Journal of Applied Leadership and Management 10, 22 – 40

# Using Intervention Research to Adopt Evidence-Based Management as a Practical Leadership Capability

Robert Alan Young (rayoung@trevecca.edu)
Trevecca Nazarene University, School of Leadership & Interdisciplinary Studies

**Summary**

| | |
|---|---|
| Research questions: | (1) How could strategic decision-makers in the public sector determine whether System 1 or System 2 thinking would be most effective? (2) How could a leader's readiness to adopt evidence-based management be assessed? (3) What organizational intervention could a public sector organization apply to integrate evidence-based management to strengthen strategic decision-making? |
| Methods: | A design-based case study employed an analytic workflow that included observations of team workshops to surface coded indicators of critical thinking. Additionally, heuristic-based questions during interviews with a purposeful sampling of leaders, managers, and employees explored the shared experiences throughout the intervention. Applied nexus analysis and interdiscursivity informed the content in the next phase with a deeper understanding of where shared perspectives aligned and where disconnects existed. The approach generated insights to inform the planning of subsequent workshops. |
| Results: | The leaders in this study were found to rely instinctively on their non-expert intuitions (System 1) rather than seek to supplement their perspectives with data, information, or other perspectives (System 2) when facing new challenges. Practitioners face a challenge in seeing the relevance of evidence-based approaches to solving their strategic problems. Furthermore, the value of an interventional framework (with nexus analysis and interdiscursivity) as a change management approach was beneficial. This study showed the benefit of focusing on the relevance of the results and the intended audience, recognizing that perhaps all or only some of the findings may be helpful to others in different settings. |
| Structure of the article: | Introduction; Problem Statement in Context; Review of the Literature; Methodology and Data Analysis; Findings; Recommendations; Conclusions; About the author; Bibliography |

## Introduction

There is arguably little question that the volatility, uncertainty, complexity, and ambiguity, in combination, are pressing public sector agencies to respond and adapt amid the constraining factors of lagging skill sets, budget, time, or a blurred combination of the three. With the regulation of epistemic uncertainty in an organizational management context, social perception and complex environments alter the decision-making structure, and gaps between satisficing solutions and optimal solutions continually compound (Martelli & Hayirli, 2018; Young, 2021). Such conditions intensify the decision-making complexities for public sector executives and their management teams with the propensity for ambiguous feedback, misaligned organizational psychological models across the team, and the compounding complications from a previous succession of decisions resulting in limited individual and agency improvements (Bakken, 2008; Del Junco et al., 2010; Huggins, 2019). In some instances, the critical decision-making processes consist of competitive disclosures of circumstantial narratives, where constructive evidence plays a minor supporting role during the debates practitioners use to persuade each other. The little emphasis on evidence collection and evaluation leads to unnecessary and unconscious risks unbeknownst to the decision-makers (Young, 2021).

In 2005, Rousseau described this gap as a failure of organizations and their managers to base practices on the best available evidence. Implications to public sector leaders extend beyond minimally optimal decisions, with the series of recent administrative laws and statutory requirements directing federal public sector agencies to improve the delivery of their services and outcomes through more scientific, rational, evidence-based approaches. The objectives are made evident in legislative intentions codified in the Digital Accountability and Transparency Act (2014), Program Management Improvement Accountability Act (2016), Federal Data Strategy (2019), and the Foundations for Evidence-Base Policymaking Act of 2018 (effective January 1, 2019). These statutory requirements call for developing strategies and approaches by government agencies to modernize practices in data management, evidence-building capabilities, and the application of statistics to improve decision-making culminating in the knowledge work of Federal agencies becoming more anchored by scientifically rigorous approaches. Missing for the practitioner is a pragmatic approach to incorporate such methods into the decision-making process for novel or complex scenarios. The absence of an operational framework for assisting practitioners in building practices in evidence-based management (EBMgt) was highlighted in findings by the US Government Accountability Office (USGAO, 2019a), having uncovered significant weaknesses in the caliber and quality of standards and guidance provided to federal agencies. Furthermore, there exists a lack of epistemological interest and understanding in the management research towards adopting and applying EBMgt into management practice (Davis, 2015; Morrell, 2008; Rynes & Bartunek, 2017).

This study offered a value proposition for generating the most informed decisions when supported by the best evidence. Such a reflective experiential learning lens proved beneficial, partially filling a pronounced void in the academic-practice (A-P) research, with a model approach for the dedicated public sector practitioner pursuing the intentions of data-informed, evidence-based outcomes in service to the interests of the American public. This research aimed to address the increased number of US Government public sector agencies in need of becoming rigorously more ambidextrous. The capability to continue juggling mission-critical operations while designing and implementing novel approaches and innovative interventions for improved strategic decision-making and organizational outcomes against a changing landscape is critical (Jackson & Leung, 2018).

For those organizations facing the challenge of improving the decision process, particularly those enterprise-wide strategic decisions, Nooraie's (2008) definition of decision rationality served well, describing the construct as the extent of analysis and integration loaded into the decision-making process. The dual process involves *System 1* as the intuitive path with its heuristic noise and bias typically prevailing over *System 2* with its rational, informed judgments (Capelo & Dias, 2009; Kahneman, 2011; Porter et al., 2017; Priest & Gass, 2017). The dual-process principles and practices support improved decision rationality by adopting the EBMgt framework. The analytic path is fueled by System 2 thinking, offering opportunities for organizations to render better decisions grounded in evidence-informed rationality. These findings support those of the GAO, identifying that the implications for failing to close the A-P gap have increased significantly with recent administrative laws and statutory requirements through more scientific, rational, evidence-based approaches (USGAO, 2019a).

There is an argument in the literature that even if sound evidence for policy analysis continues to expand, the political nature of policy debate and decision-making, coupled with a lack of incentivization and fragmentation, is generally unfavorable to science-driven perspectives and agendas enabling accountability and effectiveness (Behn, 2003; Gill, 2018; USGAO, 2019b; Head, 2015). Such a state of fragmentation leaves public leaders with explicit mandates without a path into unchartered waters (USGAO, 2019b). Furthermore, real-world problems are complex, and no single discipline can adequately describe and resolve these issues (Young, 2022).

## Problem Statement in Context

Statutory requirements mandate developing strategies and approaches for government agencies to modernize practices in data management, evidence-building capabilities, and the application of statistics to improve decision-making culminating in the knowledge work of Federal agencies to become more anchored by scientifically rigorous approaches. The absence of more relevant guidance for agency leaders, particularly those with more operational and less research-orientated missions, further emphasizes the A-P gap (USGAO, 2019b). Most practitioners lack formal education and knowledge in scientific methodological research and evidence-building, often resulting in decisions built around faulty data, inappropriate interpretations, conclusions, or unsubstantiated personal intuition (Leedy & Orman, 2010; Young, 2021). In this design-based case study methodology, the researcher and practitioner served in a dual role, intending to lead meaningful change that overcomes the difficulties in transforming a theoretical idea into a practical application (Simon & Goes, 2018). Furthermore, for disciplines that suffer from a pronounced A-P gap, it is recommended that researchers and practitioners partner in collaborative networks to address problems associated with misunderstandings between the two communities and lead to improved service delivery (Hall et al., 2019). Achieving high value for citizens requires innovative operating frameworks (Plan & Algehed, 2017). Such integrated adoption of EBMgt as a thoughtful, deliberative enabler can achieve quality in public administration being demanded (Young, 2021). With Leedy and Ormrod (2010) proclaiming that competent and effective practitioners should preface their decisions and priorities on reliable research findings in their field, this study needed to provide insights leading to improved, evidence-informed decisions and outcomes. Three questions formed the problem statement: (1) How could strategic decision-makers in the public sector determine whether System 1 or System 2 thinking would be most effective? (2) What organizational intervention could a public sector organization apply to integrate evidence-based management to strengthen strategic decision-making? Lastly, (3) how could leader readiness to adopt evidence-based management be assessed?

