Scientific Research Publishing

Open Journal of Business and Management, 2025, 13(5), 3312-3328
https://www.scirp.org/journal/ojbm
ISSN Online: 2329-3292
ISSN Print: 2329-3284

Patterns of Leadership for Infrastructure Companies: An Applied Research and Case Study

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How to cite this paper: Nold, H., Michel, L., & Valentine, A. (2025). Patterns of Leadership for Infrastructure Companies: An Applied Research and Case Study. *Open Journal of Business and Management, 13,* 3312-3328.
https://doi.org/10.4236/ojbm.2025.135175

Received: August 4, 2025
Accepted: September 2, 2025
Published: September 5, 2025

Abstract

Our international research team captured and collated data from over 450 organizations over a 10-year period who have participated by using the proprietary Performance Triangle validated diagnostic instrument. The resulting data set includes public, private, and governmental organizations representing many industries or business segments from across the globe. The team has launched a multi-year project to analyze patterns within the data by the business sector or industry. The focus of this paper is infrastructure companies that we have defined as construction, logistics, and companies throughout the global supply chain that provide the infrastructure for modern living. The resulting qualitative case study and data analysis describe the attributes of the typical company in the cluster. The findings will report on the correlation coefficients to illustrate the strength and direction of relationships identified by the patterns in the data. The paper provides insight into baseline attributes of the typical company to help executives plan actions to improve performance from average to exceptional.

Keywords

Performance Triangle, Leadership, Infrastructure Companies, Logistics Companies, Construction Companies

1. Introduction

Our international research team captured and collated data from over 450 organizations over a 10-year period who have participated by using the proprietary Performance Triangle validated diagnostic instrument. The resulting data set in-

cludes public, private, and governmental organizations representing many industries or business segments from across the globe. This vast data set allows the research team unique opportunities to drill down into the data to reveal meaningful patterns for typical organizations in specific industries or business segments. Numerous papers and books have already been published based on analysis of the data interpreted through the lens of the Performance Triangle model and accompanying visual aids including the Leadership Scorecard first introduced by Lukas Michel in 2013. This ongoing effort to contribute to management theory and practice includes prior publications such as *The Performance Triangle* (Michel, 2013) that introduces the model and methodology, *The Transition of Organizations* (Michel & Nold, 2023) that explores patterns in the data for organizations at various life cycle growth stages, *Organizational Agility—Testing, Validity, and Reliability of a Diagnostic Instrument* (Nold, Anzengruber, Woelfle, & Michel, 2018) which establishes the statistical validity and reliability of the diagnostic instrument, *Organizational Culture: A Systems Approach* (Nold & Michel, 2021), *Innovation in the Insurance Industry* (Nold, Michel, & Perez, 2022), and the *The Dunning-Kruger Effect on Organizational Agility* (Nold & Michel, 2023) among others.

As part of this continuing effort to share unique insights with both academics and practitioners, the team has launched a multi-year project to analyze patterns within the data by business sectors of representative samples including public services, manufacturing companies, and educational institutions among others. The focus of this paper is infrastructure companies that we have defined as construction, logistics, and companies throughout the global supply chain that provide the infrastructure for modern living. The resulting qualitative case study and data analysis describe the attributes of the typical company in the cluster. It is intended to provide insight into baseline attributes of the typical company to help executives plan actions to improve performance from average to exceptional.

