarizes the primary findings from the 1997 dissertation; discusses three advances in horizontal interaction since 1997; discusses three current horizontal interaction challenges; and discusses the future of horizontal interaction.

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Note: The anthropomorphic convention of ascribing human qualities to organizations is used in this research report. For example, a phrase such as "Human Resources contacted Operations to discuss the open positions." means "One or more employees of the Human Resources Department contacted one or more employees of the Operations Department to discuss the open positions."

I. The Need for Horizontal Interaction

"The reports of my death are greatly exaggerated."
- Mark Twain

Many people over the past several decades have predicted that the organization structure commonly depicted by the organization chart ("*org chart*")—which emphasizes the *vertical* supervisor-to-supervisee relationships in the organization—would eventually be a relic of the past. Now imagine that the organization chart is a human. Then it could justifiably quote Mark Twain: "*The reports of my death are greatly exaggerated*." The vertically-oriented organization structure and corresponding organization chart are still prevalent today. This vertical structure is useful for the day-to-day management of the organization ("*running the place*"), but it is often inadequate for improving the organization from a strategic perspective ("*improving the place"*). A conceptual organization chart with the "*vertical*" and "*horizontal*" dimensions is depicted in Figure 1.

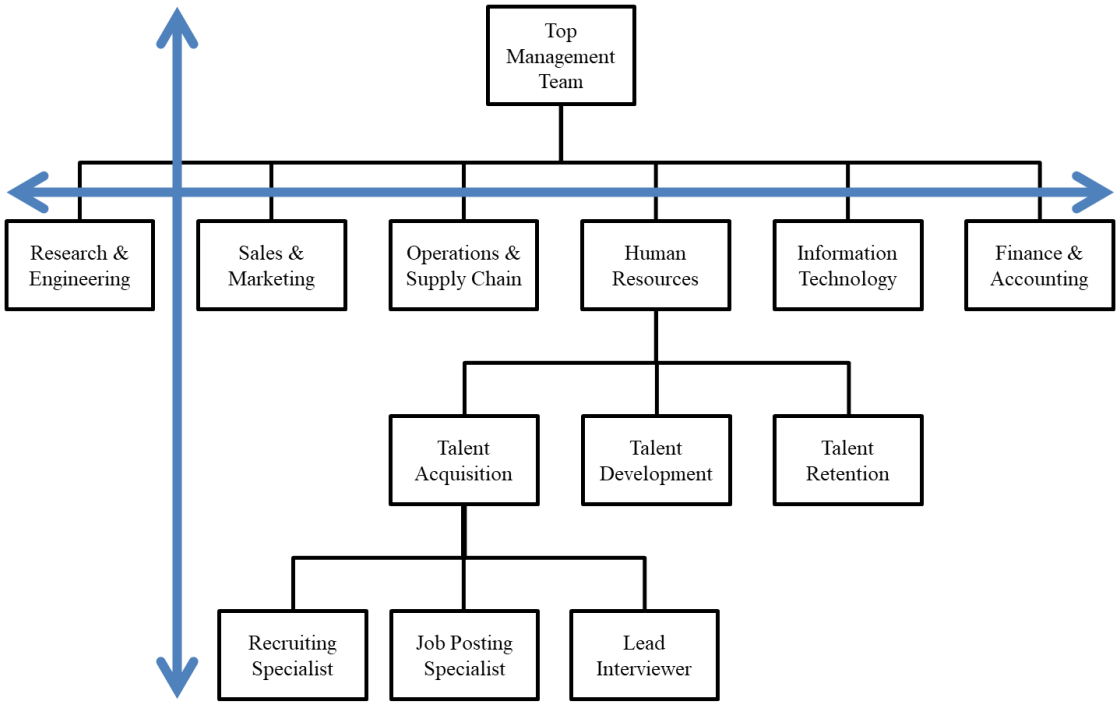


Figure 1. Organization Chart with Vertical and Horizontal Dimensions.

Horizontal interaction occurs when a member of one organizational unit communicates with a member of another organizational unit located on the same level of an organizational hierarchy or on a different main branch of an organizational hierarchy (Liedtke, 1997). *Horizontal interactions* are different than the *vertical* supervisor-to-supervisee *interactions* that occur during day-to-day operations in that they cross organizational unit boundaries. The organization chart depicted in Figure 1 is for an organization with six functional departments (*"silos"*). There are fifteen possible horizontal interaction pathways between the six departments which are depicted in Figure 2.

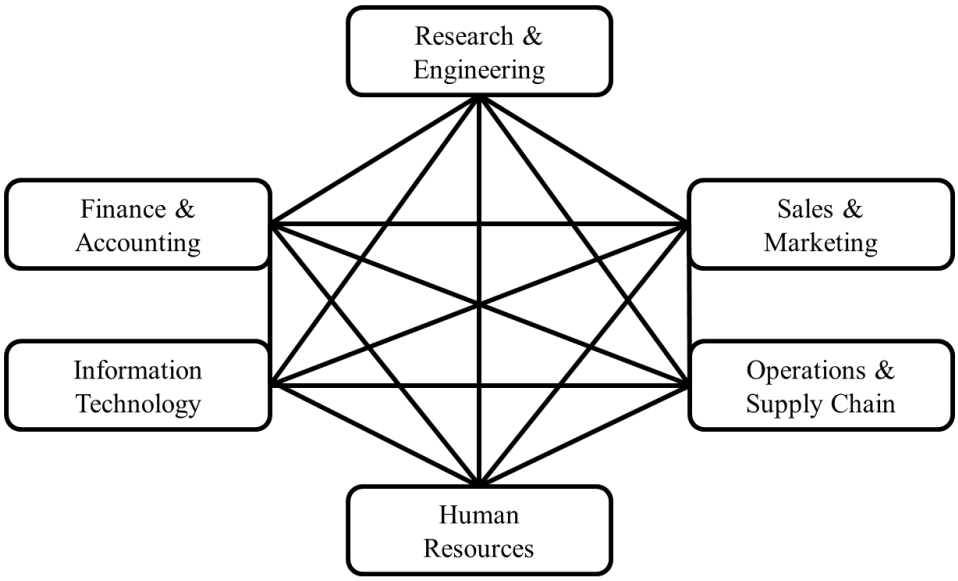


Figure 2. Fifteen Possible Horizontal Interaction Pathways Between Departments.

A Top Management Team (TMT) sometimes launches a *strategic improvement initiative* (or *improvement initiative* for short) to address a critical organizational performance challenge. An *improvement initiative* is defined (Liedtke, 1997) as "*a sequence of intentional, large-scale events and activities directed by TMT members and/or their direct reports that are conducted to improve organizational performance in an organizational performance category*."

Horizontal interactions are often necessary during strategic improvement initiatives because of the need for cross-organizational communication, coordination, cooperation, and collaboration between organizational units. For example, let's say a TMT wanted to improve safety in the manufacturing plant by focusing on improving personal protective equipment (PPE) and its use. A cross-departmental PPE Team could be formed that is led by the Operations & Supply Chain Department and also have team members from the Human Resources Department (PPE training perspective), the Information Technology Department (PPE analytics perspective), and the Finance & Accounting Department (PPE financial perspective). The potential relationships between those four departments are shown in Figure 3. The PPE Team could conduct internal and external research on PPE; identify several PPE options; analyze the PPE options; select a PPE option or a hybrid PPE option; purchase the PPE; assure that employees are trained on the use of the new PPE; introduce the new PPE into the manufacturing plant; and then periodically review the performance of the new PPE. Organizations that develop strong horizontal interaction capabilities have a potential new source of competitive advantage and/or a new core competence. It is doubtful that the PPE improvement initiative would be very successful without effective communication, coordination, cooperation, and collaboration between the four departments. Horizontal interaction is most likely necessary for improvement initiative success.

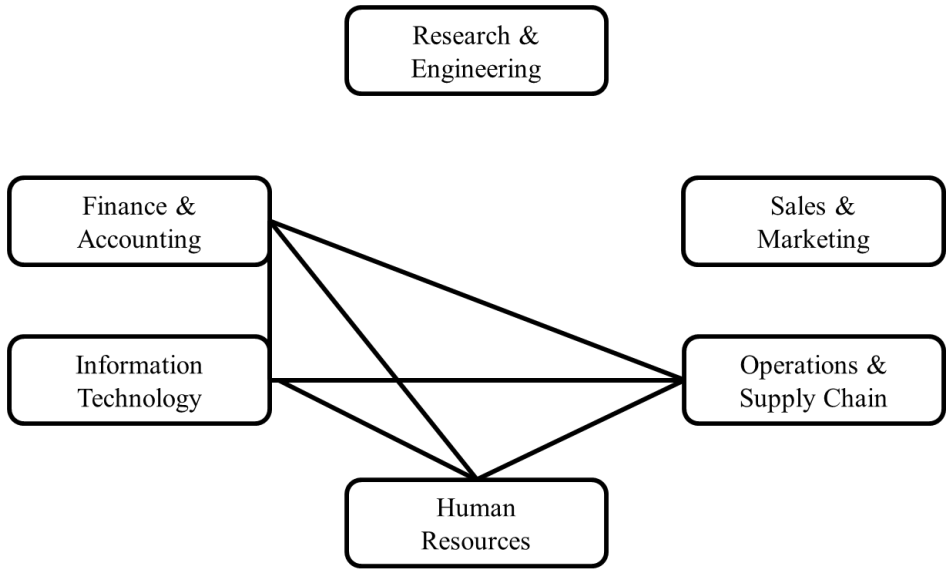


Figure 3. Important Horizontal Interactions for Improving Plant PPE and Its Use.

Sometimes there are barriers between departments which either prevent horizontal interactions from occurring or make horizontal interactions difficult to conduct. Some conceptual barriers are depicted as red lines in Figure 4. We can see that there are barriers between the Operations & Supply Chain Department and the Human Resources Department and there are also barriers between the Operations & Supply Chain Department and the Information Technology Department. Examples of barriers include physical distance, historic conflict, personality clashes, competition for TMT attention, competition for funding, and competition for talent. If the Operations & Supply Chain Department doesn't cooperate with the Human Resources Department during the PPE improvement initiative, then the manufacturing plant employees might not receive adequate training on the new PPE. If the Operations & Supply Chain Department doesn't cooperate with the Finance & Accounting Department, then there might not be adequate funding for new PPE.