## Review of the Literature

Among the significant challenges researchers and strategists define is the need for ambidexterity as an organizational capability, yet it remains one of the more pervasive concepts in organizational theory and strategic management (O'Reilly & Tushman, 2013; Sarta et al., 2020). Research has shown that ambidexterity positively correlates with long-term performance in organizations and influences how they strategize and react to their external environment (Jackson & Leung, 2018). Decisions in the public sector are often shaped by a complex array of forces obligating those organizations in dynamic operating environments to adapt to more complexity, bigger and thicker data, and new threats amid the constraining factors of declining numbers of workers, budget, time, or a holus-bolus combination of the three (Young, 2021). Decision-making by federal sector executives and management teams during complex scenarios, when feedback is often ambiguous, leaves people with missed learning opportunities, mental models stagnant, and compounding complications from a previous succession of decisions, far too often resulting in no improvement in individual or organization outcomes (Bakken, 2008; Del Junco et al., 2010; Huggins, 2019).

From another perspective, Barends and Rousseau (2018) opine that the decision-making process in many organizations resembles competitive storytelling, where evidence plays a minor role during debates practitioners use to persuade each other. Such storytelling turns the ambiguities and complexities of experience into a form that is elaborate enough to elicit interest, simple enough to be understood, and credible enough to be accepted.

In 2017, Palm and Algehed concluded that when organizations find a relevant example, often there is no understanding of why it worked previously, adding that the more novel and complex the problem, the less applicable the lessons of yesterday. Such under-emphasis on evidence collection and evaluation leads to unnecessary and unconscious organizational risks, often unbeknownst to the decision-makers (Barends & Rousseau, 2018). Well aware of pressures to improve organizational performance, dedicated public sector practitioners responsible for meeting the organization's obligation for improved, evidence-informed decision-making are left without explicit direction. Hall et al. (2019) noted that the difference between what researchers do and what practitioners understand is significant to the point of creating a paradox—researchers develop a theory for practitioners who, in turn, reject it because it seems to have no basis in reality. Such a scenario beckons a call for increasing epistemological sophistication, leveraging the practitioner's perspective with a qualitative approach to inform public sector leaders striving to comply with administrative law and, in the end, produce better strategic decisions in service to the public.

Research has crept into the fragmented and multi-layered decision process through the amorphous or unintentional adoption of research knowledge, becoming part of the zeitgeist rather than overt deliberation (Weiss & Bucavalas, 1981). In 1980, Weiss' findings supported the premise that policy-relevant research influences decisions through decision accretion and knowledge creep, emerging more from bureaucratic routines having built one on top of another (Fleming & Rhodes, 2018).

The implications for failing to close the A-P gap citing the lack of relevant research to inform federal policy, had increased significantly with recent administrative laws and statutory requirements directing federal agencies to improve the delivery of their services and outcomes through more scientific, rational, evidence-based approaches. Consequently, the knowledge work of federal agencies needs to become more anchored by scientifically rigorous approaches. The how-to options map towards achieving this mandate, particularly those with more operational and less research-orientated missions, remains missing for the practitioner (Young, 2022).

The three categories of federal agencies are production, with clear deliverables to the public; regulatory agencies that enforce the nation's safety and health regulations; and scientific agencies managing the nation's research and development efforts. Unfortunately, with the vast majority of production

and regulatory agencies practitioners lacking formal education and knowledge in scientific methodological research and evidence-building, decisions are built around faulty data, inappropriate interpretations or conclusions, or unsubstantiated personal intuition (Leedy & Orman, 2010; Young, 2021). In its two reports to Congress in 2019, the GAO uncovered significant weaknesses in the caliber and quality of standards provided to departments and agencies, further concluding that the guidance was significantly fragmented (USGAO, 2019a & 2019b).

## Intervening to Improve Decisions

The agency in this case study is no different from the increasing number of public sector organizations that need to become more ambidextrous despite a lack of clarity for a path forward (USGAO, 2019a; Young, 2021). Ready access to data, adaptable technology, and an ever-combative political environment contribute to the complexity of decision-making in the public sector (Battaglio et al., 2019). Acting on public policy means practitioners must overcome these environmental complexities and cognitive limitations.

Kahneman (2011) made clear that System 1 intuitive thinking, with its impressions, feelings, and simplified heuristics, has served humans well throughout millennia. Today, reliance on the biased-driven intuitive path alone for judgments that require more rational deliberation, System 1 thinking often fails by introducing heuristics and biases (Kahneman, 2011; Kahneman & Klein, 2009; Barends & Rousseau, 2018). Systematic deviations from the norm, when one's subjective social reality directs responses to stimuli rather than objective standards, enable cognitive heuristics to interfere and cause errors when choosing which system of thinking should be applied in particular scenarios (Kahneman, 2011). Often, individuals, the team, and the organization are unaware of certain constraints when toggling between System 1 or System 2 (Battaglio et al., 2019).

To counter a cultural ethos wherein senior decision-makers often rely upon System 1 intuitive judgments, adopting the EBM framework will support decision rationality where the analysis is fueled by System 2 deliberative, evidence-informed thinking (Barends & Rousseau, 2018; Sleboda & Sokolowska, 2017). Unfortunately, the reality is that practitioners have a closer interaction with day-to-day organizational problems and decision-making and are interested in acquiring actionable knowledge that would enable them to make more effective, immediate decisions resulting in a focus on outcomes rather than processes (HakemZaheh & Baba, 2016).

There exist well-documented gaps between what researchers conclude and what management practitioners apply in practice balance between academic rigor and practical applicability. Although the academic community recognizes that the research-practice gap is a significant impediment to the profession's advancement, the gap still prevails (HakemZadeh & Baba, 2016). Moreover, a lack of collaborative research and dissemination models suggests strengthening networks and relationships between the researcher and the practitioner (Briner et al., 2009; Hall et al., 2019; Hughes et al., 2008).

The obstacle before many organizations is building and sustaining the collection of mental models that break through the noise towards rational, analytic processing rather than intuition alone, particularly in dynamic decision-making environments (Porter et al., 2018). There are substantial barriers to the fullest adoption of EBMgt principles beyond academic theory and into the practice of management (Rousseau & Gunia, 2016), including the training of managers and analysts, redesigning of roles and responsibilities, reorienting organizational culture to identify potential multicultural implications, and establishing a structure for the effective actioning of research findings (HakemZadeh & Baba, 2016; Hudson, 2009).