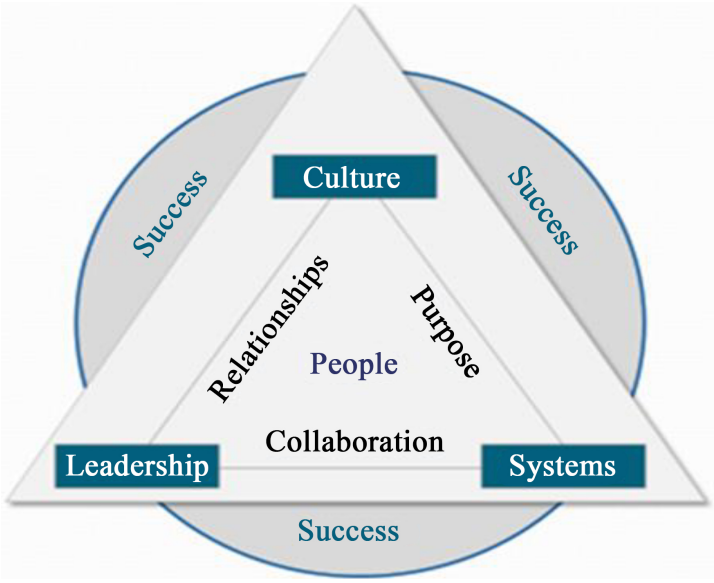
2. Background

2.1. The Performance Triangle Model

The Performance Triangle Model (PTM) emerged from nearly twenty years of observation and research with over 200 organizations worldwide (Michel, 2013; Nold & Michel, 2016). The PTM provides a workable and practical methodology to help executives design organizations for success in the VUCA 21st Century. Success in the volatile, uncertain, complex, and ambiguous (VUCA) business environment requires forward thinking C-suite executives to adopt innovative techniques to actively design organizations with dynamic capabilities to sense then quickly respond to changes. Such agile thinking and strategies must originate in the boardroom and flow from there to the C-suite then throughout the entire organization. Agile principles, beliefs, values and attitudes, center around people and the massive body of tacit knowledge embedded within their minds and experience. Agile management is very different and should not be confused with agile

software development methodologies to develop better software, faster and more efficiently. Key to designing organizations that 'fit' the VUCA world is gaining insight into many unseen and rarely discussed elements of the organizational culture. When one considers that organizational culture exists in the minds of people in their values, beliefs, and shared assumptions, changing the culture is easier said than done (Schein, 1985). Comprehensive culture change needs to be led from the very top and adopted by everyone from top to bottom of the organization chart.

The Performance Triangle Model (PTM) illustrated in **Figure 1** is a visual representation of a dynamic system of culture, leadership, and systems that is powered by people who work in a resilient environment that nurtures healthy relationships, collaboration, and a strong sense of purpose where people share their unique and valuable tacit knowledge. Culture is a major component of the dynamic system and cannot be effectively changed without recognizing and addressing key elements of the ENTIRE system (Nold & Michel, 2021). Since culture resides in the minds and experiences of people, the beliefs, values, and assumptions of people become the focus of attention. Power for the entire PTM system comes from the ability of people to maximize their inherent capabilities. It falls to senior executives to build an environment that allows people to perform at their peak. However, culture with all its intangibles and people with all their idiosyncrasies and uncertainties make actively creating a people-centric management design very difficult. Senior executives intrinsically know that "people are our most valuable asset" and write that in the corporate mission or vision statement yet we frequently see organizations where senior leaders insert interferences into the system that prevents people from performing rather than helping.



Source: Adapted from Michel (2013). *The performance triangle: diagnostic mentoring to manage organizations and people for superior performance in turbulent times*, London, UK: LID Publishing Ltd.

Figure 1. The performance triangle.

Figure 2 illustrates the structure of the six primary dimensions and twenty-seven elements that compose the PTM.

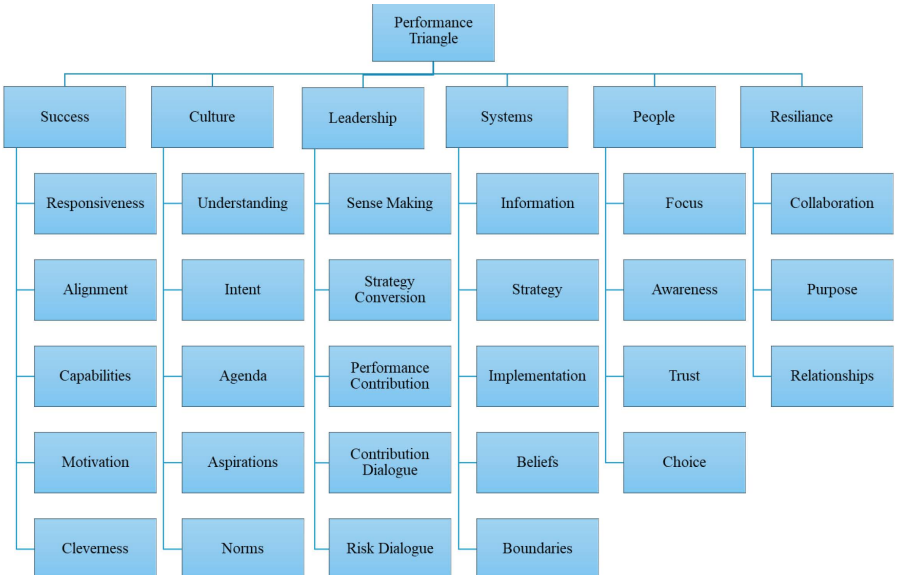


Figure 2. Structure of the performance triangle model.

2.2.1. Success

Success in the PTM is evaluated using the following characteristics with the assumption that if the answer to these five questions is "yes" then the organization is likely to be successful.

