ABSTRACT

Title of Dissertation: THE UNDEREXPLOITED FRONTIER OF BUSINESS INTELLIGENCE: LEVERAGING ACADEMIC RESEARCH EVIDENCE FOR MANAGEMENT DECISION-MAKING

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This systematic review explores factors that influence practitioner use of academic research evidence in management decision-making. Academic research utilization is likely to improve organizational outcomes, but it is often the least used source of evidence in management decision-making. This review provides recommendations for management practitioners to facilitate the organizational adoption of evidence-informed decision-making (EIDM). A theory of change for EIDM adoption is proposed, based on implementation science and theories of innovation, behavior, culture, and change management. Ten findings of high and moderate confidence levels emerged from a thematic synthesis of 29 critically appraised studies. Based on these findings, major factors that influence EIDM uptake by management practitioners include research-practice alignment and engagement, practitioner purpose behind evidence utilization, use of knowledge brokers, leader and peer support, organizational learning culture, time management, organizational structure, resources, and practitioner research skills. Five recommendations for practice are proposed: (1) introduce EIDM to the organization, (2) promote a learning culture, (3) develop the organizational structure and resources, (4) provide research engagement experiences, and (5) facilitate dissemination and demonstration of evidence. Additionally, a capability maturity model is proposed to help practitioners diagnose organizational readiness for EIDM implementation and prescribe actions to facilitate adoption. This dissertation strengthens the evidence base for evidence-based management (EBMgt) and fills knowledge gaps about the process of using

scientific research in management practice. This study clarifies the relationships between barriers and facilitators to evidence use, the decision-making environment, and strategies for implementing EIDM. Scholars are encouraged to bridge the research-practice gap by publishing research that is more accessible and relevant to management practitioners, cultivating relationships with practitioners, and teaching EBMgt to management students. Researchers are invited to further develop this research by conducting effect studies of the factors that influence EIDM uptake and refining the proposed maturity model.

Keywords: evidence-based management, evidence-informed decision-making, implementation science, management practitioners, maturity model, research utilization, systematic review.

THE UNDEREXPLOITED FRONTIER OF BUSINESS INTELLIGENCE: LEVERAGING ACADEMIC RESEARCH EVIDENCE FOR MANAGEMENT DECISION-MAKING

By

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Dedication

I would like to dedicate this dissertation to my wife Brenir and my children Breanne, Brigette, and Julian. I am grateful for their support, patience, and love as I worked through my doctoral studies and dissertation. My wife was especially supportive in helping me think through ideas for this dissertation and in caring for our family's needs while I was studying. I am deeply appreciative of the sacrifices my family made to make it possible for me to complete this doctoral journey. It would have been very difficult to complete this dissertation without their support.

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List of Abbreviations

AMO = ability, motivation, opportunity

CEBMa = Center for Evidence-Based Management

CERQual = Confidence in the Evidence from Reviews of Qualitative Research

COM-B = capability, opportunity, motivation, behavior

EBMed = evidence-based medicine

EBMgt = evidence-based management

EBP = evidence-based practice

EIDM = evidence-informed decision-making

EPPI Centre = Evidence for Policy and Practice Information and Co-ordinating Centre

ESI = empirically-supported intervention

HR = human resource

HRM = human resource management

PICOC = population, intervention, comparison, outcome, context

PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses

SME = subject matter expert

UMGC = University of Maryland Global Campus

WoE = weight of evidence

Chapter 1: Introduction and Overview of the Management Problem

Whether one is looking to purchase a household item or make a million-dollar business deal, people often search for reviews on products and services before making a purchase. Such reviews constitute evidence. While the validity and reliability of different sources of evidence may vary, people use evidence to make decisions every day, most of the time without considering the word evidence. On the other hand, the coronavirus pandemic has recently demonstrated the devastating effects of people not making evidence-based decisions, either due to anti-science attitudes, carelessness, lack of awareness, or political motives. Regardless of one's views, ignoring evidence often results in negative consequences, and making decisions based on good quality evidence often results in beneficial outcomes.