One contributor to the continuing problem is that academicians assume that scholars know what they are talking about when producing scholarly literature, and “since scholars are their target audience, they practically talk in code to practitioners” (Cohen, 2007, p. 1017).

There is value in applying intuition; however, organizations should develop their leaders to pursue

expert intuition. The primary condition for defining expertise is the existence of consensus and evidence that the agreement reflects objective aspects of successful performance, even if they are not quantified explicitly (Kahneman & Klein, 2009). That said, when the performance of different professionals can be compared, the best practitioners define the standard. Shanteau (1992) characterizes experts as being recognized within their profession as having the requisite knowledge, skills, and abilities to perform at the highest levels.

There is a process for acquiring and bolstering skills that support genuine experts' intuitive judgments and preferences. Kahneman and Klein (2009) explored two necessary conditions for the development of talent: high-validity environments (or recognized as such) and an adequate opportunity to learn them (improving memory for the next time). From the practitioner's perspective, identifying the cues that experts use to make their judgments, even if they involve tacit knowledge, is typically tricky for the expert to articulate. This is because intuition is many viewed with an almost magical aura, defined as knowledge not acquired by a rational process (Kahneman & Klein, 2009).

People, including experienced professionals, sometimes have subjectively compelling intuitions even when they lack actual skill, either because the environment is less familiar or because they have not mastered it (Kahneman & Klein, 2009). In early research, Shanteau (1992) sought task characteristics that distinguished the domains in which experts did well from those who performed poorly. The key factors that Kahneman and Klein (2009) classified were the predictability of outcomes, the amount of experience in that domain, and the availability of good feedback. Shanteau pointed to static (as opposed to dynamic) stimuli as favorable to good performance. However, the implications and lessons from Shanteau's early works align less and less with the more dynamic uncertainty required of today's public organizations pursuing ambidexterity (Bakken, 2008; Del Junco et al., 2010; Huggins, 2019).

Organizational interventions (OI), as a developmental approach, are a sequence of activities, actions, and orchestrated events intended to facilitate an organization's improvement in performance and effectiveness (Das & Bhatt, 2016). Intervention design derives from careful diagnosis intending to resolve specific problems and improve particular organizational functioning identified in the diagnosis (Abildgaard et al., 2016). Adding to the challenge are the fundamental differences between how academics approach the analysis of a problem and how practitioners focus on a problem's solution (Cohen, 2007; Kaliappan & Kavitha, 2019).

Foundational research by Harrison (1970) identified a need for differentiated conceptual models separating the various intervention strategies from one another so that academics and practitioners could rationally match the most appropriate approach to the different organizational problems. One central concept addressed the depth of individual emotional involvement in the change process. Harrison (1970) characterized depth to reflect how value-laden, emotionally charged, and central to the individual's sense of self were affected by the issues and processes experienced during an OI. Harrison's (1970) early work presented a case countervailing the trend by moving towards more autonomy and internal control represented by individuals serving as competent and willing collaborators in the OI endeavor.

More recently, intervention research (IR) has emerged as a design science approach that addresses the relevance gap issue and the growing complexity of management practice (Getenet, 2019; Radaelli et al., 2014). It is argued that increasing our understanding of management requires more insightful, influential, and immediately applicable research, calling for closer collaboration between management and researchers. The design-based inquiry process demonstrates that IR can be both rigorous and relevant to practitioners and how it can advance theoretical knowledge in management science (Getenet, 2019; Radaelli et al., 2014; Young, 2021).

There are two distinct approaches to evaluating data collected during an OI. The first is the quantitative approach, where either standardized or intervention-specific data collection, typically taking the form of a questionnaire, is integrated into statistical

models of implementation and effect to achieve optimal intervention results (Lobo et al., 2017; Nielsen et al., 2007; Nielsen & Randall, 2009, 2012). The second approach, which was applied during this intervention, collects qualitative data from semi-structured interviews with individuals involved in the OI as the methodological approach to investigate the phenomenon as a human experience (Lobo et al., 2017; Nielsen et al., 2006).

The observations of intervention activities to identify variable associations otherwise not measured but related (Brannan & Oultram, 2012; Lobo et al., 2017) or long-term field observations would aid in identifying more subtle, action-orientated changes over time (Czarniawska-Joerges, 2007; Jones et al., 2017; Lobo et al., 2017). Applying qualitative evaluation has been used extensively to understand how actions are taken, how an OI affects change, and the further development of organizational intervention practice (Aust et al., 2010; Jones et al., 2017; Nielsen et al., 2007).

The EBMgt framework, with its components and procedures described as evidence-based practices, is presented as an approach encompassing (a) conscientious and explicit analysis, (b) group discovery, (c) synthesis of interdisciplinary knowledge variety, (d) systematic review, and (e) trusted, critical assessment of the best available evidence enabling decision-makers to strengthen decisions outcomes in the epistemic uncertainty of dynamic, complex environments (Briner et al., 2009; Bosman, 2015a; Martelli, 2012; Martelli & Tuna, 2018). EBMgt has been put forward as a means of bridging the A-P gap, and while there have been over 100 articles specifically addressing EBMgt, nearly 80% of those articles have been either introduction and advocacy articles, essay and perspective pieces, teaching-related articles, reviews, or critiques and responses, leaving only 21% as empirical studies (Rynes & Bartunek, 2017). Accepting EBMgt as a pragmatic approach requires individual and group motivation to apply systematic methodology, scientific knowledge, and explicit logical thought to inform the organization and public policy decision-making (Barends & Rousseau, 2018; Wright et al., 2016). Such an effort supports the achievement of the intentions behind the federal statutory requirements. EBMgt framework demonstrates refinement in scholarly thinking regarding the relevance of research in managerial decision processes (Wright et al., 2016). However, “the gap between science and practice is so pervasive that some have despaired of its ever being narrowed” (Rynes et al., 2007, p. 987).

Organizational legitimacy is another product of evidence-based management. Unfortunately, often with legitimacy being the result of making decisions in a systematic and informed fashion, resulting in actions more readily justifiable in the eyes of stakeholders (Sohrabi & Zarghi, 2015), EBMgt is not recognized as a value-proposition by decision-makers (Young, 2021). Achieving high value for citizens requires both innovation and incremental development of operating procedures, so the integrated adoption of EBMgt as a deliberative enabler can achieve the quality in public administration being demanded (Palm & Algehed, 2017). Moreover, it has become clear that data alone is insufficient to inform and support decision-making (Maxim et al., 2018). It, therefore, seems appropriate to proclaim that public sector practitioners should base decisions and priorities on reliable research findings in their field and, by doing so, generate insights leading to improved, evidence-informed decisions (Leedy & Ormrod, 2010).

Integrative complexity (IC) refers to an individual's ability to differentiate by recognizing multiple dimensions and perspectives about an issue, coupled with the ability to integrate, as that individual's recognition of conceptual connections among the differentiated characteristics supports multidimensional processes and effects when making decisions (Baker-Brown et al., 1992; Van Swol et al., 2018). In the context of IC, strategic decision-making can be explained as a combination of paradigms of limited rationality and organizational politics. However, an individual with high cognitive differentiation recognizes and synthesizes the multidimensional processes and effects at play with each decision (Wollmann & Steiner, 2018). Adding high levels of integration would then involve

comparing the differentiated perspectives and outcomes with how they connect to other complex dimensions. Such changes to the mental schema, serving as the framework for one's knowledge of the world and understanding of new information, often occur through assimilation or accommodation (Cherry, 2019).