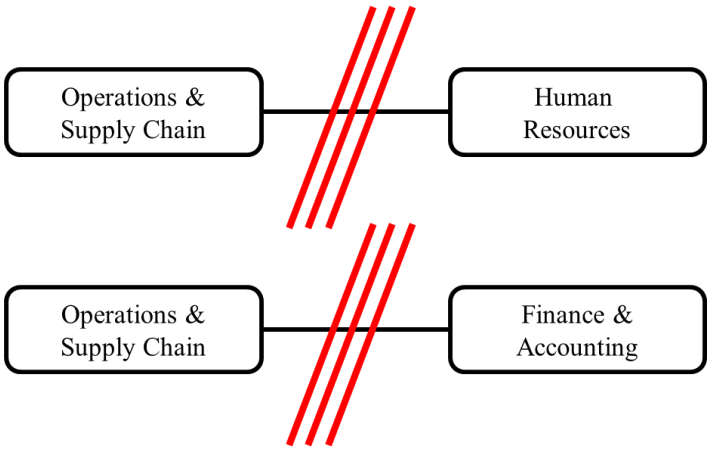


Figure 4. Barriers Between Departments (Red Lines).

If the TMT of a hospital wanted to improve medication administration, then there would most likely need to be extensive communication, coordination, cooperation, and collaboration during the improvement initiative between the Nursing Department, Pharmacy Department, Purchasing Department, Human Resources Department, and the Information Technology Department.

This research report involves a *reflection back* on horizontal interaction over the past twenty-five years and on the research that I conducted in the 1990s which led to the publication of my doctoral dissertation in 1997. That 1990s research (1) confirmed the importance of horizontal interaction during strategic improvement initiatives, (2) revealed new insights into the nature of horizontal interactions, and (3) identified organizational best practices. This research report explains the need for horizontal interaction; summarizes the primary findings from the 1997 dissertation; discusses three advances in horizontal interaction since 1997; discusses three current horizontal interaction challenges; and discusses the future of horizontal interaction.

The 1997 dissertation contains the results of a comprehensive horizontal interaction literature review from the years 1916 to 1997. What follows are some of the most important horizontal interaction developments in chronological order from that time period:

Fayol (1916, French; 1949, English) – Gang Plank
Weber (1924, German; 1947, English) – Bureaucracy
Barnard (1938) – Cooperative Systems
Deutsch (1949) – Theory of Co-operation
March & Simon (1958) – Types of Coordination
Simpson (1959) – Horizontal Communication
Burns & Stalker (1961) – Organic Systems
Chandler (1962) – Rise of the Multidivisional Form
Sherif (1962) – Intergroup Relations
Cross-Functional Management in Japanese TQM (1960s; see Kurogane)
Mee (1964) – Matrix Organization
Lawrence & Lorsch (1967) – Integration Study
Thompson (1967) – Types of Interdependence
Galbraith (1973) – Types of Lateral Relations
Tichy (1981) – Network Organizations
Fligstein (1985) – Multidivisional Form Dominance
Porter (1985) – Value Chain
Deming (1986) – Production Viewed as a System
Jacques (1990) – Defends Hierarchies
Galbraith (1994) – Lateral Organizational Capability
Heckscher (1994) – Post-Bureaucratic Organization
Deming (1994, see 2018 Citation) – System of Profound Knowledge
Smith *et al.* (1995) – Cooperation Research Agenda
Mintzberg *et al.* (1996) – Collaboration Article
Romme (1996) – Hierarchy-Team Debate

Henri Fayol described *horizontal interaction*—although not using those words—in 1916. Fayol's ideas were first published in English in 1929. Fayol (1949, English version) described the scalar chain: "The scalar chain is the chain of superiors ranging from the ultimate authority to the lowest ranks. The line of authority is the route followed—via every link in the chain—by all communications which start from or go to the ultimate authority." The left-most image in Figure 5 is a modified version of Fayol's (1949) scalar chain. The circles represent people in an organizational hierarchy. The lines connecting the circles represent superior-subordinate (or *supervisor-supervisee*) relationships. Fayol asserted that superior-subordinate relationships are sometimes inadequate from a *speed perspective*:

> "This path [along the scalar chain] is dictated both by the need for some transmission and by the principle of unity of command, but it is not always the swiftest. It is even at times disastrously lengthy in large concerns, notably in governmental ones. Now, there are many activities whose success turns on speedy execution, hence respect for the line of authority must be reconciled with the need for swift actions."

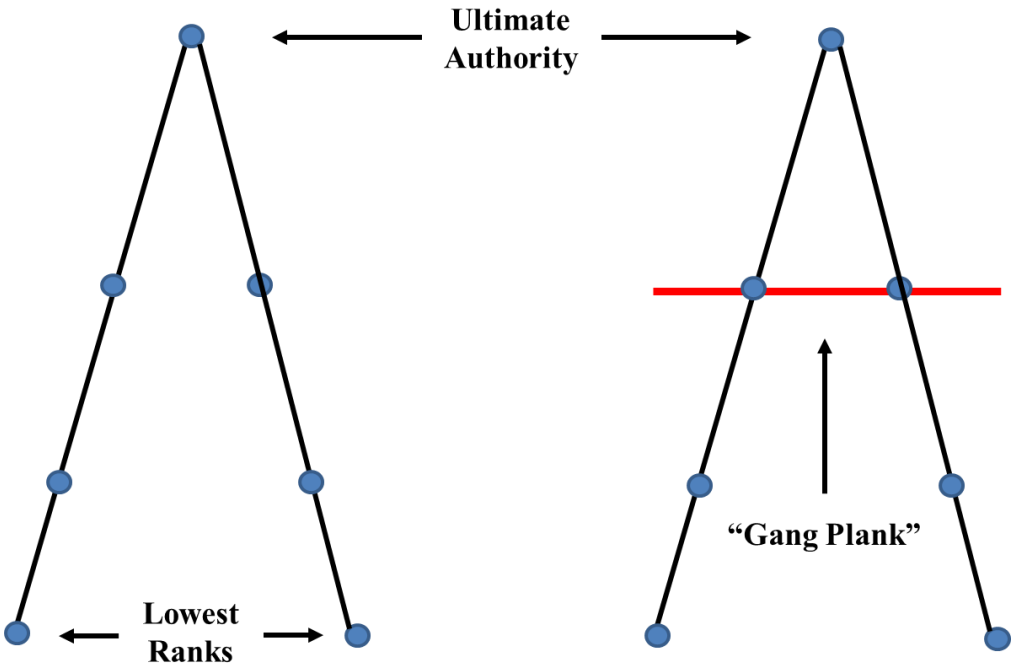


Figure 5. Scalar Chain With and Without the *Gang Plank*.

Fayol suggested that employees should sometimes use the "*Gang Plank*" as a method to circumvent the scalar chain. This is depicted in the right-most image of Figure 5. Historically, pirates sometimes used a *Gang Plank* to perform dastardly deeds. According to Fayol (1949), the ". . . use of the 'gang plank' is simple, swift, sure." It is clear that horizontal interaction occurs when the *Gang Plank* is used. Fayol (1949) explained that the line of authority was necessary, but insufficient in some circumstances:

> "It is an error to depart needlessly from the line of authority, but it is an even greater one to keep to it when detriment to the business ensues. The latter may attain extreme gravity in certain conditions. When an employee is obliged to choose between the two practices, and it is impossible for him to take advice from his superior, he should be courageous enough and feel free enough to adopt the line dictated by the general interest. But for him to be in this frame of mind there must have been previous precedent, and his superiors must have set him the example—for example must always come from above."

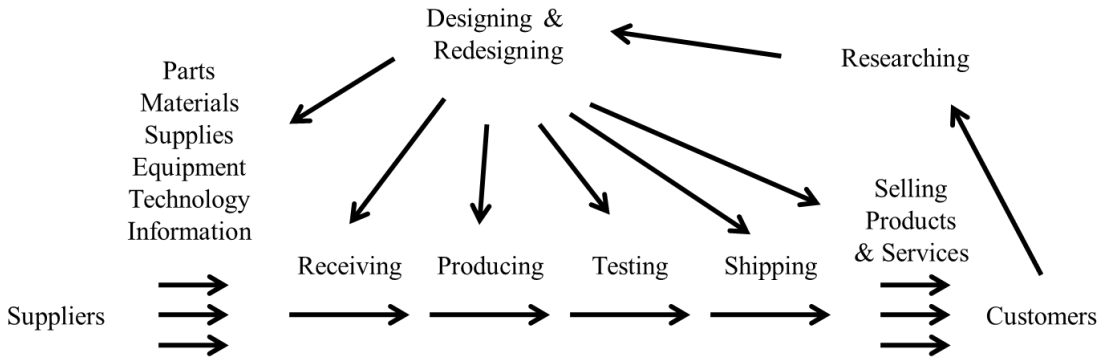
In that passage, Fayol hinted at the importance of having an organizational culture conducive to horizontal interaction. Fayol (1949) mentioned liaison officers and department head meetings as horizontal interaction mechanisms. Fayol (1949) also mentioned some of the benefits of horizontal interaction: "The collaboration of all concerned leads to a united front, an understanding of the reasons for decisions, and a broadened outlook." Those suggest a *system view* of organizations.

Barnard (1938) was one of the first to view organizations as cooperative systems: "It is the central hypothesis of this book that the most useful concept for the analysis of experience of cooperative systems is embodied in the definition of a formal organization as *a system of consciously coordinated activities or forces of two or more persons*." The phrase *consciously coordinated activities* suggests horizontal interaction between organizational units.

The field of Operations Research adopted the *organization as a system view* as early as the 1950s. Churchman, Ackoff, and Arnoff (1957) commented: "During this period of differentiation and segmentation of the management function a new class of managerial problems began to appear and assert themselves, problems which can be called executive-type problems. These problems are a direct consequence of the functional division of labor in an enterprise, a division which results in *organized* activity. In an organization each functional unit (division, department, or section) has a part of the whole job to perform. Each part is necessary for the accomplishment of the *over-all objectives* of the organization. A result of this division of labor, however, is that each functional unit develops objectives of its own . . . These objectives are not always consistent; in fact, they frequently come into direct conflict with one another." The functional units (division, department, or section) mentioned by the authors can be represented by an organization chart. The authors continued: "An objective of O.R. [Operations Research], as it emerged from this evolution of industrial organization, is to provide managers of the organization with a scientific basis for solving problems involving the interaction of components of the organization in the best interest of the organization as a whole. A decision which is best for the organization as a whole is called an optimum decision; one which is best relative to the functions of one or more parts of the organization is called a suboptimum decision." Additional thoughts on this *system* theme can be found in Churchman (1968) and Ackoff (1981).

