SYM-AM-18-048

PROCEEDINGS
OF THE
FIFTEENTH ANNUAL ACQUISITION RESEARCH SYMPOSIUM

WEDNESDAY SESSIONS
VOLUME I

Acquisition Research:
Creating Synergy for Informed Change

May 9–10, 2018

Published April 30, 2018

Prepared for the Naval Postgraduate School, Monterey, CA 93943.

ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

Acquisition Leadership Development and Capabilities for Complexity: Research, Development, Testing, and Evaluation

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Abstract

Department of the Navy (DoN) strategies and plans continue to highlight the need for new thinking and innovative approaches to meet the demands of the future force. Navy leadership has called for cultural changes and programmatic improvements to the way the civilian workforce is prepared for leadership roles and responsibilities. While traditional competency models meet some organizational goals and needs, a more responsive approach to leadership development and capabilities may be needed to meet emergent challenges and opportunities. To address the complex challenges facing the DoN workforce, this research project integrates a complexity perspective of leadership development and capabilities with a process model of organizational learning to (1) study how a complexity perspective of leadership development and capabilities contributes to human and social capital strategies of the DoN Research, Development, Testing and Evaluation (RDT&E) workforce, and (2) assess a process model of organizational learning that integrates relevant forecasts of leadership "know-how" needed to meet organizational challenges. To conduct this study, an innovative hybrid-Delphi method of expert forecasting and consensus-building is tested with leadership panels drawn from DoN RDT&E facilities.

Introduction

Department of the Navy (DoN) strategies and plans continue to highlight the need for new thinking and innovative approaches to meet the demands of the future force (DoN, 2016, 2017). For example, Navy leadership has called for cultural changes and programmatic improvements to the way the civilian workforce is prepared for leadership roles and responsibilities (DoN, 2016; DoN Research, Development, Test, & Evaluation [DoN RDT&E], 2017). In fact, the Navy Research and Development Enterprise 30-year plan calls for the creation of a leadership development program focused specifically on the future civilian research and development workforce. However, studies of the federal civilian workforce regularly identify serious challenges related to leadership training and development programs that fail to effectively address organizational needs in a complex and rapidly changing environment (Ingraham & Getha-Taylor, 2004; National Academy of Public Administration, 2017).

Some estimates show that organizations worldwide spend more than $30 billion annually on the selection, training and development of organizational leaders (Hrivnak, Reichard, & Riggio, 2009). This expense reflects the perceived importance of leadership to organizational success. However, the research and assessment behind this strategic investment lags other areas of organizational learning (Boyatzis, 2007). Possible explanations for this lag include the rapid growth of the training industry in response to high

organizational demand and a disconnect between the training industry, internal training functions, and the organizational research community (Hrivnak et al., 2009).

This research project focuses on one area of potential disconnect, the work on leadership development and managerial competencies. Many organizations, including the federal government, rely on some form of individual competency model for training programs and role performance (Boyatzis, 2007). The traditional competency model of leader development employs a fixed set of general role competencies that correspond to valued leadership behaviors. Competency models cultivate desired leadership behaviors through standardized training and development programs. However, many general competency models are based upon research and validation efforts conducted 30 to 40 years ago (Boyatzis, 2011). As a result, leader development efforts may not be aligned with the needs of complex and rapidly changing organizational environments. While traditional competency models meet some organizational goals and needs, a more responsive approach to leadership development and capabilities may be needed to meet emergent challenges and opportunities.

Research Problem and Question

The DoN Civilian Workforce Framework highlights the emergence of a “new age of competition” and increasing complexity and pace of change that demands a more effective military and civilian workforce (DoN, 2016). The DoN 30-year Research and Development plan calls for a shift in organization culture that “values learning, collaboration, innovation and the importance of diversity of thought, culture and background in the generation of concepts and proposed solutions” (DoN RDT&E, 2017). Similarly, Navy leadership advocates for the creation of a “learning culture” capable of addressing the organizational and strategic challenges and opportunities facing the Navy (DoN, 2017).