Using academic research evidence in management practice is likely to lead to better business decisions and outcomes. For example, several studies have demonstrated how applying academic research evidence can help organizations improve productivity, reduce costs, and increase profits (Glaub et al., 2014; Jepsen & Rousseau, 2019; Tucker, 2014). However, academic evidence is too often underexploited by management practitioners. Essentially, "billions of dollars are 'left on the table' or even wasted when managers" ignore evidence-based business practices and make decisions based on less reliable sources of evidence (Olivas-Luján & Arreguín, 2008, p. 13). Thus, leveraging academic evidence in management decision-making is likely to benefit organizations in today's competitive business environment.

This dissertation examines the factors that influence the use of academic research evidence in management decision-making. This study identifies practical recommendations managers can implement to profit from this rich source of underexploited reliable evidence available in the public domain. Such business intelligence may add significant value to management decision-making and lead to outcomes that advance the organization's interests.

Background and Overview

Saving lives is worth a relentless search for evidence. This cause gave birth in the early 1990s to a movement to use the best available evidence in medical practice. Pioneers of this evidence-based medicine (EBMed) movement defined it as "the conscientious, explicit, and judicious use of current best

evidence [both clinical and external] in making decisions about the care of individual patients" (Sackett et al., 1996, p. 71). Briner (2019) further elaborated that evidence-based practitioners make a conscientious effort to identify the best available evidence, explicitly describe the evidence on which their claims are based, and are judicious in critically appraising the quality of the evidence. Such rigor mutually enhances the quality of practice and the credibility of practitioners.

The EBMed movement inspired the adoption of evidence-based practice (EBP) in other disciplines. This movement led to scholar-practitioner collaborations to promote EBP, and to develop and share evidence summaries to inform more effective decision-making. The first of these collaborations, formed in 1993, were the Cochrane Collaboration for the medical discipline, and the Evidence for Policy and Practice Information and Co-ordinating (EPPI) Centre for public policy. The Campbell Collaboration was founded in 2000 to promote EBP in the social sciences, and the Center for Evidence-Based Management (CEBMa) in 2007 for the management discipline. A Google search for *evidence-based center* resulted in numerous similar collaborations in various fields.

EBMed led to numerous improvements in health, which helped patients recover faster, improved hospital safety, and ultimately saved more lives (Academy of Medical Royal Colleges, 2013). Similar contributions of EBP abound in other disciplines, including aviation safety, nursing, athletic training, and social work (Courtright et al., 2012; Irwin et al., 2013; Welch et al., 2014; Wike et al., 2014). Lessons from EBMed have taught management practitioners, for example, that even a small business with 50 employees can save approximately $11,250 per year in health-related employee costs by investing $150 per employee into a formal wellness program (Tucker, 2014). EBP in the management discipline is often referred to as evidence-based management (EBMgt). Management practitioners have also reaped the benefits of EBMgt, including improvements to customer service, product quality, operational efficiency, and increased revenue (Pfeffer & Sutton, 2006a).

EBMgt combines the best available evidence from multiple sources, including practitioner expertise, organizational data, stakeholder perspectives, and scientific research to inform management

practice through a heterogeneous evidence synthesis (Briner et al., 2009). Barends and Rousseau (2018) break out the EBMgt process into six-step known as the six As, in which practitioners:

1. *ask* a focused question,
2. *acquire* evidence from multiple sources to answer the question,
3. *appraise* the quality of the evidence,
4. *aggregate* the evidence to form findings,
5. *apply* those findings into practice,
6. *assess* the results of their evidence-based decisions.

Besides enhancing the rigor, relevance, and transparency of decisions, EBMgt can help organizations promote greater accountability, deal more effectively with manager criticism, and dispel misinformation (Center for Evidence-Based Management, 2013). EBMgt can promote greater inclusion and equality in the workplace and narrow the opportunity gap for disadvantaged professionals, including women and minorities (Olivas-Luján & Arreguín, 2008). Good quality evidence helps managers overcome the rational limitations and biases involved in making decisions based on personal experience alone (Barends et al., 2014). EBMgt can help managers fill knowledge gaps, produce insights, and make "faster and better decisions with less risk" (Pfeffer, 2010, Ch. 4). Thus, the greater rigor, relevance, and transparency that comes with evidence-based decisions is likely to benefit organizations in various ways.