Deming (1986) described how he introduced the concept of *production viewed as a system* in Japan in 1950: "Improvement of quality envelops the entire production line, from incoming materials to the consumer, and redesign of product and service for the future. This chart was first

used in August 1950 at a conference with top management at the Hotel de Yama on Mount Hakone in Japan." The diagram in Figure 6 is a modified version of the "chart" mentioned by Deming.



Based on *Production Viewed as a System* by Dr. W. Edwards Deming in "*Out of the Crisis*"

Figure 6. Production Viewed as a System.

Deming (1994; see 2018 reference) introduced "Appreciation for a system" as one of the four parts of his System of Profound Knowledge. Deming (1994) defined a *system* as, ". . . a network of interdependent components that work together to try to accomplish the aim of the system." Deming (1994) defined management's role in accomplishing the aim of the system: "It is management's job to direct the efforts of all components toward the aim of the system."

Kurogane (1993) described Cross-Functional Management—which originated in Japan in the early 1960s as an important component of the Japanese Total Quality Management (TQM) system: "As already stated, the vertical strata of a corporation are tied together, but strong sectionalism exists in departments such as manufacturing, sales, and others and impedes communication horizontally. In order to solve interdepartmental problems, committees or councils have been formed to address quality assurance, cost management, and other functions. These bodies actively work with each department on management and improvement of functions. This 'cross-functional management' has been devised and administered by Toyota Motor Corporation since the 1970s."

Scott (1992) introduced three *system* definitions for organizations which have implications for the possible contexts and motivations for horizontal interaction: Rational System, Natural System, and Open System. Here are Scott's *system* definitions:

- Rational System Definition: "*Organizations are collectivities oriented to the pursuit of relatively specific goals and exhibiting relatively highly formalized social structures*."
- Natural System Definition: "*Organizations are collectivities whose participants share a common interest in the survival of the system and who engage in collective activities, informally structured, to secure this end*."
- Open System Definition: "*Organizations are systems of interdependent activities linking shifting coalitions of participants; the systems are embedded in—dependent on continuing exchanges with and constituted by—the environments in which they operate*."

Galbraith (1994) explained the importance of developing lateral organizational capabilities and how those capabilities can help create a competitive advantage. Galbraith discussed a number of horizontal interaction topics: Lateral Organizational Capability, Lateral Coordination, Lateral Organization, Formal Lateral Groups, Integrating Roles, and The Distributed Organization. A key point made by Galbraith is that lateral organizations must be flexible in order to adjust to changing circumstances and emergent issues and opportunities.

The new product and service development processes in many organizations involve extensive horizontal interaction. Kume (2004) discussed how cross-organizational teamwork is necessary during new product development. Cross-departmental participation in new product development is depicted in Figure 7. The steps of a New Product Development Process are on the left and the departments are listed at the top. Extensive communication, coordination, cooperation, and collaboration between departments must occur in order to successfully launch a new product.

		Product Planning	Sales	R&D	Engineering	Legal	Quality Assurance	Prototype	Production Planning	Accounting	Manufacturing Engineering	Supply Chain	Manufacturing	Marketing	Service
Step #	**New Product Development Step**														
1	Ideate New Product Concept	X	X	X											
2	Conduct Basic Research			X		X									
3	Create Research Prototype			X		X									
4	Create High Level Design				X										
5	Create Detailed Design				X		X								
6	Create Working Prototype				X		X	X							
7	Develop Production Plan	X	X		X		X		X	X					
8	Prepare for Production				X		X		X	X	X	X	X		
9	Develop Marketing Plan		X											X	
10	Develop Service Plan						X								X
11	Create Manufacturing Prototype				X		X	X		X	X	X	X		
12	Manufacture Product						X		X	X	X	X	X		
13	Initiate Service Operations		X				X								X
14	Review New Product Development Project	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Figure 7. Cross-Departmental Participation in New Product Development.

The horizontal interaction literature and organizational practices have continued to develop and mature since 1997. A comprehensive literature review (post-1997) and formal search for contemporary organizational best practices was not conducted for this research report. One post-1997 book that merits mentioning is "*The Horizontal Organization*" by Ostroff (1999). The author offered numerous insights into horizontal organizations. Several insights into current organizational practices were discovered by searching the Harvard Business Review database.

Corkindale (2008a) described some of the challenges associated with implementing matrix management and shared what some practitioners were saying: "One theme has emerged loud and

clear from executives I have been coaching this year: the utter frustration of operating in complex and shifting matrix management systems." Corkindale (2008b) later elaborated on the challenges with matrix management and offered suggestions for how to lead in a matrix management system. Vantrappen and Wirtz (2016) mentioned that there are still many promoters of matrix management and many detractors. They offered several suggestions for how to successfully implement a matrix management system.

Tabrizi (2015) claimed that the majority of cross-functional teams are dysfunctional and offered several reasons: "Cross-functional teams often fail because the organization lacks a systemic approach. Teams are hurt by unclear governance, by a lack of accountability, by goals that lack specificity, and by organizations' failure to prioritize the success of cross-functional projects." The author went on to offer several suggestions for addressing the issues. Carucci (2022) identified some of the challenges associated with the hybrid work that has emerged recently during the pandemic: "Silos were certainly prevalent before the pandemic—hybrid work has simply created new requirements for effectively connecting teams that must work together to achieve shared outcomes." Many organizations are currently reimagining how they will operate going forward.

Several authors have recently written about networks. Satell (2015) discussed the phenomenon of moving from bureaucracy to network and some of the misconceptions associated with networks. Ibarra and Hunter (2022) introduced three interdependent forms of networking: operational, personal, and strategic. They mentioned that all three are necessary, but you must master strategic networking. Strategic networking involves "People outside your control who will enable you to reach key organizational objectives." King and Kovacs (2022) suggested that we are losing touch with our networks: "Our recent research shows that our professional and personal networks have shrunk by close to 16%—or by more than 200 people—during the pandemic." They further discussed the importance of face-to-face contact: "Without face-to-face contact, our emotional attachment to friends and family deteriorates quickly." They suggested focusing on *reconnection*. Uzzi and Dunlap (2022) identified three unique advantages of networks: private information, access to diverse skill sets, and power." They suggested connecting with *information brokers* and *superconnectors*: "To forge more useful connections, identify the *information brokers* and *superconnectors* in your network—people who connect disparate groups and can introduce you to new opportunities." Cross and Thomas (2022) described some symptoms that indicate you are "networking impaired" and offered a Four Point Model for improving your networking: Analyze Your Network, De-layer, Diversify, and Capitalize.

Finally, numerous authors have written about collaboration. Gardner (2017) used the experiences of the Dana-Farber Cancer Institute to identify ways for an organization to get its "Stars" to collaborate. Dhawan and Chamorro-Premuzic (2018) mentioned a disadvantage associated with remote teams: "As more and more of our interactions happen digitally, we will continue to experience new forms of miscommunication and misunderstanding." They stressed the need for *understanding the new rules of engagement*. Kwan (2019) suggested that one of the major reasons why some groups in organizations don't react positively to cross-group initiatives is because they are concerned with their security: "Nagged by concerns about their security, groups

that have been asked to collaborate often retreat into themselves and reflexively assume a defensive posture. Their top priorities: Guard the territory, minimize the threat." Kwan identified three dimensions of group security: Group Identity, Group Legitimacy, and Control. Kwan suggested starting with a threat assessment and then taking action to minimize the resistance by reinforcing identity, reaffirming legitimacy, and reasserting control. Hale and Grenny (2020) offered some practical suggestions for how to get people to participate in virtual meetings. Saunders (2020) offered four tips for effective virtual collaboration. Cross *et al.* (2021) claimed that over-collaboration is sinking productivity in some organizations: "These demands, which can be invisible to managers, are hurting organizations' efforts to become more agile and innovative. And they can lead to individual career derailment, burnout, and declines in physical and mental well-being." They offered several suggestions for mitigating the risks of collaborative overload. Cross (2022) discussed several reasons why some people tend to say "*yes*" when asked to collaborate even though it might not be in their best interests—including FOMO—which is the Fear of Missing Out. Cross says that successful collaborators are adept at identifying and challenging beliefs, imposing structure in their work, and altering their behaviors. Howard *et al.* (2022) described how collaboration can drastically improve U.S. health care especially the inter-organizational collaboration that occurs during Collaborative Quality Initiatives (CQIs). Hugander (2022) described the importance of *trust* during collaboration: "Research shows that it takes a long time to build interpersonal trust in organizations. When people from different groups come together to cross-collaborate on important strategic challenges, there will be low trust between the individuals who haven't worked together before." Hugander went on to suggest that people shouldn't let trust "*get in the way*" of collaboration: "It might sound counterintuitive, but shifting attention away from trust might be one effective way to quickly build trust in new constellations." Lastly, Gardner and Matviak (2022) stated that a *siloed approach* to target setting can be a barrier to collaboration. They suggested having overarching shared goals: "Broad shared goals that focus on big challenges and can be achieved within a year help break down organizational silos and get teams working together across functions."

II. Primary Horizontal Interaction Findings from 1997

The Research Motivation

The *vertical vs. horizontal* debate amongst scholars in the literature was quite intense in the 1990s (see, e.g., Romme, 1996) and there were also many gaps in the horizontal interaction literature. On the practitioner side—leaders of organizations were confronted with many options when deciding how best to structure their organization. Does the vertically-oriented organization structure composed of business units or divisions or departments make sense or would it be better to create a horizontally-oriented structure based on a network, a set of processes, or a value chain? A common sentiment in the 1990s was that there were not enough horizontal interactions occurring during both day-to-day operations and during strategic improvement initiatives. The primary reason offered was that the vertically-oriented business units/divisions/departments—sometimes derisively referred to as "*silos*"—were inhibiting horizontal interaction. There was too much "*silo*

work" and "*silo thinking*" and the *"silos*" needed to be "*busted*" or "*broken down*." The vertical departmental *silos* are depicted in Figure 8.