While DoN leadership and other experts seek new leadership strategies, little seems to have changed beyond the use of new tools and technologies that facilitate ease of access and make learning more flexible. However, modern warfare continues to evolve, resulting in demands and impacts on all aspects of the American defense environment, especially the civilian defense acquisition workforce (DAWF; Trainor, 2017). The DAWF is a specialized sub-component of the DoD workforce with key responsibilities to develop, acquire, and deliver warfighting capabilities to the operational forces of the U.S. Armed Forces (Office of the Under Secretary of Defense for Acquisition, Human Capital Initiatives, 2017).

While the challenges of complexity and change impact the whole of the DoD, the DAWF faces its own unique set of problems. The Defense Acquisition Performance Assessment Project (2006) identified some of the factors that contribute uniquely to the work of defense acquisition. Figure 1 depicts a system where values, goals, and functions of defense acquisition often operate in conflict rather than in alignment. These divergent forces combine with the changes in modern warfare to expose important distinctions, or interactions, tensions, and pressures, that influence the thinking about leadership and the development of leadership capabilities in the DAWF. Trainor (2017) suggested that one way to think about these distinctions is to view them as a function of the unique and complex challenges of defense acquisition, the disconnected structure of the acquisition system, and the cultural influences of leadership and learning within the DAWF.

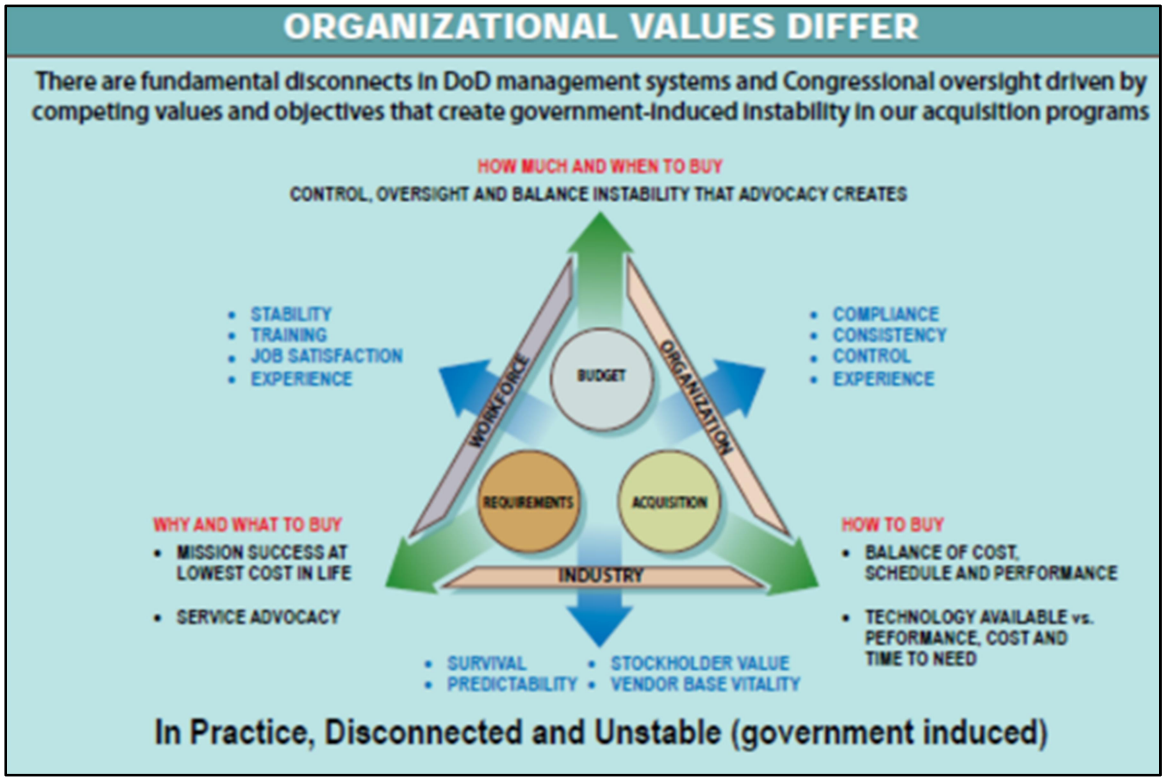

Figure 1. Divergent Forces in Defense Acquisition.
(Defense Acquisition Performance Assessment Project, 2006, p. 4)