Problem Statement and Significance of the Problem

While many scholars embraced the opportunity to enhance the rigor and relevance of management research through EBMgt, most practitioners have not been as enthusiastic or even aware of EBMgt (Barends et al., 2012; Tranfield et al., 2003). More particularly, management practitioners rarely use academic research evidence for decision-making. In practice, there is still a heavy reliance on personal experience, casual benchmarking, tradition, and assumptions for decision making, rather than research and facts (Buckley et al., 2015; Pfeffer & Sutton, 2006b). For example, numerous studies since 2002 continue to demonstrate that human resource (HR) managers' beliefs about practice do not align with research evidence (Bezzina et al., 2017; Carless et al., 2009; Rynes et al., 2002). Giluk and Rynes-

Weller (2012) researched reasons management practitioners resist using academic research, which included a distrust of science and statistics, fear of politicization by special interests, and resistance to change. These researchers also found that practitioners are reluctant to use research findings that contradict personal experience, are perceived as threatening, or are not supported within their practice context.

The rise of EBMed navigated similar barriers that can provide useful lessons to the emerging EBMgt in establishing an evidence base for its effectiveness, changing organizational cultures and practices, and avoiding misuse for political purposes (Giluk & Rynes-Weller, 2012). Academics acknowledge that overcoming the research-practice gap requires increasing the relevance of management research for practitioners (Das, 2003; Lawler, 2007). However, implementing EBMgt is not as simple as applying the lessons learned from EBMed.

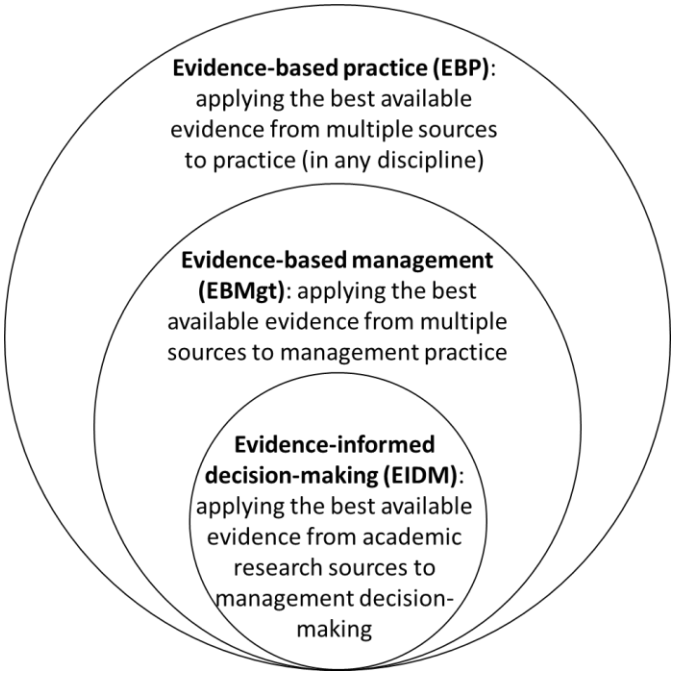
Walshe and Rundall (2001) explained that in contrast to the medical field, management culture, practice, and decision-making processes rely less on research evidence. Management practitioners generally lack awareness of and access to academic research. Furthermore, the management discipline is less objective, has less-developed research, and does not have standardized professional requirements (Rynes & Bartunek, 2017). Action research has demonstrated that evidence-based practices that do not require practitioners to directly use scientific literature can be operationalized by traditionally intuitive decision-makers. For example, as a result of participating in entrepreneurship training based on research evidence on personal initiative, small business owners in Uganda experienced positive business outcomes, including an increase in profits (Glaub et al., 2014).

The problem addressed in this dissertation is that managers are less likely to seek out academic research than other evidence sources for decision-making (Barends et al., 2017; Liang et al., 2011a; Rynes et al., 2002). Thus, while EBMgt considers evidence from four general sources (research, organizational, practitioner, and stakeholder), this dissertation focuses on practitioner use of academic research evidence, which is one form of research evidence. More specifically, the use of academic research evidence in management decision making is addressed. While evidence-informed decision-

making (EIDM) generally refers to the application of EBP to decision-making, in this study EIDM is used to refer specifically to the use of academic research evidence in management decision-making. Figure 1 illustrates the scope of EBP terminology used in this dissertation.