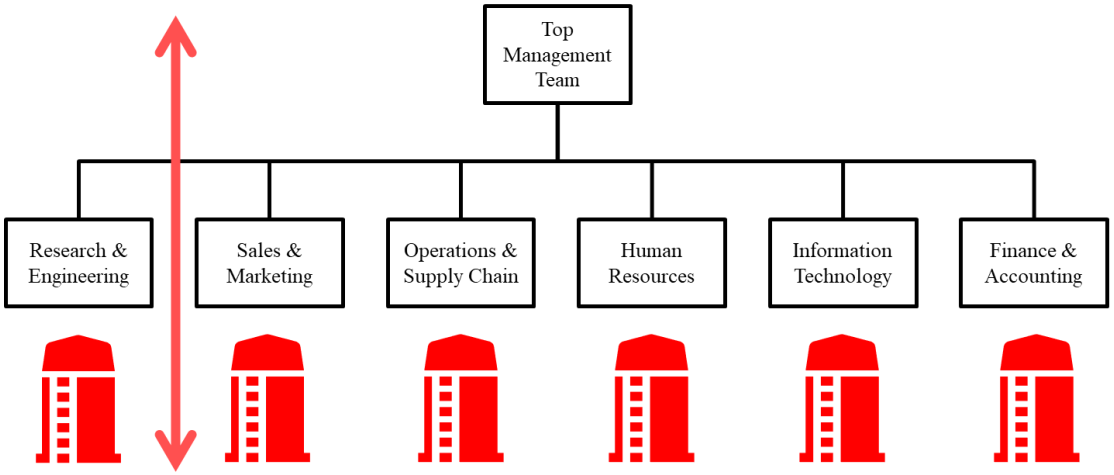


Figure 8. Department Structure with Departments as Silos.

The Research Context

Horizontal interactions can occur during both day-to-day operations and during strategic improvement initiatives. I decided to focus my research in the early 1990s on horizontal interaction during strategic improvement initiatives. Top Management Teams (TMTs) commonly direct activities to improve organizational performance including strategic planning activities. *Strategic planning* has been defined (Liedtke, 2019) as "*a pattern of formal and informal long-term decision-making activities which result in a strategic plan that is implemented, periodically reviewed, and adjusted with the aim of improving organizational performance*." The strategic planning activities often result in strategic improvement initiatives. A strategic improvement initiative (or "*improvement initiative*" for short) is defined (Liedtke, 1997) as "*an intentional set of formal coordinated activities to improve some aspect of organizational performance from a strategic perspective*." Many of the interactions that occur during improvement initiatives are vertical with respect to the organization chart (i.e., supervisor-to-supervisee). However—as was mentioned earlier—horizontal interactions are often necessary for improvement initiative success. For example, multiple departments might need to communicate, coordinate, cooperate, and collaborate during an improvement initiative to improve product quality. The degree of horizontal interaction during an improvement initiative—ranging from "*no horizontal interaction*" to "*extensive horizontal interaction*"—depends upon the nature of the improvement initiative.

My theory at the time was that if more horizontal interactions occurred during improvement initiatives—assuming a *silo-dominated* organization—then there would tend to be greater improvement initiative success. There are barriers to increasing horizontal interactions such as physical distance, historic conflict, personality clashes, competition for TMT attention, competition for funding, and competition for talent. It is also possible to have too many horizontal

interactions during improvement initiatives which could adversely affect the ability to schedule meetings, decision-making speed, and execution speed. The theory is depicted in Figure 9.

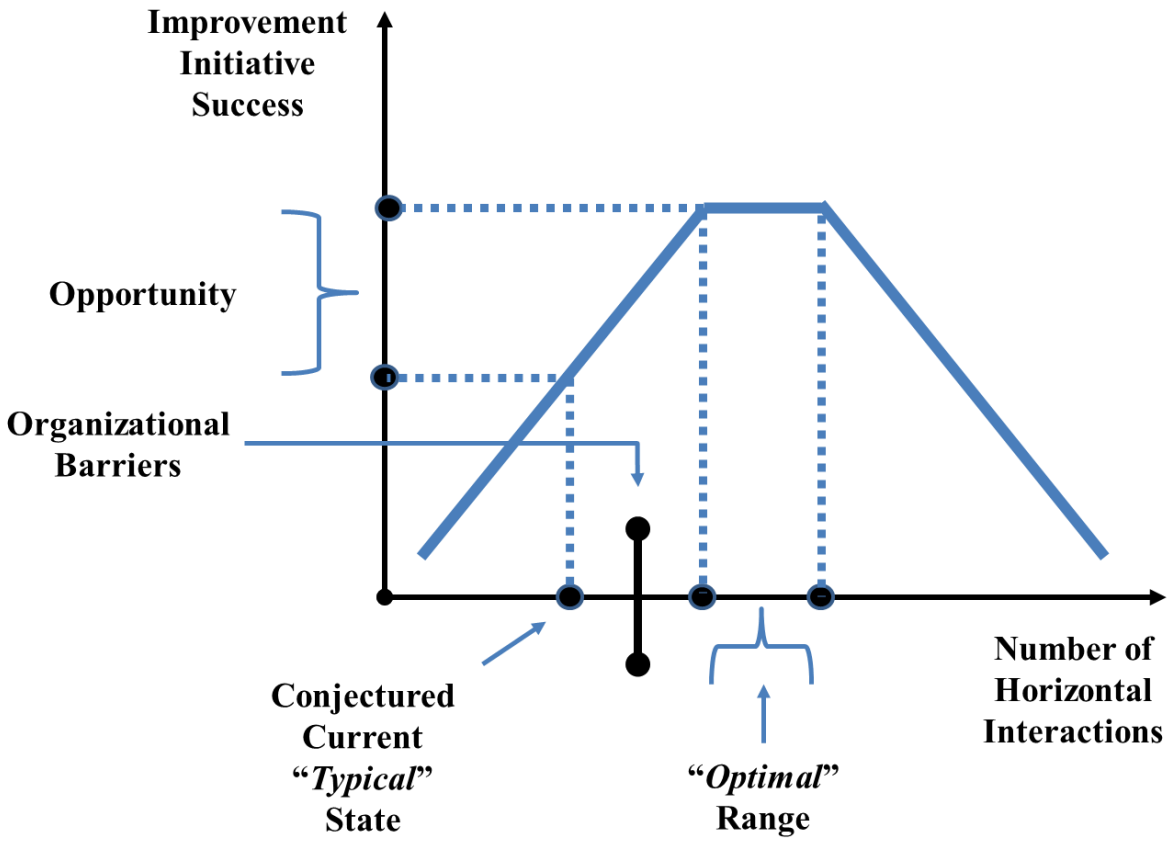


Figure 9. The conjectured relationship between the number of horizontal interactions during an improvement initiative and improvement initiative success.

The Research Questions

Having decided to focus on *horizontal interaction during strategic improvement initiatives* for my research—I identified five research questions that would guide my research:

- To what extent do horizontal interactions occur during improvement initiatives in U.S. organizations?
- Do horizontal interactions occur throughout the entire life of improvement initiatives or do they occur more frequently in specific stages?
- What are the perceived benefits of the horizontal interactions?
- What are the perceived difficulties associated with horizontal interactions?
- How has the use of horizontal interactions during improvement initiatives changed over time?

The Research Approach - Case Study Method

I used the case study research method to answer the five research questions. Six quality-oriented U.S. organizations were recruited to participate in the research. Site tours, on-site interviews, phone interviews, literature searches, and document analysis were used to collect the base level data for each of the six case study organizations. Within-case analyses and cross-case analyses were conducted to identify commonalities, differences, and emergent themes. The strategic planning and horizontal interaction practices of the case study organizations were documented in the form of six case studies which ranged in length from 49 pages to 89 pages in the dissertation.

The Research Results – Primary Findings

The eventual doctoral dissertation was published in 1997 and is 809 pages in length. It is titled, "*Horizontal Interaction During Strategic Improvement Initiatives: A Study Involving Six Quality-Oriented Organizations*." The research findings reported in the dissertation answered each of the five research questions. The research findings additionally (1) confirmed the importance of horizontal interaction during strategic improvement initiatives, (2) revealed new insights into the nature of horizontal interactions, and (3) identified organizational best practices. What follows are some of the primary findings.

Several **horizontal interaction characteristics** were identified:

- **Role:** What role did the horizontal interaction play during the improvement initiative?
- **Form:** What form of communication was used to conduct the horizontal interaction?
- **Scope:** Who was involved in the horizontal interaction?
- **Location:** Where did the horizontal interaction occur.
- **Timing:** When did the horizontal interaction occur?
- **Content:** What topics were discussed during the horizontal interaction?
- **Method:** How was the horizontal interaction conducted?
- **Formality:** How formal was the horizontal interaction?

Horizontal interactions were found to play numerous **roles** during improvement initiatives: Informative, Task Completion, Development, Decision Making, Assignment, Preparation, Proposal, Coordination, Input, Feedback, Learning, Evaluation, and Adjustment. The horizontal interactions also assumed a variety of different **forms** in terms of how they were conducted: Face-To-Face, Mail Services, Telephone Call, Telephone Message, Facsimile, Electronic Mail Message, Database Access, Videoconferencing, and Hybrid. Although many horizontal interaction benefits were discovered (described later), several horizontal interaction **difficulties** were discovered: Large Group Size, Personality Problems, Lack of Familiarity, Variation in Terminology, Variation in Knowledge Levels, Too Much Information, Untrustworthy Information, Lack of a Clear Focus, Dual Authority, Organizational Unit Influences, and Tone of Reviews.

One of the models that emerged from the research is depicted in Figure 10. It states *horizontal interaction during improvement initiatives leads to many consequences (benefits) which help contribute to the improvement of organizational performance* (improvement initiative success).

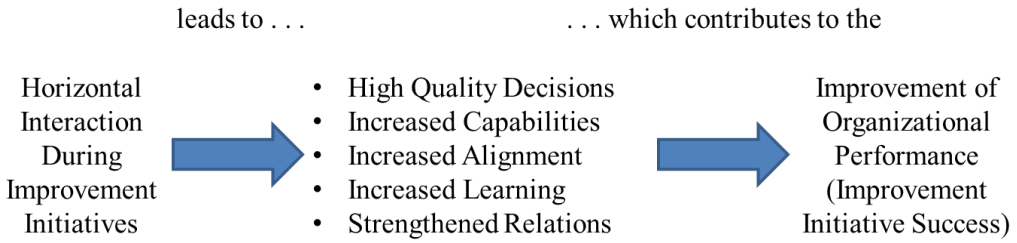


Figure 10. Emergent Horizontal Interaction Model.