- Responsiveness – Is the organization flexible and able to react to changes in the environment?
- Alignment – Is the direction of the organization clear? Does the structure fit the strategy? Is it shared broadly and are employees aligned to support the strategies?
- Capabilities – Does the organization have the competencies and skills needed to deliver on promises?
- Motivation – Are employees throughout the organization inspired to perform above and beyond expectations?
- Cleverness – Are employees empowered to be creative and use their creativity to meet expectations or demands from clients or customers within boundaries that do not stifle creativity?

2.2.2. People

It is commonly recognized that people perform at their highest potential by winning their "inner game" and overcoming self-doubt, fear, bias, limiting concepts or assumptions that distort perceptions, decisions, behaviors, actions and stress that interfere with, and diminish, performance (Gallwey, 2000; Michel, 2020; Whitmore & Gallwey, 2010). Questions applicable for the people dimensions are the following.

- Focus – Are people allowed to focus attention and energy on tasks? Are interferences preventing people from focusing their abilities to complete tasks?
- Awareness – Are people aware of forces that influence actions and decisions?
- Trust – Do people trust co-workers and management to be treated fairly and with respect? Is management credible?
- Choice - Are people allowed the freedom to use their own creative ability to solve problems, respond to customers, or to be innovative?

2.2.3. Systems

In the PTM "systems" represent more than just the computer driven information technology driven systems. Systems consist of an institutional framework with rules, routines, and tools that set the stage for rigorous and disciplined leadership (Galbraith, 2008). Human systems in the form of rules, routines, and guidelines of many types provide frameworks that give technological structure and relevance. To support collaboration among people, systems make information available to assist people to find purpose, support the decision-making process, and set boundaries balancing entrepreneurship with efficiency. The diagnostic questions for systems are the following.

- Information – Do decision makers at all levels have access to timely and relevant information to know what is going on inside and outside the organization to make informed decisions?
- Strategy – Do leaders and followers clearly understand the rules of the game and what is needed to achieve strategic and operational objectives?
- Implementation – Do decision makers throughout the organization clearly understand what actions are needed to be successful?
- Beliefs – Do decision makers throughout the organization have a shared ambition to support organizational objectives?
- Boundaries – Do decision makers throughout the organization have a firm understanding of boundaries or limits to their decisions or authority?

2.2.4. Leadership

Effective leaders in agile, people-centric, organizations interact with individuals on a personal level, relate to others to facilitate meaningful collaboration, and establish a supportive work environment based on trust (LaRue, Childs, & Larson, 2006). The need for effective communication skills and interaction with followers are recurring themes in literature (Haneberg, 2011; Hugos, 2009). It becomes essential for effective leaders in a successful organization to develop effective communication and interaction skills that are natural and unique to the leader and organization (Valentine, 2020). Ultimately, what is important is that the individuals in the organization adopt shared vision, collaborate in an environment of trust while leaders champion creativity and experimentation. The Performance Triangle diagnostic instrument asks the following question related to leadership.

- Sense making - Do leaders have the capability to sense changes in internal and external environments and interpret meaning?

- Strategy conversion – Do leaders understand why the organization has established strategic goals and are goals founded on lessons from the past?
- Performance conversion – Do leaders have a clear understanding of whether the organization is on track, what needs to be done to remain on track, and what needs to be done to achieve superior performance?
- Contribution dialogue – Do leaders have a clear understanding of what they can do to contribute toward moving the organization forward? Do leaders clearly understand their role?
- Risk dialogue – Do leaders have a clear understanding of the potential risks and the level of risk that the organization can tolerate?

2.2.5. Culture

The culture of the organization creates shared context, enables, or inhibits knowledge exchange, and defines invisible boundaries for collaboration. A vibrant culture establishes shared context as the common ground with a shared agenda, language, mental models, purpose, and relationships among people (von Krogh, Ichijo, & Nonaka, 2000). Organizational culture becomes the invisible force that, like gravity, shapes all interactions within the universe that the organization exists and becomes the glue holding the organization together (Hofstede et al., 1990).

Organizational culture either enables knowledge sharing or is a barrier to sharing even simple pieces of information (Nold, 2012). Like a virus infecting living organisms, organizational traits like autocratic leadership styles, silos, or lack of trust and respect throughout the organization effectively block knowledge sharing. Unseen or unnoticed viruses make culture an organizational bottleneck that constrains the amount and quality of knowledge sharing limiting the creativity of people, the ability to act, and limiting performance. The challenge for any executive is to create a culture that facilitates people working together on tasks that add value to the organization. Effective collaboration requires a shared problem and commitment with people working together with shared ways of doing things (Nold, 2021). The questions designed to give insight into organizational culture are the following.