Figure 1

Scope of Evidence-Based Practice (EBP) Terminology in This Dissertation



Purpose of the Study and The Research Question

The purpose of this dissertation is to explore factors that influence EIDM, or the use of academic research evidence in management decision-making. Understanding such factors may help identify interventions to overcome barriers to EIDM. Implementing such interventions may facilitate academic evidence utilization among management decision-makers.

This dissertation is executed through a systematic review involving a thematic synthesis of evidence. Gough, Stewart, and Tripney (2017) argued for the value of systematic reviews as "the first research products sought" by both "academics planning new research" and "policy and practice professionals using research to inform decisions" (pp. 282-283). A systematic review is suitable for addressing the purpose of this research because this methodology can be used to synthesize evidence from

multiple research methods, including qualitative, quantitative, and mixed methods. This nimble character of systematic reviews facilitates the synthesis of the best available evidence from multiple sources for addressing a practical management problem.

The research question for this review is: *What factors influence practitioner use of academic research evidence in management decision-making?*

As mentioned previously, the scope of the term EIDM is narrowly defined in this dissertation as the use of academic research in management decision-making. However, the term EIDM was not used in the research question to prevent reader misinterpretation with a broader scope of definition involving multiple sources of evidence. Throughout this dissertation, the term EIDM will be used interchangeably to denote the use of academic research evidence in management decision-making.

The PICOC logic (population, intervention, comparison, outcome, context) informed the development of the research question and methodology for this review (Barends & Rousseau, 2018). The target population is management practitioners. While a specific intervention is not employed in this exploratory study, interventions that promote EIDM are sought, including diffusion, behavioral, and cultural interventions. A comparison is made between facilitators and barriers relative to EIDM implementation. The desired outcome is the practitioner's use of academic research evidence within the context of management decision-making in all sectors and geographic locations for which evidence is available.

Rationale for the Study

In the opening of their textbook on EBMgt, Barends and Rousseau (2018) declared, "we have a moral obligation to use the best available evidence when making a decision" because management practitioners in all industries affect many lives (p. 1). This dissertation identifies ways to make EIDM easier for management practitioners by examining determinants of EIDM and potential solutions. This study synthesizes relevant and practical recommendations for leaders and managers to harness the power of research evidence to improve organizational outcomes. Furthermore, the findings and recommendations of this study provide practitioners tools to further the organization's ability to become

more evidence-based. As a systematic review, this dissertation provides a single source for the best available evidence that management practitioners can trust, rather than relying on individual studies.

This dissertation also furthers academic research on the broader topic of EBMgt. Some scholars have criticized EBMgt for lacking sufficient empirical evidence to support its rhetoric (Reay et al., 2009). Indeed, eight years after this critique, only about 20% of the current EBMgt literature was found to be empirical (Rynes & Bartunek, 2017). Scholars have called for "a moratorium on further 'opinion' pieces about EBMgt, instead focusing on producing more systematic reviews and high-quality empirical work" (Rynes & Bartunek, 2017, p. 252). In particular, "the systematic study of the process from research production to research use is a relatively new and emerging field of study" (Gough, Stewart, & Tripney, 2017, p. 288). As a result, there is a gap in knowledge about the process of using scientific research, including its facilitators and barriers, its relation to the decision-making environment, and implementation strategies (Gough, Stewart, & Tripney, 2017). This study contributes to the evidence base for EBMgt in these areas.

Scholars have considered academic evidence use through different theoretical approaches, including organizational culture, behavioral science, and innovation diffusion (Potworowski & Green, 2012; Denise M. Rousseau & Gunia, 2016; Speicher-Bocija & Adams, 2012). This dissertation brings these theoretical lenses together within the context of implementation science and organizational change management to consider a comprehensive theoretical framework for understanding EIDM adoption. Furthermore, a capability maturity model is proposed as an operational model to aid practitioners in facilitating EIDM adoption within their organizations.