The final and surprising primary finding was that it is useful to link horizontal interactions ("*link the linkers*") and that there were several mechanisms that were discovered for linking horizontal interactions. You can increase your chances of improvement initiative success by linking the horizontal interactions (i.e., *connected* horizontal interactions)—as opposed to not linking the horizontal interactions (i.e., *disconnected* horizontal interactions). A horizontal interaction is itself a *link* (recall the *Gang Plank*) and you can leverage the horizontal interactions by linking them together in creative and strategic ways. From a *system thinking* perspective (see, e.g., Deming, 1986, 2018), the horizontal interactions that occur during an improvement initiative are components of a system and they must interact ("*link*") in very special ways in order to accomplish the aim of the system (improvement initiative success). "Not Linked" and "Linked" horizontal interaction situations are depicted in Figure 11.

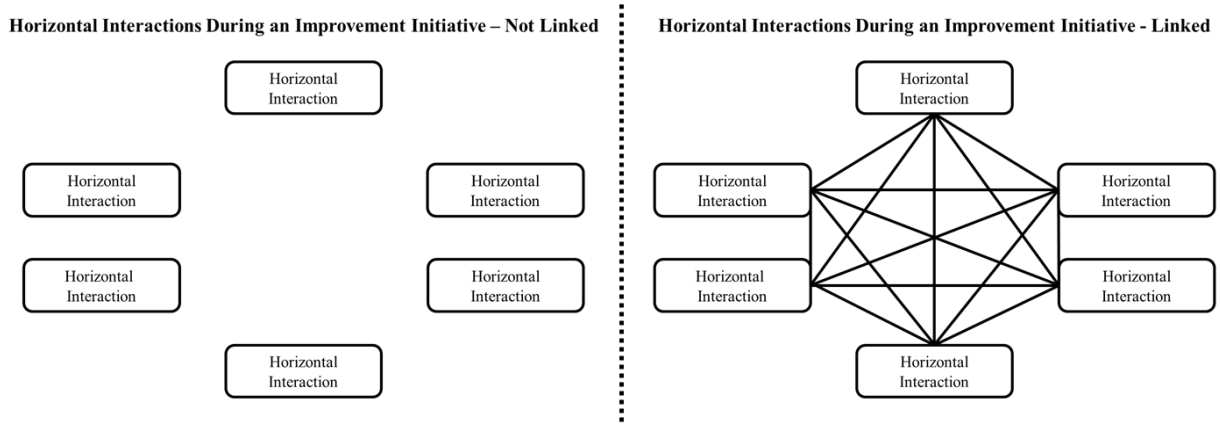


Figure 11. Not Linked and Linked Horizontal Interaction Situations.

There were two types of horizontal interaction linking mechanisms: (1) **Outputs** which included Focuses, Information, Conceptual Aids, Standardized Elements, and Principles and (2) **Ways Transported** which included People, Conceptual Aids, Documents, Groupware, and

Recording Devices. For example, if the TMT decides to focus on *safety*, then that "*focus*" can serve to link all of the horizontal interactions that occur during each improvement initiative.

That concludes a summary of the primary findings of the 1990s horizontal interaction research. Information about the dissertation can be found on Google Books by typing the title of the dissertation. What follows is a discussion of three horizontal interaction advances since 1997.

III. Three Horizontal Interaction Advances Since 1997

Significant progress has been made in organizations since 1997 in conducting horizontal interactions during strategic improvement initiatives. Some of the progress has been due to *social* factors and some of the progress has been due to *technical* factors. Three of those advances will now be discussed: (1) Advances in Cross-Organizational Team Practices (*structure*), (2) Advances in Information and Communication Technology (ICT) (*technology*), and (3) Advances in Informal Social Networks (*relationships*). The three advances are depicted in Figure 12.

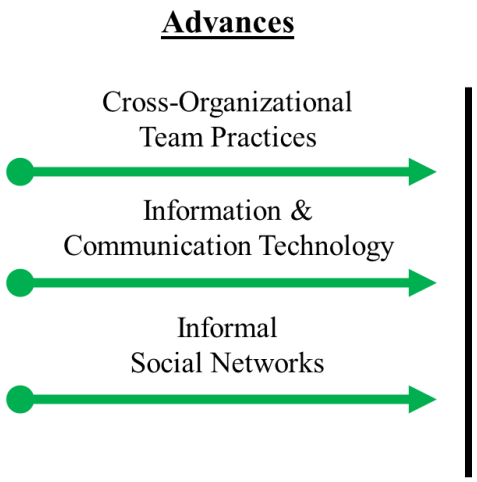


Figure 12. Three Horizontal Interaction Advances Since 1997.

The three advances collectively—related to *structure*, *technology*, and *relationships*—have helped "*break down*" the vertical silos in organizations. This is depicted in Figure 13.

1. Advances in Cross-Organizational Team Practices

The vertical organization structure depicted in Figure 1 is still prevalent today and it has been generally effective for "*running the organization*" on a day-to-day basis. It creates logical groupings of members of the organization based upon specialized knowledge, skills, and abilities; it clarifies roles, accountability, and responsibilities; and it establishes and supports reporting relationships. It has generally been less effective for "*improving the organization*" from a strategic

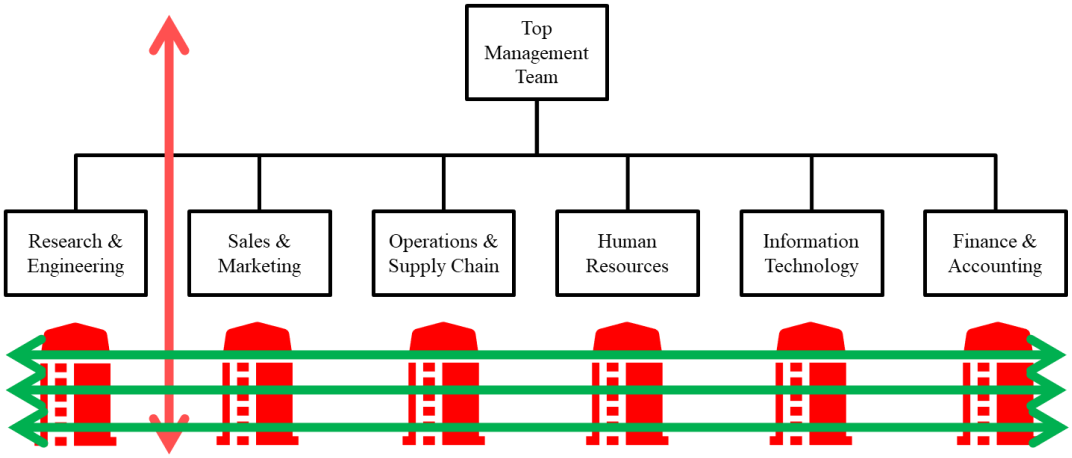
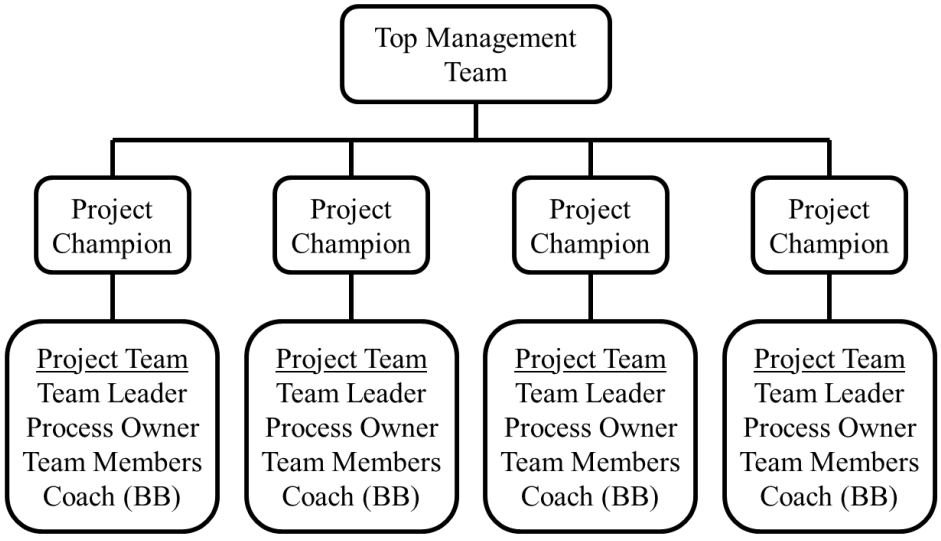


Figure 13. The Three Advances "Breaking Down" Silos.

perspective. Cross-organizational committees, project teams, and task forces are quite common in organizations today. Horizontal interaction occurs naturally and easily during those meetings. An organization structure consisting of cross-organizational Six Sigma project teams is depicted in Figure 14. *Six Sigma* is a strategic improvement approach that employs cross-organizational project teams (Schroeder *et al.*, 2008). The authors offered a research-based definition of Six Sigma: "Six Sigma is an organized parallel-meso structure to reduce variation in organizational processes by using improvement specialists, a structured method, and performance metrics with the aim of achieving strategic objectives." Such structures are used in practice to "*improve the organization*" instead of "*run the organization*." It is easy for cross-organizational communication, coordination, cooperation, and collaboration to occur during Six Sigma project team meetings.



"BB" = Six Sigma Black Belt

Figure 14. Six Sigma Project Structure.

The projects in the Six Sigma project structure can be managed at the TMT level as a portfolio of projects. A project portfolio is depicted in Figure 15. The projects in the Six Sigma project structure in Figure 14 can be *"mapped to*" the projects in the portfolio depicted in Figure 15. A project structure does not have to be limited to Six Sigma projects. There might also be Discovery projects, High Velocity projects, Lean projects, Standardization projects, Innovation projects, and Implementation projects in the project portfolio and corresponding project structure.