Integratively complex arguments are based on evidence from varied, novel, or conflicting perspectives on a particular issue, yet, in many instances, one's mental model will persist even when presented with evidence that contradicts their beliefs (Padesky, 1994; Van Swol et al., 2018). At times, there is a difference between integrative complexity and critical thinking. Put this way, a high degree of integrative complexity is characterized by flexibility, broad thinking, and recognizing of several aspects open to interpretation, having recognizable, viable connections and interactions (Suedfeld, 1985).

The IC behind thinking has been researched as an outcome of minority influence; furthermore, IC can also be a means by which minority members—or members with more discrepant opinions—can persuade others (Gardikiotis, 2011). Members with views more discrepant from other group members may be more influential when making complex and nuanced statements (Van Swol et al., 2018). One crucial factor is the extent to which one's self-schema has developed, framing a self-understanding when people "focus on what we know about who we are now, who we were in the past, and who we could be in the future," as Cherry (2019, para. 4) framed it. However, the framework's tenets offer a clear opportunity to identify implications when strategic decisions are at risk due to reliance on the human tendency to lead-with-your-gut approach, especially when leading multicultural teams (Livermore, 2015). Furthermore, cognitive science suggests that the human mind is poorly wired to deal effectively with inherent uncertainty and the challenges of handling complex, multifaceted issues, information processing limits, and biases all the more makes a case for evidence-based decision-making (Maxim et al., 2018; Barends & Rousseau, 2018). Recognizing this is essential to assessing the probabilities of success when applying IC principles with a diversified or multicultural team, especially when those involved have partly conflicting goals, limited cognitive capacity, underdeveloped self-schema, or a combination of the three (Young, 2021).

Van Swol et al. (2018) argued that exposure to minority dissent might lower majority members' confidence. It also leads to more systematic processing and reconceptualization of arguments as most members try to resolve the conflict against their viewpoint and pursue a desire for harmony in the group. In the context of IC, strategic decision-making can be explained as a paradigm combination of limited rationality and organizational politics (Wollmann & Steiner, 2017).

## Methodology & Data Analysis

Commencing in late 2020, the research team launched a design-based intervention case study intending to generate insights towards readying the agency, its leaders, and its workforce to adopt EBMgt as an approach to inform better strategic decision-making and improve outcomes on behalf of the American public. Intending to produce insight into the transitioning between System 1 and System 2 thinking, using findings from data to thread interventional changes into subsequent engagements, and to assess individual and team readiness to adopt EBMgt, a design-based, analytic workflow was applied. The analytic workflow included observations of workshops to identify and code indicators of critical thinking. Additionally, heuristic-based questions during interviews with a purposeful sampling of leaders, managers, and employees explored the shared experiences throughout the intervention. Applied nexus analysis and interdiscursivity informed the content in the next phase with a deeper understanding of where shared perspectives aligned and where disconnects existed. In qualitative social research, textural analysis of documents is the process of interpreting physical evidence (e.g., documents, handbooks, training materials, policy guidance) to give voice and meaning to the study topic (Bowen,

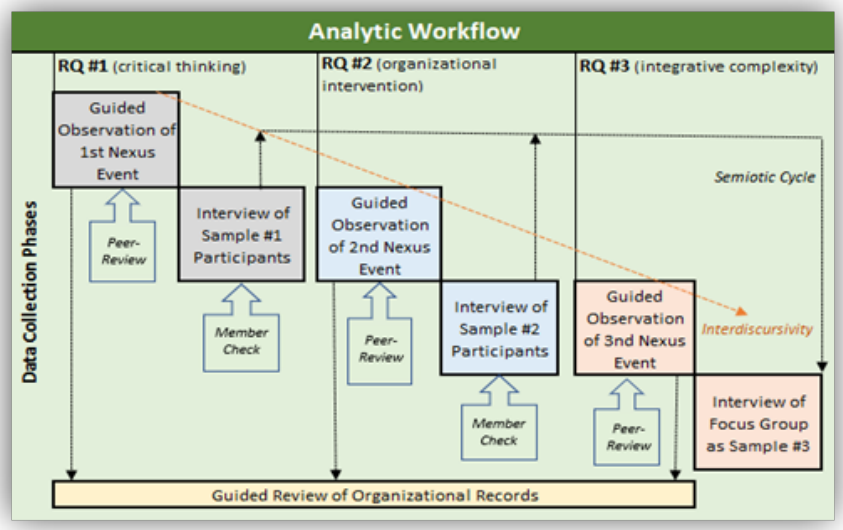
2009). This study capitalized on the advantage of thematic analysis as a form of pattern recognition within organizational documents. Overall, this methodology for data collection and analysis (observation, interview, and textural review of records) formed the analytic workflow. The approach filled gaps otherwise left as unknowns. This effort garnered practitioner insights from the experiences during an organizational intervention, further informing an operationalized framework, helpful less so to academic scholars and more to the consultants, management trainers, and public sector practitioners trying to navigate the abundance of material advocating EBMgt as an organizational capability.

Strategic organizational development interventions are of the utmost importance to create change and improve performance, engendering improved outcomes by an organization through alignment of its people, decisions, and relationships with the external environment (Das & Bhatt, 2016; Kaliappan & Kavitha, 2019; Radaelli et al., 2014; Salkind, 2010). Qualitative studies are often helpful to decision-makers when the established methods determine transferability rather than the generalizability of findings by the intended audience (Munthe-Kaas et al., 2019). Therefore, it is beneficial for researchers to focus on the relevance of the results and the intended audience, recognizing that perhaps all or only some of the findings may be helpful to others in different settings (Mills & Gay, 2019). While determined to serve the American public, practitioners face challenges in seeing the relevance of evidence-based approaches to solving their strategic problems (USGAO, 2019a; 2019b). This study was beneficial through this designed-based case study methodology as an investigation into the complexity of a particular institutional intervention from multiple perspectives. Creswell's (2009) perspective on philosophically pragmatic importance suggests four worldviews: postpositivist, transformative, constructivism, and the fourth, directly applicable to this study, pragmatism, focusing on the consequences of action; that is, being problem-centered, pluralist, and oriented in real-world practice. This perspective aligns with practical action research (Mills & Gay, 2019). This study's data collection plan followed the mediated-discourse analytical pathway linking the semiotic cycle with interdiscursivity relevant to the three research study questions depicted in Figure 1. Data collected from the structured observations during nexus events, labeled as workshops, encompassed the visible indicators of processing skills manifesting as problem-solving, critical thinking, and information processing (Ertel & Solomon, 2014).