Discussion of Concepts

Key concepts relative to the research question and purpose of this study include academic research evidence, management practitioners, management decision-making, and academic research evidence use in management decision-making. Academic research evidence refers to scientific or scholarly research primarily published in academic journals, although gray literature sources may also contain academic evidence. For example, academic research is often disseminated through conferences,

books, trade journals, and professional institutions, which may be more practitioner-friendly sources. Academic research evidence is distinguished from other sources, such as organizational data, practitioner expertise, and stakeholder perspectives (Barends & Rousseau, 2018). Furthermore, since the focus of this study is on practitioner use of academic research, other forms of research, such as primary research conducted within a practitioner organization, are outside the scope of this dissertation. Thus, references to scholarly research, scientific research, and research throughout this dissertation refer to academic research.

Management practitioners are broadly considered in all roles and contexts. Thus, a manager may be responsible for a single project, a small business, or a large organization. Managers are present in all industries, countries, and organizations, and are subject to their respective cultures, rules, and practices. Management is also not a traditional profession because managers do not have a standardized education, knowledge base, or credential (Rousseau, 2012a). References to practitioners throughout this dissertation refer to management practitioners.

Generalists often make management decisions (as opposed to specialists). These decisions are multi-faceted, have organizational constraints, and take stakeholder concerns into account. They are usually not made using standardized decision supports, and it is often difficult to establish a causal link between decisions and effects. Walshe and Rundall (2001) contrasted these management decision-making attributes with clinical (or technical) decision-making. The latter involve largely uniform decisions made by a single or a few specialized practitioners with greater decision-making autonomy. Furthermore, such technical decisions are usually reinforced through support systems and a common knowledge base with distinct measurable effects.

EIDM involves practitioners using scholarly evidence to conscientiously, explicit, and judiciously inform decision-making (Sackett et al., 1996). In this case, a management practitioner proficient in EIDM should be capable of navigating the six As of EBMgt with respect to research evidence (Barends & Rousseau, 2018). This involves asking a practical research question, making the necessary effort to acquire, appraise, aggregate, and apply academic research, and then assessing the outcome of the

evidence-informed decision. Thus, the application of pre-packaged evidence-based best practices that do not require practitioners to turn to academic evidence is not considered within the scope of EIDM in this dissertation.

Definitions and Terminology

Since this review features many operational terms using *evidence-based* or *evidence-informed*, this section summarizes the distinctions between these terms. The use of the best available evidence from multiple sources across various disciplines is generically referred to as evidence-based practice (EBP). The term EBP as used in the literature may sometimes refer to the application of pre-packaged evidence-based practices that do not necessarily require the practitioner to turn to the evidence (also known as empirically-supported interventions) (Gray et al., 2013). For example, an organization may implement evidence-based HR practices without requiring practitioners to study the evidence behind those practices. This study is not about such empirically-supported interventions. Rather, this study addresses practitioner direct use of evidence, and the acronym EBP will only be used in this context.

EBP applied to management is referred to as evidence-based management (EBMgt) (Rynes & Bartunek, 2017). Most disciplines, including management, have adapted the evidence-based medicine (EBMed) definition of the "conscientious, explicit, and judicious use of current best evidence in making decisions" to their disciplines (Sackett et al., 1996, p. 71). Barends and Rousseau (2018) further defined EBMgt as follows:

> Evidence-based practice in management is about making decisions through the conscientious, explicit, and judicious use of the best available evidence from multiple sources by:
>
> Asking: translating a practical issue or problem into an answerable question
>
> Acquiring: systematically searching for and retrieving the evidence
>
> Appraising: critically judging the trustworthiness and relevance of the evidence
>
> Aggregating: weighing and pulling together the evidence
>
> Applying: incorporating the evidence into the decision-making process
>
> Assessing: evaluating the outcome of the decision taken

to increase the likelihood of a favorable outcome. (p.2)

Applying EBMgt to decision-making is often referred to as evidence-informed decision-making (EIDM). Langer et al. (2016) defined EIDM as "a process whereby multiple sources of information, including the best available research evidence, are consulted before making a decision to plan, implement, and (where relevant) alter policies, programmes and other services" (p. 6). However, Langer et al. (2016) used EIDM "interchangeably to denote the use of research evidence by decision-makers" (p. 7). While this present review preserves the original definitions of EBP and EBMgt, EIDM is used specifically within the context of academic research evidence, similar to the use by Langer et al. (2016). More precisely, as previously mentioned, EIDM is used to denote the use of academic research evidence in management decision-making. In this case, EIDM applies the EBMgt definition within the narrower scope of decision-making and applying only academic evidence sources.