To address these unique distinctions and the related demands for different approaches to leadership and learning in the DoN workforce, this research project integrates a complexity perspective of leadership development and capabilities with a process model of organizational learning. The conceptual and methodological design objective of the project is to (1) study how a complexity perspective of leadership development and capabilities contributes to human and social capital strategies of the DoN RDT&E workforce, and (2) assess a process model of organizational learning that integrates relevant forecasts of leadership "know-how" needed to meet organizational challenges.

The research question addressed by the project is, "What organizational capabilities and leader development needs best position the DoN acquisition workforce to meet future challenges and opportunities of a complex environment?" The DoN RDT&E workforce was chosen as the focus of this research because it operates as an integral function within the acquisition system and is impacted by many of the forces and distinctions described above. The output of this project contributes to and extends the emerging field of complexity leadership, adds conceptual rigor to the practice of leadership development and capabilities in the DoN RDT&E civilian workforce, and provides organizational leaders with a practical method for forecasting and prioritizing emergent challenges and needs in a complex environment.

Technical Background and Review of the Literature

The complex global challenges, dynamic nature of the operating environment, and the pace and pervasiveness of technological change demand greater alignment and synergy across the DoN military and civilian workforce (DoN, 2016). The world is operating at machine speed and the workforce must be smarter, more agile, and adaptable to support the mission. The past focus on technological breakthroughs and increased investment in new systems to meet the threat is no longer sufficient to accomplish the mission. An increased emphasis on leadership and innovation is seen as vital to current and future success. The message permeating leadership at all levels of the DoN is the need to cultivate new and different ideas and collaborate and share knowledge that challenges assumptions and provides new perspectives on emerging adaptive problems (DoN, 2017).

In contrast to the call for innovation, rapid learning, and change, the traditional defense civilian workforce model of leadership development emphasizes a stable set of role competencies, broadly applied development opportunities, and specific performance expectations (OUSD[AT&L], 2017). This general role competency model identifies positional competencies and designs training and development necessary for functional success in a role. The role competency and performance model offers predictable and generalizable results and provides scalable education, training, and development programs that benefit a large organization, like the DoN. Despite the clear advantages and efficiencies of the role competency model, leaders continue to call for capabilities of speed, agility, adaptability, and innovation to meet the demands of the operating environment (DoN, 2017; DoN RDT&E, 2017). In response to the call for new ideas on leadership, this research project integrates different perspectives and theories of leadership with a new process of organizational forecasting and consensus-building. The following theoretical and conceptual foundations serve to orient and organize the study.

Complexity leadership theory argues that traditional transactional and hierarchical approaches to organizational leadership are increasingly incapable of delivering new capabilities to solve complex challenges and rapidly shift to capture new opportunities (Uhl-Bien & Arena, 2017). The theory suggests that leadership is more than a role, a style or an approach, but rather an emergent process that occurs as organizations work through the tensions, pressures, and interconnections needed to survive and thrive in a complex environment (Uhl-Bien & Arena, 2017). Complexity leadership theory proposes that organizational effectiveness depends on dynamic, interrelated forms of leadership, which enable creativity and scale innovation into new organizational capabilities (Uhl-Bien & Arena, 2017).

The *dynamic capabilities* literature argues that the current operating environment is marked by globalization, technology, and competition and that organizational success flows from two core capabilities. *Operational capabilities* are the ability to exploit current environments by leveraging existing resources and reinforcing proven operating routines, while *dynamic capabilities* are the simultaneous exploration, creation, and adaptation of organizations to changes in the environment that produces new operational capabilities (Denford, 2013). This research project is focused on *dynamic managerial capabilities*, or the managerial and leadership capacity to search, seize, and transform learning into new operational capabilities (Augier & Teece, 2009).