This study's research site was a public sector organization in the US federal government, with a target population of nearly 700 personnel geographically assigned across the country. As a senior leader in this organization, the researcher firmly understood this setting's social-cultural context. Such understanding proved beneficial. This organization has created a diverse, inclusive, and educated professional workforce with a tenure average of 19.3 years, ages ranging from 24 to 66 years old, and a gender composition of 39.9 percent female and 60.1 percent male in 2020. Approximately 75% of the management and executive levels hold baccalaureate degrees. This study involved a purposeful sample of 38 members, organized into three groups – the senior leadership team, a representative management team, and an existing employee council serving as a focus group. Applied were three instruments to achieve triangulation, intending to match the significance and relevance of issues, arguments, and perspectives from different angles to generate evidence for findings (Simons, 2009). The instruments were (a) structured nexus-event observations, (b) semi-structured heuristic-based interviews, and (c) the guided review of organizational records. Case study methodology, in particular, is less concerned with confirmation or convergence, whether through different data sources, methods, theories, or researchers, but more so with exploring different perspectives and how they do or do not intersect at a point of nexus (Simons, 2009; Scollon, 2001; Scollon & de Saint-Georges, 2011). The choice of instruments supported nexus analysis. Using methodological interdiscursivity during the nexus engagements, labeled as workshops in this study, was coupled with a reflexive ethnographic application of heuristic questions, as Scollon (2001)

suggests. Ertel and Solomon (2014) further supported the premise of interdiscursivity, advocating the use of interview data as insight to inform agreement and divergence before subsequent nexus engagements. Nexus analysis provided an analytical pathway to explore organizational interventions, the dynamics, and implications in practice, particularly with this case-bound, action-orientated change involving individual and collective learning and mediated organizational adaptation (Dooly, 2017; Hui et al., 2017; Jones et al., 2017; Scollon, 2001).

Figure 1: *Analytic Workflow*




Structured observations were conducted during the workshops to assess the constructs of critical thinking and integrative complexity. The workshops were designed to introduce new mental models, constructs, approaches, and methods of applying evidence-based practices. The observation design overlaid the five scales identified in the Watson-Glaser Critical Thinking Appraisal (WGCTA) to measure critical thinking attributes (Bernard et al., 2008) with Ertel and Solomon's (2014) strategic thinking framework. The intent was to produce a consolidated perspective. Their strategic thinking (ST) framework combines critical thinking and information processing, labeled as processing skills. The eight behaviors associated with strategic and critical thinking aligned with Schwarz's (2017) mutual learning framework used to guide interventions effectively in organizational groups (Edmondson, 2017). The research team identified themes for categorizing individual behaviors consistent with critical thinking and integrative complexity through observational data. Semi-structured heuristic-based interviews were conducted after the workshops to identify unsurfaced critical thinking and integrative complexity episodes. Respondent validation was applied to improve data accuracy, creditability, validity, and transferability.

This data collection accomplished two aims. First, asking heuristic questions to identify semiotic cycles by verifying and making sense or meaning by the participants in the relevant context (Jones et al., 2017; Scollon & de Saint-Georges, 2011), and secondly, filling the gap by asking the participants of their sense of quality achieved during workshop engagements (Jones et al., 2017). With experience not

being directly observable, data about it depends on the participants' ability to reflectively discern aspects of their own experience and communicate what they feel through conversation to explore the dynamic between individuals and situational contexts (Sonday et al., 2020). Participant interview data from respondent-validated transcriptions were analyzed to identify stability, agreement, divergence, and change readiness between participants attending the same facilitated workshop. From the "lived experiences" of interviewees, patterns were identified that led to mediated actions being incorporated into the content of the subsequent workshops.

Guided textural review of organizational records composed priori or posteriori, each workshop offered insights into the phenomenon (Merriam & Tisdell, 2015). As Radaelli et al. (2014) suggested, a multi-level analysis went beyond the focus on the actions, exploring the mutual interactions between individuals, teams, and the organization. Jones et al. (2017) described this as the nexus of practice, wherein recognizing reoccurring linkages of actions by individuals and the ability to adopt those new practices throughout a group.

This ethnographic content analysis was an unobtrusive technique that allowed the researcher to analyze relatively unstructured data for various meanings (Merriam & Tisdell, 2015). This approach is consistent with the interdiscursivity methodology during intervention research (Lobo et al., 2017; Scollon, 2001). Data analysis during intervention research is not left until all data are collected (Jones et al., 2017; Mills & Gay, 2019). This study was structured around nexus analysis, and reflective interdiscursivity resulted in data undergoing collection, research, and application to plan content for subsequent workshops. The process is repeated to identify patterns and categorize themes consistent with critical thinking, organizational intervention, and individual integrated complexity. This approach of applying interdiscursivity contributed toward filling the practitioner and researcher gap (Briner et al., 2009; Hall et al., 2019).

## Findings

Organizational interventions to effect change are messy and disconcerting, yet success can be achieved when orchestrated with clear objectives, boundaries, and systematically applied processes using data. There are added benefits when flexibility fosters exploration and joint discovery by the team and the organization.

The first research question explored the transitions between System 1 and System 2 when facing complex decisions. The participants in this study, seasoned as subject matter experts in many domains, demonstrated little authoritative understanding of the constructs culminating in strategic decision-making when applying the obligation of evidence-informed perspectives and conclusions. This was not surprising and is commonplace in many organizations. One reason was the barrage of volatility, uncertainty, complexity, and ambiguity experienced within the operating environment. Based upon the premise that rational decision-making is limited by the volume of contextually available information, the cognitive limitations of the decision-maker, and the time available to make the decision, findings indicate that a supplemental obligation exists. Often overlooked (or underestimated) is the effort required to pursue better clarity in the context of information, recognize the biases and heuristics that limit cognitive processing, and that time spent on one project results in pulling time from another. The prioritization of attention becomes paramount when considering cognitive load. The study affirmed that when decision-makers are inundated with options for new approaches, whether ranked for optimization or not, they tend to apply heuristics for simplification rather than inquire with colleagues or external sources for clarification. A reluctance to engage in conversations that would surface the scope of their understanding of the basic tenets behind evidence-based practices between participants during the workshops was observed. Observation showed participants were less willing to go broad during nexus events when exploring barriers to interdependent goal setting instead of preferring frames too narrow for impact. In other instances, the structure was too broad,

resulting in generalizations being distracting and derailing focus. As a result, few indications of systems thinking while new mental models and schemas were being generated, little synthesis having accepted new ideas from other sources and forming new stories (indicators of substantial integrative complexity), and inferences were accepted without discrimination. In subsequent interviews, participants confirmed these conclusions. The second question examines how a leader's readiness can be assessed and modulated to adopt evidence-based management and integrate it into routine practices. This research supported the premise that an individual's capacity and capability to differentiate multiple dimensions and perspectives about an issue and then synthesize any conceptual connections among the differentiated characteristics, when integrated, can contribute to supporting multidimensional processes such as the EBMgt framework. In this case, evidence shows a pattern of missed opportunities to collect new data, insights, and perspectives, cultivating newly acquired information into a synthesized, broadened, and deepened perspective. Furthermore, the findings highlighted individual inferences and assumptions playing a significant role when participants assessed the extent to which they would participate in the organization's stages of development and implementation. Defined as the conclusion made about something unknown based upon what was known (Schwarz, 2017), inferences around degrees of applied integrative complexity posed a substantial challenge for both process and content inferences within this population. Lastly, exploring a structured organizational intervention, or change management approach, to effect benefit when setting out to integrate evidence-based management practices leading to strengthening strategic decision-making.