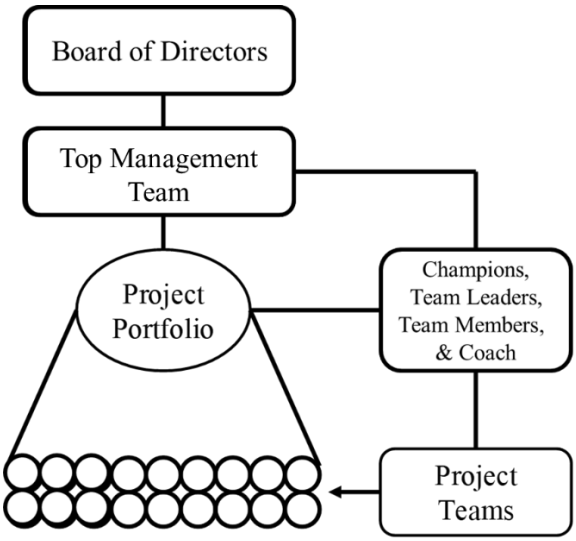


Figure 15. TMT-Owned Project Portfolio.

One of the primary advantages of a parallel-meso project structure is that it formalizes horizontal interaction and facilitates its occurrence during project team meetings. The use of cross-functional teams is also a characteristic of Policy Management—also known as Policy Deployment and Hoshin Kanri. Policy Management is a strategic improvement system that originated in Japan in the 1960s. It is one of the primary components of the Japanese Total Quality Management (TQM) System (Japanese Society for Quality Control, 2017).

2. Advances in Information and Communication Technology (ICT)

There have been numerous advances in Information and Communication Technology (ICT) since 1997 which have made horizontal interaction easier, less resource intensive, and inexpensive. Members of organizations now typically have one or more mobile devices for communication purposes and for information search and retrieval. Communication capabilities are now "anyone can communicate with almost anyone else in the world from anywhere at any time." The downside is that employees are now potentially "*on call*" 24/7/52 on their mobile devices. Internal and external platforms make it easy to communicate with others (*frictionless*). Some have suggested that a *platform revolution* is occurring (see, e.g., Parker *et al.*, 2016; and Cusumano *et al.*, 2017).

Schwab (2016) made several predictions regarding ICT in the context of a Fourth Industrial Revolution. Business in the future could look dramatically different including more alignment and integration of ICT which should make it easier for horizontal interaction to occur.

The COVID-19 pandemic accelerated the adoption and implementation of ICT in many organizations. On-site face-to-face meetings—where *deep socialization* can occur—were replaced by videoconferencing. Many organizations are now re-thinking the *future of work* and where employees need to be located. The number and type of employees permanently stationed in office buildings will vary by organization. This will affect both vertical and horizontal interaction. One interesting implication of the rapid advancement of ICT and how it has been embraced by youth is that each successive generation might adopt ICT easier than previous generations and new ways to horizontally communicate might become the norm. For example, text messaging and instant messaging might replace email messages. Horizontal interaction will occur in the metaverse.

The emergence of Big Data Analytics (BDA) platforms has created a shared space for internal and external communication to occur. Prophetically, this was described by Von Krogh, Ichijo, and Nonaka (2000) with their concept of *ba*. A BDA system & platform is depicted in Figure 16.

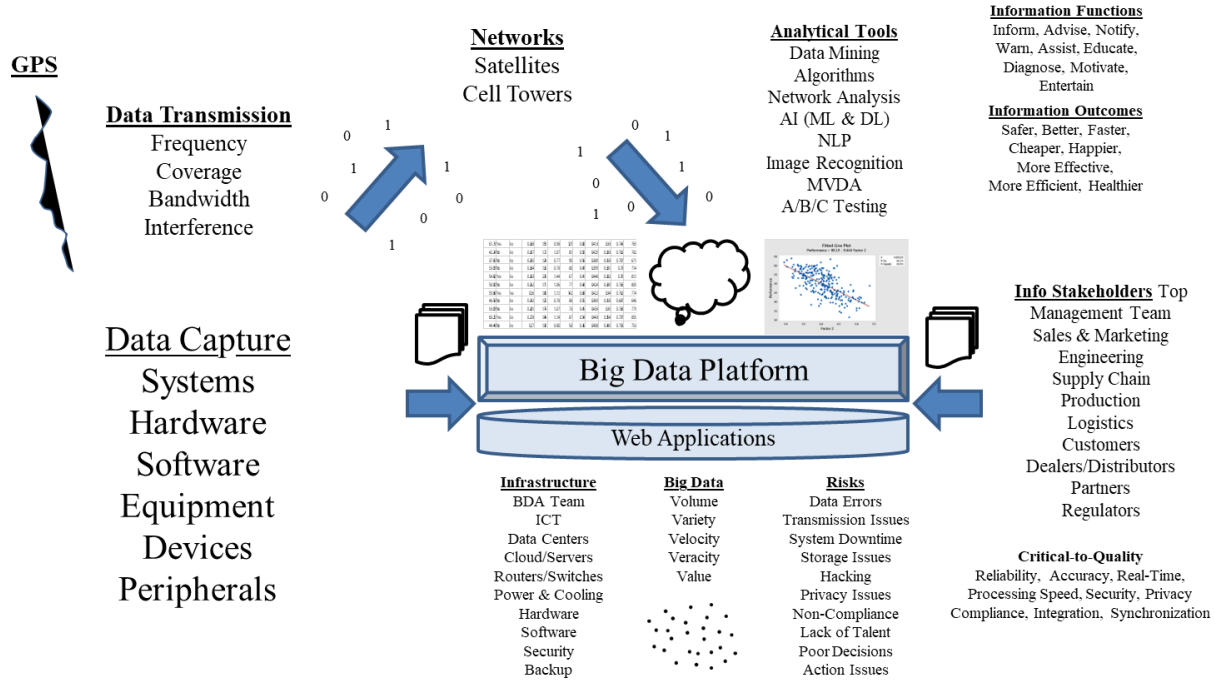


Figure 16. Big Data Analytics System & Platform.

Many have described the emerging and evolving BDA phenomenon and how BDA will help some organizations create a competitive advantage (see, e.g., Davenport & Harris, 2007; Davenport, 2014; Mayer-Schonberger & Cukier, 2013; and Marr, 2016). Horizontal interactions in the future will most likely be guided by BDA and other technologies like Artificial Intelligence. It is plausible that machine learning algorithms will help direct horizontal interactions in the future.

3. Advances in Informal Social Networks

The organization chart depicts the formal vertical reporting and communication channels in an organization. It has become clear since 1997 that the informal social networks in organizations can potentially be as important as the vertical organization chart in both day-to-day operations and during improvement initiatives. The organization chart hierarchy sometimes plays a minimal role in the functioning of informal social networks. Instead of supervisors ("*bosses*") and supervisees, there are *influencers* and *followers*. These informal social networks can be small or large, temporary or enduring, or fixed or fluid. Also, they can be unofficial and invisible, yet pervasive and influential. They can be face-to-face and/or function on a social media platform. Social media platforms have expanded horizontal capabilities inside and outside of official work environments. Two valuable social network references are "*An Executive's Primer on the Strategy of Social Networks"* by Carpenter (2009) and "*Big Data Social Mining"* by Ishikawa (2015).

The accelerated adoption and implementation of ICT during the COVID-19 pandemic arguably blurred organization chart lines. For example, a member of the Finance Department no longer had a cubicle in the Finance Department on the Third Floor of the Headquarters Building. A dedicated physical space that houses almost everyone in a department can strengthen the vertical structure and vertical relationships. Today, you can easily reach out to anyone *with only a few clicks* for help completing any task or transaction when working remotely. Virtual meetings using platforms (e.g., Zoom, MS Teams, Webex, etc.) create shared digital spaces for horizontal interaction to occur.

Some informal social networks are easy to form and are embedded in organizations. They might even include external actors. An organization chart with an embedded informal social network is depicted in Figure 17. The scenario is that a company has several employees who enjoy playing chess and they meet once a month and they jokingly refer to themselves as the Company Chess Club. The relationships in an informal social network have several benefits (e.g., cohesion, mentoring, joy in work, shared passion, etc.) and can be leveraged to an organization's advantage.

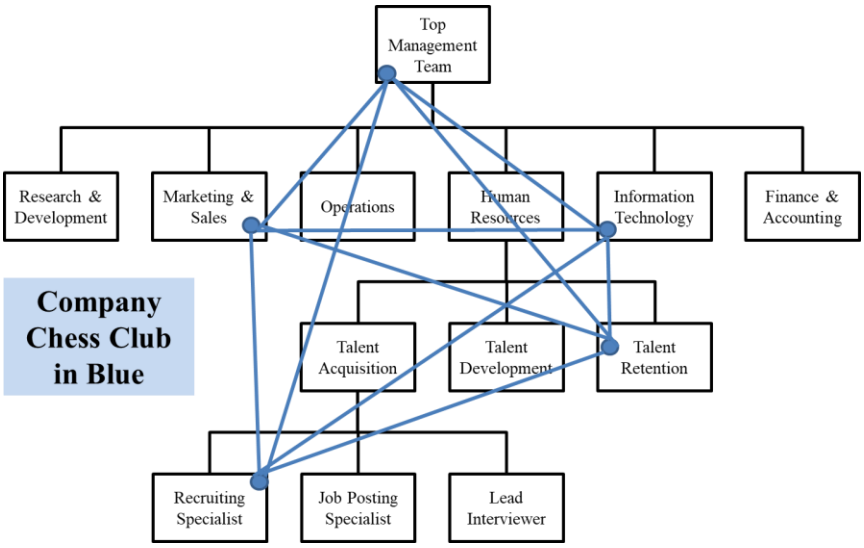


Figure 17. Informal Social Network in Blue (Company Chess Club).

We discussed three horizontal interaction advances since 1997: (1) Advances in Cross-Organizational Team Practices (*structure*), (2) Advances in Information and Communication Technology (ICT) (*technology*), and (3) Advances in Informal Social Networks (*relationships*). One key point is that even though the vertically-dominated organization structure has survived and is thriving, horizontal interaction capabilities have continued to develop and mature.

IV. Three Current Horizontal Interaction Challenges

There continue to be several challenges affecting horizontal interaction in organizations. Three of these will now be introduced and discussed: (1) Lack of System Knowledge, (2) Unnecessary Interactions, and (3) Lack of Incentives. The three current challenges are depicted in Figure 18.