The *leadership capabilities* literature (Boyatzis, 2007; Boyatzis, 2011) suggests that technical, emotional, and social intelligence competencies are related to the development and performance of effective leaders and managers. The contingency theory of job performance considers aspects of job demands, organizational environment, and the

individual in order to determine the intersection, or best fit, for individual performance and organizational success (Boyatzis, 2007).

The literature on *individual and organizational learning* describes the processes by which new knowledge is acquired, transformed, and applied in response to changing circumstances and problems. *Experiential learning theory* describes how individuals engage in a cyclic process of knowledge creation "through the transformation of experience" (Kolb & Kolb, 2009, p. 44). The *organizational knowledge* literature focuses on how leaders "enable, crystalize, and connect" the knowledge created by individuals to organizational knowledge systems (Nonaka et al., 2006, p. 1179).

Research Methodology

This research project uses a mixed mode (qualitative and quantitative) methodology to gather organizational forecasts and prioritize leadership development needs from senior managers and key leaders at two DoN RDT&E facilities. The Delphi method of panel consensus-building is designed to leverage the knowledge of qualified individuals, decision-makers, and stakeholders who are highly trained or experienced in a particular subject area, or who are unique experts in a specified field (Hsu & Sandford, 2007, p. 3).

The Delphi method was developed by the RAND organization for use in the post–World War II field of security studies and the methodology has been used in many settings, including curriculum design and training content in professional development (Linstone & Turoff, 2011). The traditional Delphi technique presents a set of open-ended prompts on a particular topic and gathers individual responses, forecasts, and priorities from participants without any face-to-face interaction. This method offers benefits of simplicity and efficiency while avoiding the influence of group dynamics that tend to negatively impact response quality. However, the individualized design of the Delphi is also a key limitation of the method, because the traditional Delphi fails to capture the shared interaction, experiences, and learning that are key to gaining broader insights and cultivating deeper knowledge about an issue of importance to a group. The lack of specific context and relevance is one reason why the Delphi method has not been used as an organizational or group learning, forecasting, and decision-making process (Landeta, 2006).

To overcome the limitations of the traditional Delphi technique, this research project employs a hybrid-Delphi method consisting of two distinct phases: a facilitated face-to-face Nominal Group Technique (NGT) discovery phase and an online Delphi panel forecasting phase. In the NGT discovery phase, respondents answer and discuss open-ended question prompts. In the online Delphi panel phase, respondents participate in two closed-ended criteria and consensus rating panels based on the aggregated group responses (Landeta et al., 2011). After receiving a report on panel findings, respondents participate in a brief process assessment survey on the effectiveness and impact of the hybrid-Delphi methodology.

The hybrid-Delphi method used in this project is designed to provide robust interactional and individual components, which may be more representative of the types of interactions needed by organizational or group members as they attempt to gather information to solve complex challenges. In particular, the hybrid-Delphi method encourages creativity and openness within the NGT phase, while integrating and focusing diversity of experience and individual perspective in the Delphi phase, which closely resembles the process and thinking often associated with innovation and complex problem-solving (Drucker, 1999; Heifetz, 2006).

In addition to the potential benefits of more relevant, creative, and robust data, the hybrid-Delphi gathers insights and forecasts in a manner less costly and burdensome than individually structured interviews or focus group methods. The use of the hybrid-Delphi methodology also promotes the integration and collaboration of researchers and practitioners, who together add scientific rigor and validity as they seek organizational insights on important human and social capital challenges (Plummer & Armitage, 2007). The specific hybrid-Delphi methodology used in this research project is described in detail below.

Recruitment Phase

The investigators conducted briefings on the research topic with senior organization leaders and gained approval to conduct the research and recruit Research & Development and/or Testing & Evaluation leaders (GS-11 to 15 and SES/SL/ST) within a directorate of the Naval Air Systems Command (NAVAIR) and the Space and Naval Warfare Systems Command (SPAWAR). Senior organization leaders provided a list of potential panel members or allowed investigators access to potential panel members meeting the general criteria. Potential subjects received an email invitation from one of the investigators along with a brief description of the research. Participants were sent a maximum of two follow-up emails/phone calls in the event a potential participant did not respond to the initial recruitment. A target sample size of 10–15 members was sought for each of two panels, totaling 20–30 participants. This sample size satisfies the methodological designs of the Delphi method of forecasting and consensus-building, while accommodating the potential effects of respondent attrition and optimizing the data analysis workload requirements of the research team.