- Understanding – Do people share an understanding of where the organization is and where it is going or attempting to go?
- Intent – Do people share a common intent of how to move the organization forward to meet goals and objectives?
- Agenda – Do people share a common agenda on what needs to be done to move the organization toward meeting goals and objectives?
- Aspirations – Do people share a common sense of purpose to meet goals and objectives?
- Norms – Do people share a common set of norms of behavior needed to get ahead within the organization?

2.2.6. Resilience

A high-energy work environment produces intense collaboration, a high sense of

purpose and trusting relationships. These features have a stabilizing effect on organizations known as resilience or "robustness." (Beinhocker, 1999; Deevy, 1995). Organizations reach higher levels of resilience through collaboration (Doz & Baburoglu, 2000), purpose, and relationships (Alpaslan & Mitroff, 2004). The diagnostic questions targeting the sides of the Performance Triangle Model are as follows.

- Relationships – Do co-workers and management have and maintain healthy, trusting, relationships?
- Purpose – Do people share a common higher purpose for the organization and organizational objectives?
- Collaboration – Do people collaborate effectively by sharing knowledge to achieve common goals and objectives?

3. Methodology

3.1. Basic Assumption

Effective leadership and the application of management practices that maximize organizational capabilities are universally accepted as an essential element for success in most any context. Fundamental to the construct in this paper is the assumption that companies in the same industry of similar size employ similar accounting methods and management practices. Literature from the accounting field has demonstrated similarities in accounting methodology regarding the treatment of revenues and expenses, making comparisons of profit and cost ratios between companies valid (Holthausen & Leftwich, 1983; Pincus, 1993). Additionally, regulations on reporting requirements for public companies issued by the Unites States Securities and Exchange Commission (SEC) combined with generally accepted accounting and auditing standards promulgated by the American Institute of Certified Public Accountants (AICPA) provided assurance of comparability. Organizations in the same industry subject to the same standards regardless of governing body and subject to the same industry forces will adopt similar management practices and systems. Companies in the infrastructure cluster, particularly those in construction, typically operate on a project basis while others secure contracts for services. Both business approaches force companies to use project-oriented cost and management techniques to track whether projects or contracts are profitable and the conditions that made them profitable or not.

3.2. Patterns of Mastery

The current case has a foundation in research. We have extensively studied a population of 458 organizations with data collected over the past 10 years with our Executive Survey tool and profiled organizations with our Organization Twin Cockpit software to 21 clusters of industries with common attributes to present as business cases. This case is one of 21. Working with such a large data set provides a unique opportunity for researchers to sort and collate data into

meaningful data points to provide insight into key attributes of an organization or cluster of similar organizations. After careful analysis of data from these 458 organizations who participated in our executive survey tool, we were able to identify patterns of results in the PTM model for organizations with various dominant management styles, growth stages, and industries. Understanding the dominant management pattern helps executives identify mostly unseen barriers that inhibit growth. Such insight allows executives to quickly develop and implement change strategies to align their organization with the needs of the VUCA world and improve performance. The Capability Profile and Leadership Scorecard tools used for this effort are extensively documented in our previous books and papers.

3.3. The Diagnostic Instrument

Over a 15-year period the authors developed and perfected a proprietary diagnostic instrument (Executive Survey Tool) with 55 questions that provides executives insight into key dynamic capabilities that are essential for organizational performance and success. As shown in **Figure 2**, 27 elements of the Performance Triangle shown in **Figure 1** aggregate into the six primary dimensions that ultimately roll up to a total PTM. Analysis of the summary (top) level and the lower levels give the executive a sense of the organization's capabilities and barriers to those capabilities. Analysis of additional sub sorts provides deep insight into a host of attributes that influence the organization's capabilities. This approach provides meaningful visibility into many "unseen and rarely discussed" interferences that exist in the organization.

In 2016, raw data from the diagnostic instrument was subjected to independent statistical analysis. The resulting analysis provided strong evidence that the instrument was a good fit to the model with high levels of reliability and validity (Nold, Anzengruber, Woelfle, & Michel, 2018). Participants answer questions in the diagnostic instrument using a Likert-type scale designed to provide insight into the perceived strength of the questions that are the elemental items in the PTM on a 0 to 100 scale. Scores between 72 and 100 indicate strong or positive sentiment while scores between 0 and 59 indicate poor or negative sentiment and medium scores between 60 and 71 indicate average sentiment which is neither positive nor negative. Participants take the diagnostic using an online portal and data is collected, collated, and stored on a secure server in Switzerland.