## Recommendations for Practice

Introducing and adopting evidence-based practices can form a new organizational strategy for the future. To that end, enabling recommendations are offered: (1) Emphasize the benefits achieved beyond the process. Throughout the journey, trust becomes pivotal. (2) A deep pool of potential evidence is urged before generating solutions to a strategic-level challenge while recognizing that evidence alone will not persuade others. Those introducing evidence must remain mindful, looking for indicators of offended colleagues–those who perceive their intuitiveness, competence, or intelligence as being undermined or challenged. The new evidence should be presented in such a way as to legitimize their change in rational judgment. Scaffolding and nudging during engagements can improve understanding. (3) Implementation of evidence-based practices should begin with a baselining of existing skills and understanding of those leaders expected to make sense of EBMgt. Building individual and group training and experiential organizational learning activities are recommended once a baseline understanding is established. (4) Findings confirmed that when people apply assertive inquiry (or mutual learning behaviors), they can overcome cognitive inhibition. An organization's culture becomes primed to absorb EBMgt as a strategic routine when those practices surface during the engagement. Examples include sharing personal perspectives, asking genuine questions, conveying all relevant information, explaining reasons and intentions, and testing assumptions and inferences. Structured strategic discussions lead to strategic outcomes; it is not by happenstance. (5) The widespread lack of knowledge in scientific methodological research continues to plague most practitioners. Formal instruction and experiential learning can be helpful but only to the extent necessary for leaders to understand their obligations and for employees to see an application to their work. Otherwise, voluntary participation in expanded training opportunities is adequate. Benefits are gained when the culture begins accepting rigorous evidence to address irrelevant data, improve interpretation from the best data, boost critical thinking by the team, and facilitate higher caliber intuitiveness by subject matter experts. (6) The analysis found the benefit of one-on-one semi-structured, heuristic-based interviews with randomly sampled leaders to understand how they are making meaning during the shared experience of the change management effort. The heuristic approach identified

gaps, excessive overlap, agreement, and divergence. Managing the intervention by applying the analytical path of intervention research workflow proved beneficial as a change management model. (7) Senior leaders and those facilitating the implementation of the new EBMgt framework should restrain the urge to express their perception at the outset, which is likely to be perceived as the "right answer" by subordinate leaders and followers. The recommendation is to pause, allowing others to express their perceptions first. As the evolution of EBMgt practices becomes more prevalent, that senior leader's initial impression may be altered upon hearing better evidence, and the minority voice may surface. It is about nudging and choice architecture. (8) In their de facto role as subject matter experts, leaders are increasingly unaware of external forces breaching their spheres of expertise. Examples of those external forces include technology, new regulations, and advanced approaches to analysis. Such a condition imposes risk and diminished effectiveness when leaders assume the breadth and depth of their expertise without realizing other expert domains have crept into their praxis. Additionally, time pressures and other cognitive interference adversely impact the fuller benefit of deliberative, critical thinking during strategic discussions. However, challenges can be overcome with assistance from experts in other domains. It takes more than just thinking critically about critical issues.

## Conclusions

It is commonly stated that qualitative studies offer relevance and usefulness to decision-makers; however, often missing are established methods to assess the transferability instead of the generalizability of findings by practitioners. A benefit of this study was the focus on the relevance of the results and the intended audience, recognizing that perhaps all or only some of the findings may be helpful to colleagues in other fields. Practitioners face a challenge in seeing the relevance of evidence-based approaches to solving their strategic problems. Through a designed-based case study methodology as an investigation from multiple perspectives into the complexity and novelty of a particular institutional intervention, this study was beneficial. The blending of the researcher and practitioner roles overcame the difficulties in transforming a perceived academic framework into a pragmatic approach. For this reason, this applied, intrinsic case study emphasized the transferability of evidence-based management insights into the practicing community. One reason for a qualitative case study preference over a quantitative methodology is the likely threat to validity attributed to history and the lack of operational control over activities occurring in real time. Such a state means a potential impact on variable performance, adding selection threat with established sample groups serving as existing teams performing at various maturity levels that change over time. This particularistic, descriptive case study research relied heavily on qualitative data to understand how the leaders and management teams in this federal public sector organization underwent an organizational intervention to build capacity in determining the level of rationality needed to render the most effective, evidence-based decisions. These findings identified how their lived experience contributed to assessing the extent to which practices in EBMgt could support better decision outcomes. Having identified an approach for establishing a state of capability and readiness to adopt the EBMgt framework elements, it also answered the literature calling for an empirically validated organizational intervention strategy achieved via improved collaboration and understanding with agency leadership, enabling the implementation of evidence-based management. Practitioners would benefit from further research into the factors and practices supporting individual and team adoption of mutual learning approaches that would bolster collective integrative complexity. In summary, this research provided an understanding of how leadership teams can determine the requisite level of rationality needed to render the most effective evidence-based strategic decisions, identified how the "lived experience" contributed to a successful intervention of the EBMgt framework, and offered a process for establishing the state of the capability to adopt the EBMgt framework beneficial for improved decisions and organizational outcomes

## About the author

With a federal career spanning 27 years, Dr. Robert Alan Young is a senior advisor for the US Department of Transportation's Federal Aviation Administration in Washington, DC. His applied doctorate (Ed.D.) in the Leadership & Professional Practice track focused on researching public sector organizational development and evidence-based management. Bob was recently appointed as a research adviser at Trevecca Nazarene University's School of Leadership & Interdisciplinary Studies, specializing in qualitative research. He is the Managing Partner at the Baypointe Analytics Group, LLC, providing corporate clients with independent service-level assessments to evidence compliance with internal controls and delivery of branded services. Bob can be reached at rayoung@trevecca.edu or by visiting LinkedIn.

## Bibliography


Abildgaard, J. S., Saksvik, P. O, & Nielsen, K. (2016). How to measure the intervention process? An assessment of qualitative and quantitative approaches to data collection in evaluating organizational interventions. *Frontiers in Psychology, 7.* https://10.3389/fpsyg.2016.01380

Aust, B., Rugulies, R., Finken, A., & Jensen, C. (2010). When workplace interventions lead to negative effects: learning from failures. *Scandinavian Journal of Public Health, 38*, 106–119. https://doi.org/10.1177/1403494809354362

Baker-Brown, G., Ballard, E. J., Bluck, S., DeVries, B., Suedfeld, P., & Tetlock, P. E. (1992). The conceptual/integrative complexity scoring manual. In C. Smith (Ed.), *Motivation and personality: Handbook of thematic content analysis*. Cambridge University Press

Bakken, B. E. (2008). On improving dynamic decision-making: Implications from multiple-process cognitive theory. *Systems Research & Behavioral Science, 25*(4), 493-501. https://doi.org/10.1002/sres.906

Barends, E., & Rousseau, D. M. (2018). *Evidence-based management: How to use evidence to make better organizational decisions*. Kogan Page Limited.

Battaglio, R. P., & Hall, J. L. (2020). Exploring the Frontiers of Administrative Behavior. *Public Administration Review*, *80*(1), 6–8. https://doi-org/10.1111/puar.13148

Behn, R. D. (2003). Why measure performance? Different purposes require different measures. *Public Administration Review 63*(5), 586–606.