To minimize undue influence during the recruitment process, the research team contacted potential subjects via email or phone. While the invitation mentioned the approval of the organization to conduct the research, the invitation was clear to state that participation was voluntary and in no way was there an expectation to participate by the command. Investigators ensured that during the recruitment and data collection phases, there was no official interaction between senior organizational leaders and individual participants regarding the research project. While it was possible that informal interaction might have occurred between individual subjects who participated in the research, investigators reminded participants that they should respect the privacy and confidentiality of other participants.

Data Collection Phase

The research study subjects participate in three different data collection stages of the project (see the Appendix—Research Protocol and Instrumentation). The first stage of data collection is a facilitated Nominal Group Technique (NGT) discussion with 10–15 leaders from the organization. In this stage, subjects are asked to respond privately and independently to four open-ended questions. The initial ideas are recorded on a whiteboard or flip-chart, and the group conducts a discussion of clarity, relevance, and logic for each of the items. The investigators organized and conducted content analysis on data collected in the NGT discussion and uploaded this data to the Naval Postgraduate School LimeSurvey program for use in the second stage of data collection. The second stage of data collection was the Delphi panel, consisting of two online surveys based on the information gathered in NGT discussion stage. The first survey involves rating items according to defined criteria, and the second survey involves rating the priority, or relative importance, of items from the first survey. Participants received individual email links to the online survey. To protect confidentiality of participant responses, no IP address or personally identifying information (PII) was collected by the survey instrument.

The investigators combined the results the NGT discussion and both surveys in a final report provided for participant review. Following review of the final report, participants received an online survey to assess the effectiveness and impact of the overall process. The NGT was designed to last 90 minutes, and each of the online surveys were designed to take 20–30 minutes to complete. The total estimated time of participation was three hours over the course of one month.

Data Analysis and Next Steps

The process of data collection began at both RDT&E facilities in April 2018 and continued until May 2018. The research team conducted analysis at each stage of data collection using qualitative content analysis following the NGT discussions and standard statistical analysis following the Delphi panel survey stage. Preliminary results will be included in the Acquisition Research Program Symposium presentation of this research project and in the final project technical report.

The analysis and conclusions of this research project are expected to contribute to the public interest by (1) extending the emerging field of complexity leadership, (2) adding conceptual rigor to the practice of leadership development and capabilities in the DoN RDT&E civilian workforce, and (3) providing organizational leaders with a practical method of forecasting and prioritizing emergent challenges and needs in a complex environment.

References

Augier, M. & Teece, D. J. (2009). Dynamic capabilities and the role of managers in business strategy and economic performance. *Organization Science, 20*(2), 410–421.

Baker, A. C., Jensen, P. J., & Kolb, D. A. (2005). Conversation as experiential learning. *Management Learning, 36*(4), 411–427.

Boyatzis, R. E. (2007). Competencies in the 21st century. *Journal of Management Development, 27*(1), 5–12.

Boyatzis, R. E. (2011). Managerial and leadership competencies: A behavioral approach to emotional, social, and cognitive intelligence. *Vision, 15*(2), 91–100.

Boyatzis, R. E., Rochford, K., & Cavanagh, K. V. (2017). Emotional intelligence competencies in engineer's effectiveness and engagement. *Career Development International, 22*(1), 70–86.

Denford, J. S. (2013). Building knowledge: Developing a knowledge-based dynamic capabilities typology. *Journal of Knowledge Management, 17*(2), 175–194.

Defense Acquisition Performance Assessment Project. (2006). *Defense acquisition performance assessment report.* Washington, DC: Deputy Secretary of Defense.

DoD. (2016). *Acquisition workforce strategic plan: FY2016–FY2021*; *Title 10 U.S.C., Sections 115B(D) and 1722B(C).* Retrieved from http://www.hci.mil/docs/Policy/Legal%20Authorities/DOD_Acq_Workforce_Strat_Plan_FY16_FY21.pdf

DoN. (2016). *Navy civilian workforce framework* (Ver. 1.0). Washington, DC: Author.