3.4. Statistical Testing

While the case study is primarily qualitative in nature, we elected to apply basic quantitative analysis to see if there is any statistical support for the qualitative observations. We captured the averages for all 19 organizations for the dimensions of leadership, culture, systems, people, resilience, success, and outcomes. Using Minitab statistics software, we calculated descriptive statistics and correlations between the main dimensions to assess whether the statistical analysis supported or

did not support the qualitative assessment of data on the Performance Triangle and Leadership Scorecard.

3.5. The Sample

The infrastructure cluster consists of data from 89 participants representing 19 organizations of which 10 are large or very large with the remaining 9 classified as small and mid-cap in size. The sample consists of public companies (8) and private (7) with the remaining (4) having some other organizational structure. While some organizations have a global reach 12 are headquartered in Europe, 3 in North America, and 4 in Australia/New Zealand.

Companies in the infrastructure cluster provide a variety of services throughout the global supply chain including logistics, transportation, construction, maintenance, storage, and packaging sectors. While these are all different services that help build and support the infrastructure for everyday living and the supply chain, we have observed common management and leadership patterns. The common element is that most companies in the infrastructure cluster operate on a project or contract basis. This means that accounting practices and management techniques are focused on the profit or loss of a specific project or contract. There were two criteria for companies to be included in the infrastructure cluster; provide products or services to support the infrastructure for modern living with projects or contracts as the primary revenue source. Here are brief descriptions of three companies in the infrastructure cluster.

Infrastructure 1 was established in 1935 and is listed on the SWX Swiss Exchange. At the time the data was captured for our cluster, Infrastructure 1 provided freight forwarding and logistics services, intercontinental air and ocean freight, and associated supply chain management services. The company employed about 15,000 people worldwide with hubs in Luxembourg, Prague, and in Huntsville, Alabama. The aircraft fleet was composed of one Boeing 747-8F. The company offered services to various industry verticals such as hi-tech, automotive, telecom, retail and fashion, healthcare as well as oil and gas.

Infrastructure 2 is large privately owned construction company in Australia. The company was founded in 1912 and has diverse construction businesses with dedicated divisions build around specific skill sets and needs that complement the core business. Infrastructure 1 has divisions for specialized services are civil and urban infrastructure, cranes and hoists (big lift specialists), fitouts (ceilings and partitions), formwork (formwork specialists), joinery (master joiners), modular (custom construction solutions), training (construction training), scaffold and plant (construction access experts), and statim yaga (indigenous careers in construction).

Infrastructure 3 is a family-owned construction business that began more than 10 years ago in Mexico. Generations of families in agriculture and livestock paved the way for the current generation to recognize the need to urbanize agricultural lands. The company builds affordable modern homes with intelligent design specifically adapted to the extreme climate of the region. Today Infrastructure 3 is a

leading construction company in the Comarca Lagunera region of Mexico in serial housing developments that build affordable and environmentally responsible homes.

4. Results and Discussion

4.1. Business Model, Operations and Performance Triangle Results

Figure 3 shows the summary level results from the infrastructure cluster of organizations. It is important to remember that the results are averages for the cluster. The typical infrastructure organization represents traditional, large industrial businesses with a few outliers like UNHO CASAS®. The cluster includes both public and privately owned and operated organizations.

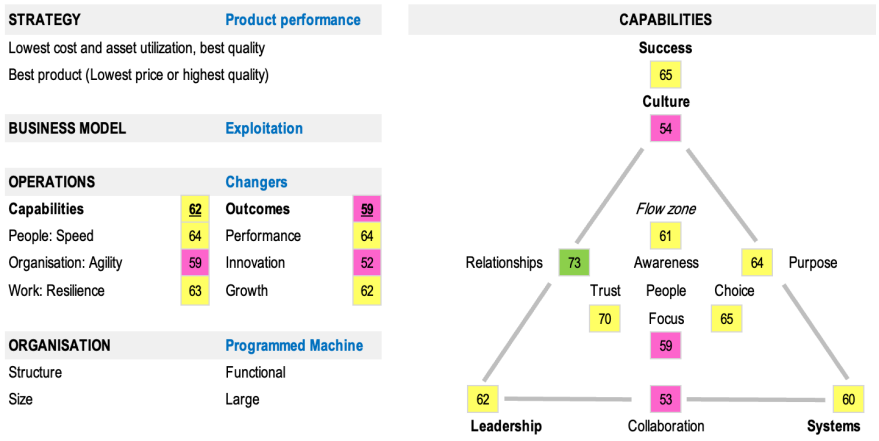


Figure 3. Business model, operations, and performance triangle results.