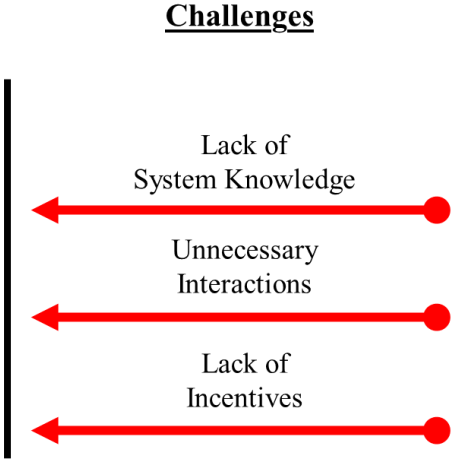


Figure 18. Three Current Horizontal Interaction Challenges.

1. Lack of System Knowledge

The members of an organization (*system*) can have very different knowledge levels of the organization (*system*). Some members of the organization might only have knowledge of their own organizational unit (division, department, section, etc.) whereas other members of the organization might have extensive knowledge of every organizational unit in the organization and how they interact with each other. A conceptual continuum of "*Knowledge of the Organization*" is depicted in Figure 19. On the left end of the continuum are members of the organization who have no knowledge of the overall system—they only know or are familiar with their own organizational unit (no "*system knowledge*"). On the right end of the continuum are members of the organization who have extensive knowledge of the overall system—they know the components of the system and the interactions between the components of the system (extensive "*system knowledge*"). The theory is that employees who have extensive knowledge of the organization are more likely to engage in horizontal interactions than those employees who are only familiar with their own area.

Figure 19. Continuum of Organizational (System) Knowledge.

Here are some fictitious questions and statements that would suggest an employee does not have much knowledge about the rest of the organization:

- "I only know people in my area."
- "How many departments are there in the organization?"
- "I didn't know that department existed."
- "I have no idea what the other departments do."
- "I don't know anyone in the other departments."
- "I'm not sure why that person in Department X is contacting me."
- "Does Department X work with Department Y?"

A somewhat disparaging name for this phenomenon would be *system ignorance*. If you are only familiar with your organizational unit and you don't know anything about the other organizational units in the organization or how they interrelate, then you are probably less likely to interact with others outside of your organizational unit (i.e., walk the *Gang Plank*). If someone doesn't know what another organizational unit does, then they are probably less likely to interact with members of that organizational unit or perhaps they will *stumble forward* and contact people they don't need to contact. If the aim for an improvement initiative is unknown or unclear, then it might be difficult for people to decide who they should interact with during the improvement initiative. If I know that the aim of an improvement initiative is to improve safety, then I will be able to more easily search for others in the organization to partner with to accomplish that aim.

Ideally, for effective and efficient horizontal interactions, each member of the organization (system) would know all of the components of the system, the necessary interactions between the components of the system, and the aim of the system and/or improvement initiative. Training can be conducted on (1) components, (2) interactions, and (3) aim(s). You have probably met someone *who knew their organization inside and out*. They knew all of the major organizational units, what they did, the key players, and the interactions between the organizational units. They operate across the silos. Toyota might refer to such employees as Toyota T-type Leaders (Liker and Convis, 2012) who ". . . develop deep roots in their home department, then branch out to lead other functions in the organization. They have both deep *vertical expertise and experience* and the ability to work across organizational units because of their additional *horizontal expertise and experience*.

2. Unnecessary Interactions

Not all horizontal interactions are necessary and unnecessary horizontal interactions represent waste. It is possible for the members of an organization to spend too much time involved in cross-organizational work activities at the expense of their own organizational unit's responsibilities and obligations—their day-to-day work. The advances in ICT have made it easier to communicate with a large number of people. The potential scale and scope of communications have increased. For example, if someone selects "Reply All" to a broadcast email message, then numerous unnecessary horizontal interactions can potentially occur instantaneously. If an organization is to prevent unnecessary horizontal interactions, then the members of the organization need to understand the components of the system and how those components must interact in order to accomplish the aim of the system or improvement initiative. The situation where there are too many horizontal interactions during an improvement initiative is depicted in Figure 20.

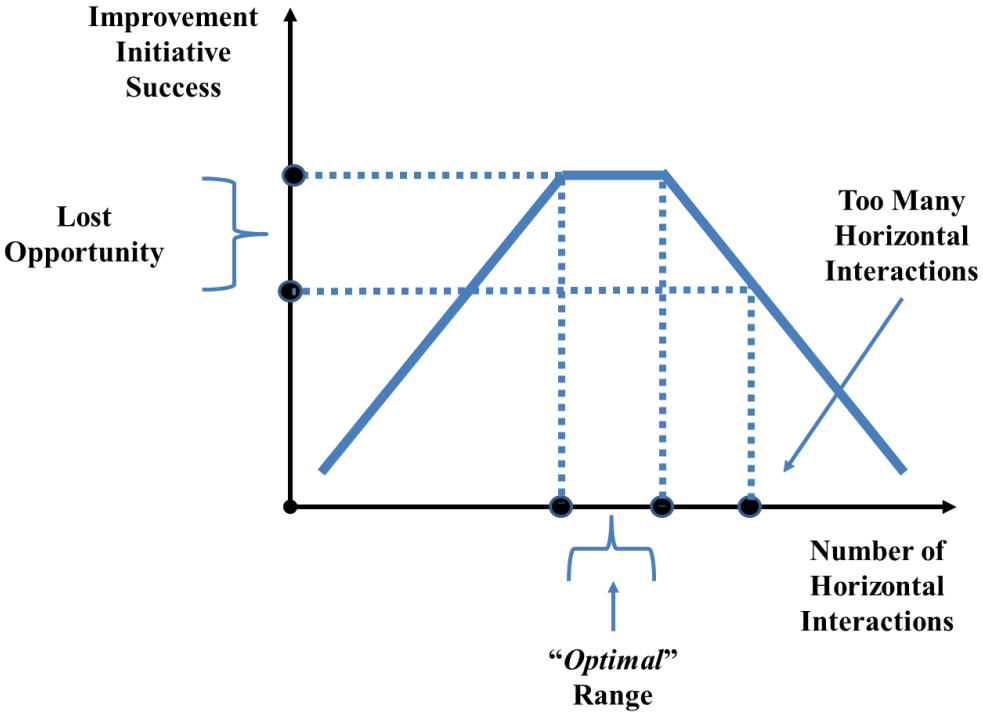


Figure 20. Too Many Horizontal Interactions.

I visited a company a few years ago that designs and produces high-technology consumer products. Those products are composed of numerous components which are assigned to Engineering Teams during the new product development process. Engineering Team members are each provided a list of people they are allowed to communicate with during their component development project. In effect, the interactions—both vertical and horizontal—are highly controlled. Also, Engineering Team members sometimes don't know what product they are contributing to until the new product launch showcase event: "Now I know which product the

component I designed goes into." Controlling communication seems counterintuitive. Wouldn't you want there to be a lot of interaction during new product development and for emergent new ideas to freely spread? Why would you want to restrict interactions and the flow of ideas? One reason that was given was because of the potential for the premature *leakage* of product information to the external world. The conclusion that I arrived at—after thinking about it for a long time—was that this approach will work if the new product development project managers are excellent at *system thinking* on the front-end of the project. If they get the interaction design right, then they will minimize unnecessary interactions. If they get the interaction design wrong, then they most likely won't get the interactions that are necessary for success.

Unnecessary interactions represent waste. Here are some fictitious statements that indicate unnecessary interactions might occur in the future:

- "I don't know who to communicate with and so I'll communicate with everyone."
- "I'm afraid of leaving someone out of the loop."
- "It's so easy and inexpensive to communicate with people from other areas."
- "I tend to err on the side of overcommunicating versus under-communicating."
- "I better include them in my communications to cover all my bases."

We can potentially avoid unnecessary horizontal interactions if we are more thoughtful prior to communicating. Does that person really need to know? We can *lean* our communications.

3. Lack of Incentives

TMTs often form cross-organizational teams to work on improvement initiatives. One implication is that the Team Leader will be "*leading*" some team members from other organizational units (divisions, departments, sections, etc.) and the team members will have less time to fulfill their day-to-day responsibilities. A person who is asked to serve on the team might justifiably ask: "What's in it for me (WIFM)?" Many organizations do not have formal incentives that encourage horizontal interaction—or in this case—serving on the team. Most or all of the drivers of behavior might be aligned with the employee's position in the vertical organization chart. Another name for *incentives* is *drivers of behavior*. Figure 21 depicts an employee caught in the two-dimensional (vertical and horizontal) crosshairs.

Some of the common *drivers of behavior* include the following . . .

• Does my supervisor care about this work activity?	Reporting Relationship
• Will this work activity affect my compensation?	Pay
• Will this work activity affect my performance review?	Performance Review
• Will I be rewarded in any way for this work activity?	Reward
• Will I receive any kind of recognition for this work activity?	Recognition
• Will this work activity enhance my reputation?	Reputation
• Will this work activity help my career development?	Career

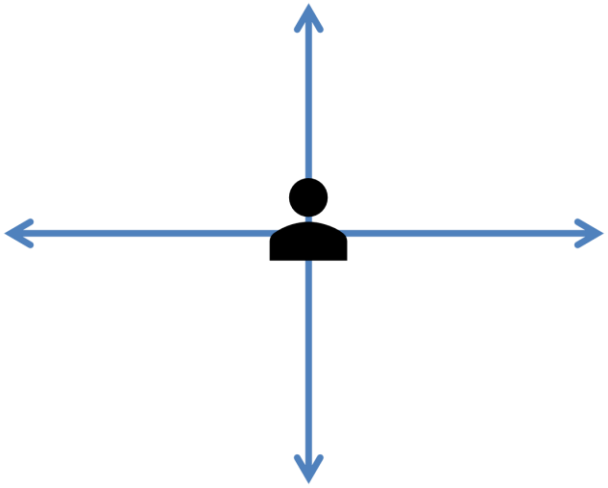


Figure 21. Employee Caught in the Two-Dimensional Crosshairs.

You can imagine the enthusiasm of those employees who are asked to participate in a work activity and their supervisor doesn't care about it, it doesn't affect their compensation, it won't affect their performance review, they won't be rewarded for it, they won't receive any recognition for it, it won't enhance their reputation, and it won't help their career development. What's in it for them? Practically nothing! There are no incentives or drivers of behavior.

The situation where all of the drivers of behavior are vertically-oriented is depicted in Figure 22. All of the drivers of behavior in this case are aligned with the vertical structure and there are no drivers of behavior aligned with horizontal interaction (cross-organizational) work activities.