DoN. (2017). *The future Navy* [White paper]. Washington, DC: Author.

DoN, Research, Development, Test, & Evaluation (DoN RDT&E). (2017). *30-year research and development plan.* Washington, DC: Author.

Dreyfus, C. R. (2008). Identifying competencies that predict effectiveness of R&D managers. *Journal of Management Development, 27*(1), 76–91.

Drucker, P. R. (1999). *Management challenges for the 21st century*. New York, NY: Harper Business.

Heifetz, R. A. (2006). Anchoring leadership in the work of adaptive progress. In F. Hesselbein & M. Goldsmith (Eds.), *The leader of the future 2: Visions, strategies, and practices for the new era*. San Francisco, CA: Jossey-Bass.

Hrivnak, G. A., Reichard, R. J., & Riggio, R. E. (2009). A framework for leadership development. In S. J. Armstrong & C. V. Fukami (Eds.), *The Sage handbook of management learning, education, and development* (pp. 456–475). London, England: Sage.

Hsu, C. C., & Sandford, B. A. (2007). The Delphi technique: Making sense of consensus. *Practical Assessment Research & Evaluation, 12*(10). Retrieved from http://pareonline.net/getvn.asp?v=12&n=10

Ingraham, P. W., & Getha-Taylor, H. (2004). Leadership in the public sector: Models and assumptions for leadership development in the federal government. *Review of Public Personnel Administration, 24*(2), 95–112.

Kolb, A. Y., & Kolb, D. A. (2009). Experiential learning theory: A dynamic, holistic approach to management learning, education, and development. In S. J. Armstrong & C. V. Fukami (Eds.), *The Sage handbook of management learning, education, and development* (pp. 42–68). London, England: Sage.

Landeta, J. (2006). Current validity of the Delphi method in social sciences. *Technological Forecasting & Social Change, 73,* 467–482.

Landeta, J., Barrutia, J., & Lertxundi, A. (2011). Hybrid Delphi: A methodology to facilitate contribution from experts in professional contexts. *Technological Forecasting & Social Change, 78,* 1629–1641.

Linstone, H. A., & Turoff, M. (2011). Delphi: A brief look backward and forward. *Technological Forecasting & Social Change, 78*, 1712–1719.

National Academy of Public Administration. (2017). *No time to wait: Building a public service for the 21st century* (Academy Project No. 2214). Washington, DC: Author.

Nonaka, I., von Krogh, G., & Voepel, S. (2006). Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization Studies, 27*(8), 1179–1208.

Office of the Under Secretary of Defense for Acquisition, Human Capital Initiatives. (2017). Mission. Retrieved from http://www.hci.mil/about-us.html#Mission

Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (OUSD[AT&L]). (2017). *Defense Acquisition Workforce Education, Training, Experience, and Career Development program* (DoD Instruction 5000.66). Retrieved from http:www.esd.whs.mil/dd

Plummer, R., & Armitage, D. R. (2007). Charting the new territory of adaptive comanagement: A Delphi study. *Ecology and Society*, *12*(2), 10. Retrieved from http://www.ecologyandsociety.org/vol12/iss2/art10/

Trainor, S. C. (2017). *Complex leadership needs in the Defense acquisition workforce* (Acquisition Research Program Technical Report NPS-AN-18-017). Retrieved from http://my.nps.edu/documents/105938399/110483626/NPS-AM-18-017.pdf/c660094b-ecf9-4e15-918f-087ad0f791a9?version=1.0

Uhl-Bien, M., & Arena, M. (2017). Complexity leadership: Enabling people and organizations for adaptability. *Organizational Dynamics, 46,* 9–20.

Yousuf, M. I. (2007). Using experts' opinions through Delphi technique. *Practical Assessment Research & Evaluation, 12*(4). Retrieved from http://pareonline.net/getvn.asp?v=12&n=4

Appendix: Research Protocol and Instrumentation

Research Question

What organizational capabilities and leader development needs best position the DoN acquisition workforce to meet future challenges and opportunities of a complex environment?