4.1.1. Business Model

Patterns in the data indicate that these companies typically operate at the "changers" maturity level which means that they typically change structure and reallocate resources in response to customer needs (Michel, 2022). Analysis of data gathered from clients participating in our Executive Survey revealed patterns that allow us to group companies into general categories based on the management index on a Maturity Scale. This scale is a useful gauge for comparing organizations' dynamic capabilities. When executives know their current maturity level, they can chart a course to advance to the next level. The maturity level is calculated using the dynamic capabilities and outcome scores from the Executive Survey. The Maturity Scale groups organizations into a six-level ranking, from contestants at the bottom to pioneers at the top. That top level reflects companies that have demonstrated strong dynamic capabilities, resulting in superior positive outcomes. The six maturity levels indicate where organizations are in their shift from traditional management to better management: contestants, exploiters, changers, enablers, performers, or pioneers Michel & Nold, 2023).

Infrastructure organizations tend to have an exploitation-type business model that is moderately successful (65) but deliver bottom-tier outcomes (59). These

results suggest that the environment does not encourage employee engagement, and that the workforce lacks motivation to meet or exceed expectations.

4.1.2. Organization Form

Infrastructure organizations tend to function as programmed machines with a traditional structure centered around functional departments (Mintzberg, 2023). Changing structure is frequent as companies adapt new projects or contracts as well as changing customer needs and environmental forces. This makes sense since many of the companies in the cluster, particularly those in construction, are project oriented.

4.1.3. Strategy and Business Model

The primary business strategy is classified as product performance which means that management focuses on providing the best product at the lowest cost that maximizes asset utilization (Hax & Majluf, 1984). Management tends to be internally focused to maximize existing core competencies with exploitation-type business models. This strategy also makes sense given the customer base.

4.1.4. Operations

The cluster operates in a dynamic change-based environment using traditional management techniques. Volumes of research studies demonstrate that traditional management techniques are essentially anti-change. Therefore, attempting to operate in a rapidly changing environment with traditional techniques is a mismatch which helps explain the poor score for outcomes on **Figure 3**. Observations suggest that managers attempt to overcome this situation either with direct interventions on daily tasks or no intervention at all. Strict command and control techniques along with frequent restructuring are the primary means to align the interests of people with changes requirements of the project or contract. Frequent restructuring, strict command and control, and direct intervention by managers creates interferences among workers which explains the low score for focus (59). All these actions combine to interfere with the ability of workers to focus their talents on the work at hand.

4.1.5. Capabilities in the Performance Triangle

The patterns at the center of the Performance Triangle shown on **Figure 3** for people indicate that people are engaged for their own personal reasons rather than with a sense of organizational purpose with mid-tier levels of trust (75), choice (65), and awareness (61). Focus of attention (59) is distorted because of ongoing changes and frequent interference from managers. In summary, the typical infrastructure company operates in the low flow zone with limited capabilities to meet emerging challenges with mid-tier levels of speed (64) and performance (64). The emergent picture is one of organizations that are successful despite themselves rather than because of commitment of workers who are supported by adequate systems and strong leadership that allows individuals to be the best they can be.

Middle-tier scores for systems (60) and leadership (62) along with a low score

for culture (54) are representative of underperforming organizations. Such a pattern indicates the presence of an infected culture that limits important operational capabilities for agility (59) and innovation (52). As in living organisms, unseen and rarely discussed "infections" creep into the organizational system that degrades the performance of the organization. As athletes cannot perform at their peak with the flu, organizations cannot perform at their peak when infected with unseen and rarely discussed norms, practices, or behaviors that senior management may not even be aware of.

Performance Triangle results on Figure 2 for relationships (73) suggest that personal interactions between colleagues are excellent. However, the data indicates lower levels of shared purpose (64) and poor collaboration (53). This pattern paired with the low score for culture (54) is further indication of a disengaging work environment with limited resilience and limited potential to grow from within.

4.2. The Leadership Scorecard

Shifting to the results for the Leadership Scorecard shown in Figure 4, the average infrastructure company is good, if not great, delivering products or services. Mid-range scores for understand (61), think (61), and deliver (64) support this observation. However, outcomes and success are being blunted as shown by low scores for engage (58) and adhere (58). In many prior writings, we have used the analogy of a car to illustrate the patterns on the Leadership Scorecard. Using the car analogy "The car is moving nicely but not as smoothly as it could be due to inefficiencies shifting gears and with limited brakes, the engine is being restrained from generating maximum output."