Bernard, R. M., Zhang, D., Abrami, P. C., Sicoly, F., Borokhovski, E., & Surkes, M. A. (2008). Exploring the structure of the Watson–Glaser Critical Thinking Appraisal: One scale or many subscales? *Thinking Skills and Creativity, 3*(1), 15-22. https://https://doi.org/10.1016/j.tsc.2007.11.001

Bosman, M. (2015a). *Leadership climate, attitudes, and evidence-based management behavior* (Publication No. 1853893220) [Doctoral Dissertation, Oklahoma State University]. ProQuest Dissertations & Theses Global.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Briner, R. B., Denyer, D., & Rousseau, D. M. (2009). Evidence-based management: Concept cleanup time? *Academy of Management Perspectives, 23*(4), 19-32. https://doi.org/10.5465/AMP.2009.45590138

Capelo, C., & Dias, J. F. (2009). *A feedback learning and mental models perspective on strategic decision making*. Springer Nature BV https://doi.org/10.1007/s11423-009-9123-z

Cherry, K. (2019). The Role of a Schema in Psychology. *Very Well Mind*. https://www.verywellmind.com/what-is-a-schema-2795873

Cohen, D. J. (2007). The very separate worlds of academics and practitioners in human resources management: Reasons for the divide and concrete solutions for bridging the gap. *Academy of Management Journal, 50*(5), 1013–1019.

Creswell, J. W. (2009). Research design: Qualitative, quantitative, and mixed methods. (3rd ed.). Sage Publications

Czarniawska-Joerges, B. (2007). *Shadowing and Other Techniques for Doing Fieldwork in Modern Societies*. Copenhagen Business School Press.

Das, S., & Bhatt, D. (2016). Strategic organizational development interventions: A case of Microsoft Corp. *International Journal of Current Research, 8*(9), 39519-39523.

Davis, G. F. (2015). Editorial essay: What is organizational research for? *Administrative Science Quarterly, 60*(2), 179–188. https://10.1177/0001839215585725

Del Junco, J. G., De Reyna Z. R., & Álvarez de Perea, J. G. (2010). Evidence-based administration for decision-making in the

framework of strategic knowledge management. *The Learning Organization, 17*(4), 343-363. https://doi.org/10.1108/09696471011043108

Dooly, M. (2017). *A mediated discourse analysis (MDA) approach to multimodal data*. Research-publishing.net. https://doi.org/10.14705/rpnet.2017.emmd2016.628

Edmondson, A. C. (2017). *Review: The skilled facilitator*. Jossey-Bass. https://www.amazon.com/Skilled-Facilitator-Comprehensive-Consultants-Facilitators/dp/reviews

Ertel, C., & Solomon, L. K. (2014). *Moments of impact: How to design strategic conversations that accelerate change*. Simon & Schuster.

Fleming, J., & Rhodes, R. (2018). Can experience be evidence? Craft knowledge and evidence-based policing, *Policy & Politics, 46*(1), 3–26. https://doi.org/10.1332/030557317X14957211514333

Gardikiotis, A. (2011). Minority influence. *Social and Personality Psychology Compass, 5*(9), 679-693. https://doi.org/10.1111/j.1751-9004.2011.00377.x

Getenet, S. (2019). Using design-based research to bring partnership between researchers and practitioners. *Educational Research, 61*(4), 482-494. https://doi.org/10.1080/00131881.2019.1677168

Gill, C. (2018). Don't know, don't care: An exploration of evidence-based knowledge and practice in human resources management. *Human Resource Management Review, 28*(2), 103–115. https://doi.org/10.1016/j.hrmr.2017.06.001

Glaser, B. G., & Strauss, A. L. (1999). *The discovery of grounded theory: Strategies for qualitative research*. Aldine Transaction.

HakemZadeh, F., & Baba, V. V. (2016). Toward a theory of collaboration for evidence-based management. *Management Decision, 54*(10), 2587-2616. http://doi.org/10.1108/MD-06-2015-0243

Hall, H., Cruickshank, P., & Ryan, B. (2019). Closing the researcher-practitioner gap. *Journal of Documentation, 75*(5), 1056–1081. https://doi.org/10.1108/JD-12-2018-0212

Head, B. W. (2015). Toward more "evidence-informed" policy making? *Public Administration Review, 76*(3), 472–484. https://doi.org/10.1111/puar.12475

huiHudson, C. G. (2009). Decision making in evidence-based practice: Science and art. *Smith College Studies in Social Work, 79*(2), 155–174. https://doi.org/10.1080/00377310902832334

Huggins, J. H. (2019). *Developing an organizational decision-making model: The impact of organizational structures, decision types, and the social network* (Publications No. 236195766) [Doctoral Dissertation, Mississippi State University]. ProQuest Dissertations & Theses Global.

Hughes, T., O'Regan, N., & Wornham, D. (2008). The credibility issue: Closing the academic/practitioner gap. *Strategic Change, 17*(7), 215.

Hui, A., Schatzki, T., & Shove, E. (2017). *The nexus of practices: Connections, constellations, practitioners.* Routledge.

Jackson, N. C., & Leung, O. M. C. (2018). Evidence-based management for today's "ambidextrous" organizations. *Strategy & Leadership, 46*(4), 28-36. https://doi.org/10.1108/SL-03-2018-0027

Jones, O., Gold, J., & Claxton, J. (2017). A little less conversation, a little more action: Illustrations of the mediated discourse analysis method. *Human Resource Development Quarterly, 28*(4), 481–513. https://doi.org/10.1002/hrdq.21289

Kahneman, D., & Klein, G. (2009). Conditions for intuitive expertise: A failure to disagree. *The American Psychologist, 64*, 515-26. https://doi.org/10.1037/a0016755

Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus, and Giroux.

Kaliappan, P., Kavitha, F. (2019). Effect of OD interventions on building high-performing teams. *International Journal of Innovative Technology*

*and Exploring Engineering, 9*(1), 554-556. https://doi.org/10.35940/ijitee.L2807.119119

Kaplan, A. (1998). *The conduct of inquiry*. Transaction Publishers.

Learmonth, M., & Harding, N. (2006). Evidence-based management: The very idea. *Public Administration, 84*, 245–66.

Lobo, M. A., Kagan, S. H., & Corrigan, J. D. (2017). Research design options for intervention studies. *Pediatric Physical Therapy, 29 Suppl 3 Supplement, IV Step 2016 Conference Proceedings*, S57-S63. https://doi.org/10.1097/PEP.0000000000000380

Leedy, P. D., & Ormrod, J. E. (2010). *Practical research* (9th ed.). Pearson.

Martelli, P. F. (2012). *An argument for knowledge variety in evidence-based management* (Publication No. 1322974492) [Doctoral Dissertation, University of California, Berkeley]. ProQuest Dissertations & Theses Global.

Martelli, P. F., & Tuna, C. H. (2018). Three perspectives on evidence-based management: Rank, fit, and variety. *Management Decision, 56*(10), 2085-2100. https://doi.org/10.1108/MD-09-2017-0920

Maxim, P. S., Garis, L., Plecas, D., & Davies, M. (2018). *The right decision: Evidence-based decision making for government professionals.* https://doi.org/10.13140/RG.2.1.4649.0969

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation* (4th ed.). John Wiley & Sons.