Methodology

Nominal Group Technique (NGT) Discovery Stage (Forecasting the Challenges of Complexity Leadership). Respondents are gathered in a room, organized around a U-shaped table with a white board or flip chart for collecting and collating information from the group. Respondents are briefed on the informed consent process and given the opportunity to read and sign the informed form prior to proceeding.

Step 1. Generating Ideas. The facilitator provides a brief overview of the research project and distributes materials to complete the written portion of the NGT. The facilitator presents the four questions to the group in written form and reads the questions aloud to the group. The facilitator invites the group to independently write ideas in brief phrases or statements for each question. Group members independently and privately responds to the following questions, writes the ideas on large post-it notes and then places ideas on flip charts or a white board corresponding to each question prompt.

Question 1 Objective: Identify how leaders experience the tensions, pressures, and interconnections of increasing complexity in their work.

> *"As you work to achieve your organization's current goals and objectives, describe or identify the ways in which you and other leaders experience tensions and interconnections, as well as pressures and demands that are new, different, or unique from those you may have experienced a few years ago."*

Question 2 Objective: Identify how leaders use complexity thinking in their work (e.g., "to catalyze and energize networked interactions that enable emergence and adaptability").

> *"Given the tensions and interconnections, as well as pressures and demands previously identified, envision an organization that fully and effectively achieves its goals and objectives. In a situation such as this, what things do leaders understand, practice, or focus on that are new, different, or unique?"*

Question 3 Objective: Identify how leaders create, facilitate, and manage the adaptive space of complexity (integrate the need to operate, the need to innovate, and the need to adapt in their work).

> *"What things do you and other leaders need to learn, adopt, or change for your organization to fully and effectively achieve its goals and objectives?"*

Question 4 Objective: Identify how leaders gain the understanding and expertise to lead for adaptability.

> *"Envision a leader who has mastered those things needed for your organization to fully and effectively achieve its goals and objectives. In what ways might this leader have acquired the knowledge, skills, and experiences needed for mastery?"*

Step 2. Recording Ideas. The facilitator leads the group members in a round-robin feedback session to concisely capture each idea (without debate). For each question prompt, the facilitator reads aloud ideas on the post-it notes. The facilitator invites group members to offer a different emphasis or variation on ideas, or to clarify meaning if ideas are repeated or unclear. The facilitator invites group members to offer additional ideas that are not included on the list. The facilitator proceeds until all members' ideas have been documented.

Step 3. Discussing Ideas. Each recorded idea is then discussed to determine clarity, relevance, and logic. For each idea, the facilitator asks, "Are there any questions or comments group members would like to make about the item?" The creator of the idea need not feel obliged to clarify or explain the item; any member of the group can play that role. The facilitator then asks, "Are there any organizing themes that appear across the responses for this question?" The process repeats for each question. The session is complete at this point.

Step 4. Content Analysis. The research team conducts a content analysis and categorization of responses to the open-ended questions based upon theory and the NGT session. The research team constructs a list of common themes and individual items from the responses provided in the NGT phase for use in the Delphi panel phase.

Delphi Panel Assessment Stage (Prioritizing Organizational Leadership Development and Capabilities). Panel members receive (via email) a secure link to complete a survey using the NPS LimeSurvey program. Respondents are asked to complete the survey within seven working days of receiving the email. An email reminder is sent to all panel participants after five working days and one working day prior to close of data collection.

Delphi Panel—Round 1 (Criteria Rating—Complexity Leadership Development Needs and Capabilities). Respondents are presented the following forecasting questions in response to the NGT Discovery Phase information.

"For each of the following questions, there are corresponding themes and items collected during the group phase. For each question, please review the information and provide your level of agreement for each item associated with a question."

(5-point Likert scale, 1=Strongly Disagree, 5=Strongly Agree)

Question 1 Objective: Respondents recognize and exploit the experience of tensions, pressures, and interconnections into learning about complexity.

Question 1: *To what extent are these leadership challenges the result of increasing complexity?*

1. *Item (1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*
2. *Item (1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*
3. *Etc.*

Question 2 Objective: Respondents acquire and apply knowledge of complexity in a relevant situation.