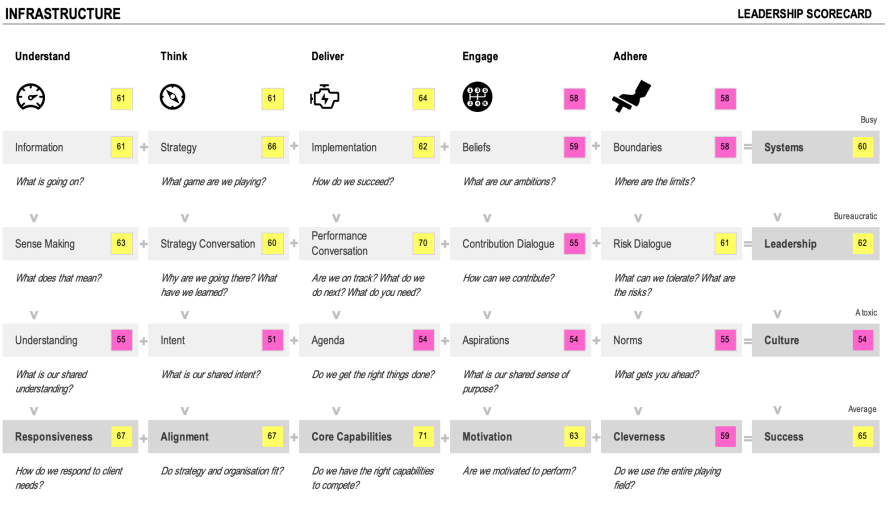


Figure 4. The leadership scorecard results.

The outcomes and resilience are low become very apparent from the scores on the Leadership Scorecard. The underlying reasons for limited engagement can be explained by low scores for beliefs (59), contribution dialogue (55), and aspira-

tions (54). People do not know what they must do to contribute and do not have a common set of ambitions and aspirations. Similarly, boundaries (58), norms (55), and cleverness (59) indicate that people do not have a clear understanding of what is expected of them. Very low scores for all elements of the culture indicate the presence of a toxic culture that invisibly prevents the organization from performing at peak. Without a widely shared set of beliefs, values, and assumptions people's engagement is underdeveloped and therefore untapped. Without shared aspirations and poor contribution dialogues, people are left to find their own motivation. Self-motivation is one of the traits of the dominant management behaviors in the cluster. Self-organization among people is a trait of organizations in a dynamic environment.

Limited beliefs (59) paired with limited boundaries (58) is a dangerous pattern making up systems (60) indicating that people do not feel they can rely on systems and may wander aimlessly because they do not know the limits of their authority. Cleverness and norms are low, meaning that workers feel that it is ok to overstep boundaries to get things done. With unclear boundaries and weak leadership, people have no other way to get work done without getting around systems and leadership. This situation helps explain low outcomes and is a toxic combination. All the aspects of the culture are underdeveloped with is an outcome from the other weaknesses.

4.3. Statistical Results

While our study is primarily qualitative in nature, we elected to apply some basic statistical tests to provide additional insight and to help assess the validity of the qualitative observations and assessment. Table 1 shows descriptive statistics for leadership, culture, systems, people, resilience, success, and outcomes and Table 2 shows Pearson's correlation among these same attributes.

Table 1. Descriptive statistics for leadership, culture, systems, people, resilience, success, and outcomes.

Variable	N	Mean	SE	StDev
Leadership	19	27.89	1.70	7.41
Culture	19	23.21	1.39	6.05
Systems	19	22.74	1.20	5.24
People	19	68.74	3.07	13.38
Resilience	19	62.47	3.95	17.24
Success	19	64.26	3.62	15.78
Outcomes	19	62.58	3.21	14.01

Table 2. Correlations: leadership, culture, systems, people, resilience, success, and outcomes.