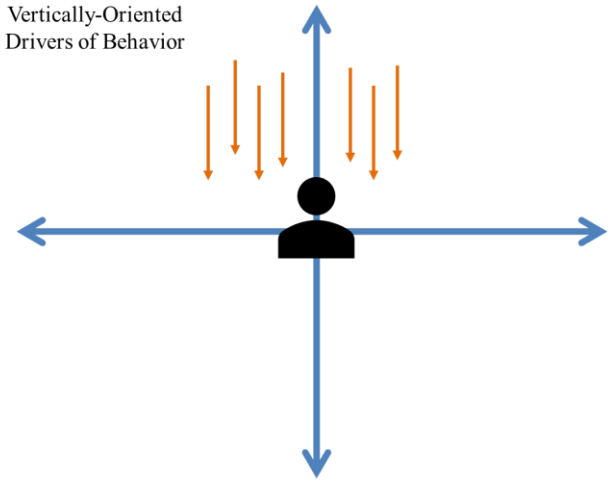


Figure 22. Vertically-Oriented Drivers of Behavior.

The situation where all of the drivers of behavior are horizontally-oriented is depicted in Figure 23. All of the drivers of behavior in this case are aligned with the horizontal work activities and

there are no drivers of behavior aligned with the vertical structure (organization chart) work activities. Fayol would have probably predicted that *many employees will walk the Gang Plank.*

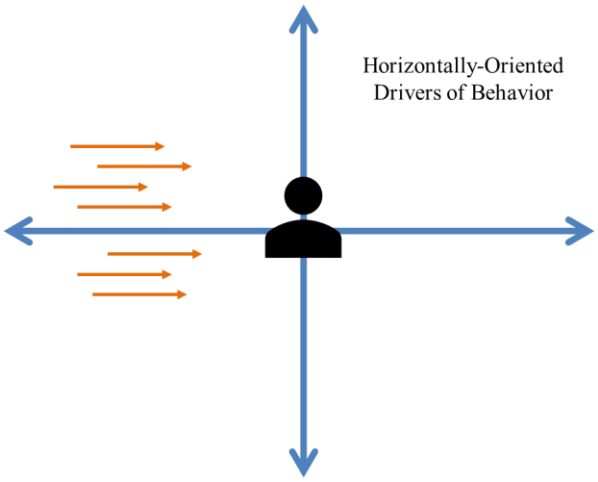


Figure 23. Horizontally-Oriented Drivers of Behavior.

The situation where the set of drivers of behavior consists of a combination of horizontally-oriented and vertically oriented drivers of behavior is depicted in Figure 24. Employees in this situation are incented to contribute to the organization through organization chart (vertical) work activities and cross-organizational (horizontal) work activities. For example, employees might receive recognition for their contributions to their department and for their contributions to a cross-organizational team. They should be willing to consider *"walking the Gang Plank*."

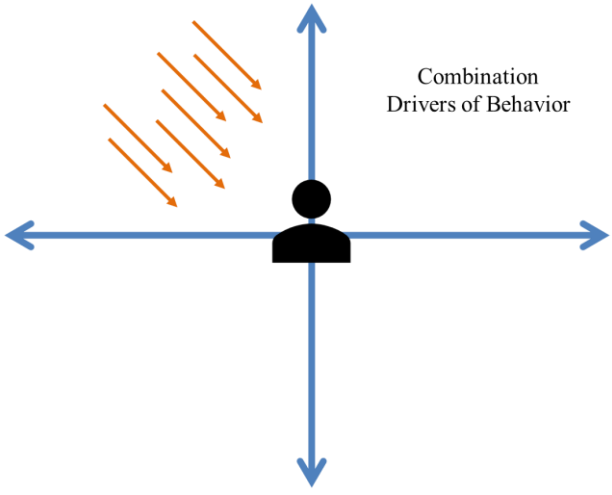


Figure 24. Combination (Vertical & Horizontal) Drivers of Behavior.

TMTs can design the set of drivers of behavior in the organization to incentivize vertical work activities, horizontal work activities, or both. Also, the weights can be different. The vertical dimension might be superordinate at times and the horizontal dimension subordinate. The vice versa can also be the case in a different situation. The clear implication is that if none of the drivers of behavior have anything to do with horizontal interaction—cross-organizational work activities—then employees will tend to be reluctant to participate and contribute.

V. The Future of Horizontal Interaction

The vertical organization structure ("*silo structure*") represented by the organization chart will not go away anytime soon—in part—because it has been shown to be useful for managing an organization on a day-to-day basis ("*running the place*"). However, it will continue to be inadequate for improving an organization from a strategic perspective ("*improving the place*") because complex problems typically require extensive cross-organizational communication, coordination, cooperation, and collaboration to solve. Horizontal interaction will continue to be necessary for improvement initiative success. Fortunately, we know more now than in 1997 about how to conduct horizontal interactions more efficiently and effectively.

Three horizontal interaction advances since 1997 and three current horizontal challenges were previously presented and discussed. These are depicted in Figure 25.

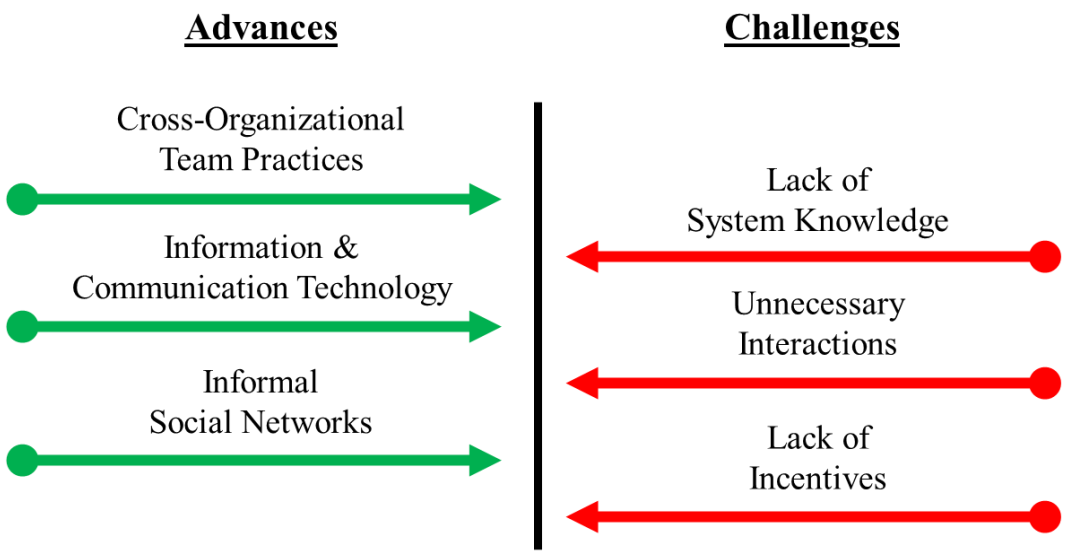


Figure 25. Horizontal Interaction Advances Since 1997 and Current Challenges.

Those organizations who capitalize on the advances and successfully address the challenges will potentially achieve a new source of competitive advantage and/or a new core competence. Here are some predictions related to the Advances and Challenges:

Predictions related to the Advances:

- Cross-organizational team practices will continue to improve and develop.
- There will continue to be ICT breakthroughs which will make horizontal interaction easier.
- Informal social networks will continue to thrive within and between organizations.

Predictions related to the Challenges:

- It will continue to be beneficial for the members of an organization to have system knowledge.
- It will continue to be beneficial for organizations to avoid unnecessary horizontal interactions.
- Drivers of behavior will continue to be a useful mechanism for incenting horizontal interaction.

Organizations who can successfully capitalize on the cross-organizational team structures, ICT, and informal social networks will increase their chances of improvement initiative success. Organizations who can increase organization member system knowledge, minimize unnecessary horizontal interactions, and implement effective incentives in the form of drivers of behavior will again increase their chances of improvement initiative success.

Developing both vertical and horizontal organizational capabilities is not easy. TMTs can simultaneously be good at "*running the place*" through the vertical organization structure and "*improving the place*" through the strategic application of horizontal interaction during improvement initiatives. This *dimensional ambidexterity* requires careful ideation, design, implementation, and practice for mastery. There will be times that it is important for the vertical dimension to be superordinate and the horizontal dimension to be subordinate. The vice versa is also true—especially when cross-organizational communication, coordinate, cooperation, and collaboration are critical for the success of an improvement initiative.

Ultimately—and ideally—employees must have the courage to walk the *Gang Plank* as described by Fayol when attempting to improve organizational performance. Leaders must understand their role in creating the work environment—the *system*—that encourages these brave deeds. What Fayol said in 1916 is worth repeating now: "But for him to be in this frame of mind there must have been previous precedent, and his superiors must have set him the example—for example must always come from above." Best wishes as you help develop your organization's horizontal interaction capabilities.

Acknowledgement

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Author Information

Charles A. Liedtke, Ph.D. is the founder and owner of Strategic Improvement Systems, LLC, a management consulting company designed to assist leaders in improving the performance of their organization from a strategic perspective. Charles conducts research, consults, and provides customized training on *Strategy*, *Culture*, *Quality*, *Analytics*, *Improvement*, and *Innovation*. He has worked with organizations worldwide on strategic improvement initiatives including Fortune 500 companies, privately-held companies, non-profit organizations, hospitals, clinics, and government entities. His most recent research reports were on *Quality, Analytics, & Big Data*; *Big Data in Hoshin Kanri*; *Information-Based Customer Value Creation*; *Advances in Strategic Planning; Shaping Organizational Culture*; and *Visions & Visioning*. Charles served as an editor for the Japanese Society for Quality Control on the English version technical standards on *Guidelines for Daily Management* and *Guidelines for Policy Management*. Those two works made the *best practice* technical standards from Japan accessible to all English speakers.

Charles earned a Ph.D. in Business – Operations and Information Management from the University of Wisconsin-Madison specializing in strategy; strategic improvement; and quantitative analysis. Charles also earned a Ph.D. Minor in Statistics and an MBA from the University of Wisconsin-Madison; an M.S. Degree in Statistics from Iowa State University; and a B.S. Degree in Economics from South Dakota State University.

Contact Information
Email: charles@sisliedtke.com
Website: www.strategicimprovementsystems.com
LinkedIn: www.linkedin.com/in/charlesaliedtke