Question 2: *To what extent are these different or unique capabilities "what it takes" to lead in complexity?*

1. *Item (1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*
2. *Item (1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*
3. *Etc.*

Question 3 Objective: Respondents assimilate knowledge about leadership in complexity and transfer it to role-related learning.

> ***Question 3:*** *To what extent will these development activities equip leaders for the challenges of complexity?*

1. *Item (1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*
2. *Item (1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*
3. *Etc.*

Question 4 Objective: Respondents internalize and transform development into new forms (identities) of complexity leadership.

> ***Question 4:*** *To what extent will these development opportunities provide the "know-how" to lead effectively in complexity?*

1. *Item (1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*
2. *Item (1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)*
3. *Etc.*

Delphi Panel—Round 2 (Consensus Rating—Complexity Leadership Priorities). Respondents are presented the following consensus questions in response to criteria means from Delphi Panel Round 1.

> *"For each of the following statements, please review the mean criteria ratings for each item and provide your level of agreement with the priority, or relative importance, of the items in the list. In the space provided, please provide a brief explanation for responses of Strongly Disagree or Disagree."*
>
> *(5-point Likert scale, 1=Strongly Disagree, 5=Strongly Agree)*

Question 1: *The ratings of leadership challenges reflect the priority, or relative importance, of those challenges for this organization.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) (Open-ended response)

Question 2: *The ratings of different or unique capabilities reflect the priority, or relative importance, of "what it takes" to lead in complexity for this organization.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) (Open-ended response)

Question 3: *The ratings of development activities reflect the priority, or relative importance, of how to equip leaders for the challenges of complexity for this organization.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) (Open-ended response)

Question 4: *The ratings of development opportunities reflect the priority, or relative importance, of how to provide the "know-how" to lead effectively in complexity for this organization?*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) (Open-ended response)

Process Assessment Survey (Methodological Effectiveness and Impact). Panel members receive (via email) a secure link to complete a survey using the NPS LimeSurvey program. Respondents are asked to complete the survey within seven working days of receiving the email. An email reminder is sent to all panel participants after five working days and one working day prior to close of data collection.

Process Effectiveness

"This section asks you to rate the effectiveness of each phase of the process in which you have participated. For each of the activities listed below, please provide your level of agreement. In the space provided, please provide a brief explanation for responses of Strongly Disagree or Disagree."

Question 1. *"The following activity was effective in identifying the leadership development and capabilities needed to best position this organization for future challenges and opportunities of a complex environment."*

(5-point Likert scale, 1=Strongly Disagree, 5=Strongly Agree)

Group Discovery Phase

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Online Complexity Leadership Forecasting Phase

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Online Leadership Development and Capabilities Priorities Phase
(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Process Learning Value

"This section asks you to rate the learning value of the experiences in which you have participated. Please provide your level of agreement with the statements below. In the space provided, please provide a brief explanation for responses of Strongly Disagree or Disagree."

***Question 2**. "The following are valuable learning experiences in this organization."*

Associating with other colleagues outside of our technical roles

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Being able to test your own ideas with other colleagues

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Acquiring new ideas and learning something new

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Contributing your knowledge to solve organizational challenges

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Using a deliberative method to think about organization priorities
(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Developing consensus on important decisions

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Process Impact

"This section asks you to rate the impact of the process on your organization. Please provide your level of agreement with the statements below. In the space provided, please provide a brief explanation for responses of Strongly Disagree or Disagree."

***Question 3**. I am confident that the results of this process reflect group consensus.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

***Question 4**. This process produced timely results for this organization.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

***Question 5**. The process produced actionable priorities for this organization.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

***Question 6**. The process will help this organization transform learning into new operational capabilities.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

***Question 7**. The process will help this organization adapt and connect the knowledge and ideas of individuals to solve complex challenges.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

***Question 8**. I would recommend a process like this to other teams and leaders in this organization.*

(1=Strongly Disagree, 2-Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

(Open-ended response)

Final Comments

Question 9. *What comments or suggestions for improvement can you offer about this process?*

(Open-ended response)

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