Mills, G. E., & Gay, L. R. (2019). *Educational research: Competencies for analysis and applications*. Sage Publications.

Morrell, K., & Learmonth, M. (2015). Against evidence-based management, for management learning. *Academy of Management Learning & Education, 14*(4), 520–533. https://doi.org/10.5465/amle.2014.0346

Morrell, K. (2008). The narrative of 'evidence-based' management: A polemic. *The Journal of Management Studies, 45*(4), 613. https://doi.org/10.1111/j.1467-6486.2007.00755.x

Munthe-Kaas, H., Nokleby, H., & Nguyen, L. (2019). Systematic mapping of checklists for assessing transferability. *Systematic Reviews, 8*(1), 22. https://10.1186/s13643-018-0893-4

Nielsen, K., and Randall, R. (2009). Managers' active support when implementing teams: the impact on employee well-being. *Applied Psychological Health and Well Being, 1*, 374-390. https://doi.org/10.1111/j.1758-0854.2009.01016.x

Nielsen, K., and Randall, R. (2012). The importance of employee participation and perceptions of changes in procedures in a teamworking intervention. *Work Stress, 26*, 91-111. https://doi.org/10.1080/02678373.2012.682721

Nielsen, K., Randall, R., & Albertsen, K. (2007). Participants' appraisals of process issues and the effects of stress management interventions. *Journal of Organizational Behavior, 28.* 793-810. https://doi.org/10.1002/job.450

Nooraie, M. (2008). Decision magnitude of impact and strategic decision-making process output: The mediating impact of the rationality of the decision-making process. *Management Decision, 46*(4), 640–655. https://doi.org/10.1108/00251740810865102

O'Reilly, C., & Tushman, M. L. (2013). Organizational ambidexterity: Past, present, and future. *Academy of Management Perspectives, (27)*4, 324–338.

Padesky, C. A. (1994). Schema change processes in cognitive therapy. *Clinical Psychology and Psychotherapy, 1.* 267–278. https://doi.org/10.1002/cpp.5640010502

Porter, M. E., Kaplan, R. S., Kahneman, D., & Martin, R. L. (2017). *HBR's 10 must reads 2018: The definitive management ideas of the year from Harvard Business Review.* Harvard Business Review Press.

Priest, S., & Gass, M. (2017). *Effective leadership in adventure programming, 3E*. Human Kinetics.

Radaelli, G., Guerci, M., Cirella, S., & Shani, A. B. (2014). Intervention research as management research in practice: Learning from a case in the fashion design industry. *British Journal of Management, 25*(2), 335-351. https://doi.org/10.1111/j.1467-8551.2012.00844.x

Rousseau, D. M. (2005). Is there such a thing as evidence-based management? *Academy of Management Review, 31*(2), 256-269.

Rynes, S. L., & Bartunek, J. M. (2017). Evidence-based management: Foundations, development, controversies, and future. *Annual Review of Organizational Psychology and Organizational Behavior, 4*(1), 235–261. https://doi.org/10.1146/annurev-orgpsych-032516-113306d

Rynes, S. L., Giluk, T. L., & Brown, K. C. (2007). The very separate worlds of academic and practitioner publications in human resource management: Implications for evidence-based management. *Academy of Management Journal, 50*, 987–1008.

Salkind, N. J. (2010). *Encyclopedia of research design*. Sage Publications. https://doi.org/10.4135/9781412961288

Sarta, A., Durand, R., & Vergne, J. (2020). Organizational adaptation. *Journal of Management 47*(1), 43-75. https://doi.org/10.1177/0149206320929088

Scollon, R. (2001). *Mediated discourse: The nexus of practice.* Routledge.

Scollon, S. W., & de Saint-Georges, I. (2011). Mediated discourse analysis. In J. P. Gee, & M. Handford (Eds.), *The Routledge handbook of discourse analysis*. Routledge.

Schwarz, R. (2017). *The skilled facilitator: A comprehensive resource for consultants, facilitators, coaches, and trainers*. Jossey-Bass.

Shanteau, J. (1992). Competence in experts: The role of task characteristics. *Organizational Behavior and Human Decision Processes, 53*(2), 252–266. https://doi.org/10.1016/0749-5978(92)90064-E

Simons, H. (2009). *Case Study Research in Practice*. Sage.

Simon, M. K., & Goes, J. (2018). *Dissertation & scholarly research: Recipes for success*. Dissertation Success, LLC.

Sleboda, P., & Sokolowska, J. (2017). Measurements of rationality: Individual differences in information processing, the transitivity of preferences and decision strategies. *Frontiers in Psychology, 8*, 1844. https://doi.org/10.3389/fpsyg.2017.01844

Sohrabi, Z., & Zarghi, N. (2015). Evidence-Based Management: An Overview. *Creative Education, 6*, 1776-1781. http://doi.org/10.4236/ce.2015.616180

Sonday, A., Ramugondo, E., & Kathard, H. (2020). Case study and narrative inquiry as merged methodologies: A critical narrative perspective. *International Journal of Qualitative Methods, 19*. https://doi.org/10.1177/1609406920937880

Stoker, G., & Evans, M. (2016). *Evidence-based policy making in the social sciences*. Policy Press.

Suedfeld, P. (1985). APA presidential addresses: The relation of integrative complexity to historical, professional, and personal factors. *Journal of Personality and Social Psychology, 49*(6), 1643. *(1) (PDF) Integrative Complexity*. Available from: https://www.researchgate.net/publication/331641271_Integrative_Complexity [accessed Nov 14, 2022].

US Government Accountability Office. (2019a). *Improving program management: Key actions taken, but further efforts are needed to strengthen standards, expand reviews, and address high-risk areas*. (GAO Report No. 20-44). https://www.gao.gov/assets/710/703235.pdf

US Government Accountability Office. (2019b). *Evidence-based policymaking*. (GAO Report No. 20-1190). https://www.gao.gov/assets/710/702997.pdf

Van Swol, L. M., Carlson-Hill, C. L., & Acosta Lewis, E. E. (2018). Integrative complexity,

participation, and agreement in group discussions. *Small Group Research, 49*(4), 409–428. https://doi.org/10.1177/1046496418755510

Weiss, C. H., & Bucavalas, M. J. (1981). *Social science research and decision-making*. Columbia University Press.

Wollmann, D., & Steiner, M. T. A. (2017). The strategic decision-making as a complex adaptive system: A conceptual scientific model. *Complexity, 2017*. https://doi.org/10.1155/2017/7954289

Wright, A. L., Zammuto, R. F., Liesch, P. W., Middleton, S., Hibbert, P., Burke, J., & Brazil, V. (2016). Evidence-based management in practice: Opening up the decision process, decision-maker, and context. *British Journal of Management, 27*(1), 161–178. https://doi.org/10.1111/1467-8551.12123

Young, R. A. (2022, June 27). Using the interdisciplinary lens to improve public sector strategy. *American Society for Public Administration*. Patimes.org.

Young, R. A. (2021). *Improving strategic decision-making with evidence-based management: A public sector case study*. (Publication No. 28715553) [Doctoral Dissertation, Trevecca Nazarene University]. ProQuest Dissertations and Theses Global.