	Leadership	Culture	Systems	People	Resilience	Success
Culture	1.00					
	0.000					

Continued

Systems	0.80	0.80				
	0.000	0.000				
People	0.31	0.30	0.62			
	0.199	0.212	0.004			
Resilience	0.46	0.46	0.90	0.72		
	0.049	0.050	0.000	0.000		
Success	0.01	0.04	0.38	0.36	0.55	
	0.961	0.872	0.113	0.131	0.016	
Outcomes	0.43	0.43	0.76	0.78	0.81	0.60
	0.063	0.065	0.000	0.000	0.000	0.006

Cell Contents: Pearson correlation
P-Value

Establishing P-value of .05 as the acceptable level of significance, Table 2 provides additional evidence that supports many of the observations in the qualitative portion of the paper. There was a positive correlation between leadership and culture $r(18) = 1.00$, $p = 0.000$ and systems $r(18) = 0.80$, $p = 0.000$ which supports the observations that leadership has a direct influence on both the culture and systems of the organization. The correlation between leadership and dimensions of people and resilience are not strong. However, the significant correlation for resilience $r(18) = 0.46$, $p = 0.049$ suggests that leadership does not have much effect on developing resilience organizations. The lack of correlation between leadership and success $r(18) = 0.01$, $p = 0.961$ reinforces the qualitative observation that leadership in the cluster may be doing more to restrict success than to drive success. Strong and significant correlations between outcomes and systems $r(18) = 0.76$, $p = 0.000$, people $r(18) = 0.78$, $p = 0.000$, and resilience $r(18) = 0.81$, $p = 0.000$ supports the observation that while these companies are moderately successful, outcomes could be improved if leadership worked to improve in these dimensions.

Other important observations from Table 2 include the strong correlation between culture and systems $r(18) = 0.80$, $p = 0.000$ which reinforces the qualitative observation that the culture and systems are intertwined and helps explain the qualitative observation that people may be working around the system to get things done. The low correlation between culture and success $r(18) = 0.04$, $p = 0.872$ supports the observation that a potentially toxic culture is doing little to fuel success. Additionally, the high and statistically significant correlation between resilience and systems $r(18) = 0.90$, $p = 0.000$ and people $r(18) = 0.71$, $p = 0.000$ provide support for the qualitative observations that poor resilience is a reflection of poor systems and the people dimensions in the model.

5. Conclusion and Practical Implications

The typical infrastructure organization in our cluster of 19 has a basic business model designed for exploitation. The basic operational approach is to restructure the organization and reallocate resources over and over as markets or customer requirements change. Change-based management practices using traditional

management techniques are typical in the cluster. Managers typically (re-)structure work schedules or duties but frequently leave the details on how to adjust to the people at the front-line supervisors and workers. Non-involvement is a safe position for managers who distance themselves from the action and become insulated from missed schedules or poor work which may be used to absolve themselves from blame when a project gets into trouble or there is an unanticipated change. The pattern of low scores is typical of organizations where managers do not effectively communicate expectations or limits of authority, which creates uncertainty in the minds of front-line employees that negatively impacts performance.

Weak leadership in a change-based environment and a Leadership Scorecard with many weaknesses generates limited ability to use internal capabilities to enhance competitive position. Results on the Leadership Scorecard and the Performance Triangle clearly illustrate flaws that limit the ability of workers to perform at their peak and represent opportunities for improvement. The weaknesses shown on the Leadership Scorecard primarily in the systems and culture dimensions which are reinforced by the correlations explain why employees lack engagement and performance is less than optimal. The typical company in the cluster has cultural attributes indicating that people are not aligned to achieving company goals and appear to be motivated more by personal factors than organizational purposes. Additionally, constant change dictated by managers introduces interferences and uncertainty into the workforce that causes front-line employees to lose focus of attention which stunts performance.

The patterns in the data indicate that the main leadership challenge in infrastructure organizations is that there is weak or no leadership. It should be noted that there are notable private enterprises in the cluster that are still owned and managed by their patrons. The leadership style of these private companies is very different from the larger public industrial firms. The owners seem to take a more hands-on approach to management that helps to overcome some of the inherent weaknesses in the operation as front-line employees absorb the beliefs and values of the owners. Senior managers and project managers in larger public industrial firms might do well to practice 'management by wandering around' to share their beliefs and values in a way that does not interfere with the daily operations of on-site supervisors. It is important to remember that the data in our cluster is an average of many firms. A deep dive into parts of the data indicates that managers in many private companies make a positive difference.

The patterns in the infrastructure cluster, that are largely supported by significant correlations, clearly indicate that many organizations could improve success and outcomes by moving beyond traditional management and changing management practices. The practical implication is that enlightened leaders and managers are needed to develop dynamic and people-centric capabilities that would fill weaknesses in the systems and improve the culture. Fixing or replacing leadership at top management levels should be the priority. Without a significant mental shift

at top levels, nothing constructive will get done. Patterns on the Leadership Toolbox provide a roadmap to set priorities needed to align the operating system with people-centric practices to advance from successful to very successful.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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