Chapter Summary

Today, EBMed is an expected norm used to save lives in healthcare. Rousseau (2008) stated, "if you are wondering what physicians did before [using evidence-based medicine], the answer is what managers are doing now, but without medicine's added advantages from common professional training and malpractice sanctions" (p. 258). While EIDM cannot solve all of management's problems, when it becomes part of the mainstream in management decision-making, it may help organizations more effectively solve important problems that can save millions of dollars, if not lives.

While managers may turn to various sources of evidence in decision-making, academic research is the least exploited source. This deprives management practitioners of a wealth of highly rigorous business intelligence that could inform better decision-making and ultimately better organizational outcomes. This dissertation examines the factors involved in practitioner use of academic research evidence in management decision-making. This study stands to fill both practice and research gaps by providing managers with interventions to facilitate EIDM, as well as strengthening the evidence base for EBMgt.

Organization of the Dissertation

This chapter addressed the background, problem, research question, and rationale for this systematic review. The rest of this dissertation is outlined as follows. Chapter two reviews the literature landscape, providing a discussion of seminal authors, recent important scholarly works, and the impact of these scholarly works. The theoretical framework is also presented, along with conceptual and operational models. Chapter three addresses the methodology of evidence-based research and systematic reviews. The specific steps of this systematic review are discussed, including the initiation, search strategy, quality appraisal, synthesis, and implications. Chapter four presents the analysis and findings, including a description of the data set, the quality appraisal results, the analysis, the findings, and a confidence assessment of the findings. Finally, chapter five discusses the conclusions and recommendations. It explains the answers to the research question, the implications for management and research, the limitations of this study, and future research considerations. Actionable recommendations are presented as part of the management implications.

Chapter 2: Scoping Literature Review and Theoretical Frame

The purpose of this study is to explore the factors that influence practitioner use of academic research evidence in management decision-making, or EIDM. This chapter provides a review of the relevant and seminal literature regarding EIDM. After a discussion on implementation science, EIDM is framed as an innovation. Behavioral and organizational culture theories are addressed in association with EIDM uptake. A discussion on organizational change management then sets the stage for the proposed theoretical framework, involving a theory of change for EIDM implementation. A capability maturity model is then presented as an operational model to facilitate organizational EIDM uptake.

Literature Landscape

A background and historical overview of EIDM was presented in Chapter 1 and the evidence-based research framework is discussed in Chapter 3. The EBP movement has resurged interest in the application of research findings in practice settings. However, interest in research utilization in the social sciences goes back many years before EBP became popular in the 1990s. In her seminal work, Weiss (1979) conceptualized early models of research utilization in the social sciences, which are fundamental to modern theory. Table 1 presents her six models of research utilization and their inherent limitations.

Of the six models, Weiss (1979) suggested the problem-solving model as the most common approach to practitioner research utilization. However, her interactive and political models are also approaches that could be used in practitioner problem-solving. The knowledge-driven model could potentially be used by practitioners interested in scientific research, such as those using social science to deliver management consulting. The tactical and enlightenment models are less likely to result in a practitioner using actual research findings.

Table 1

Conceptual Models of Research Utilization

Model	Description	Limitations
Problem-solving model	A practitioner seeks research evidence to answer an unknown question about a problem to be solved or a decision to be made.	Assumption that practitioners and researchers agree on the research goal.
Interactive model	A practitioner seeks information from a variety of sources, including scientific.	Science is one of many sources of knowledge and may not be seen as relevant to practice.
Political model	A practitioner seeks scientific research to support a predetermined decision or position.	Potential for distortion, misinterpretation, or non-consideration of alternative findings.
Knowledge-driven model	Basic research that is relevant to practice leads to applied research, technology development, and ultimate application.	Assumption that the existence of knowledge motivates its development and use.
Tactical model	The use or invocation of research for a purpose unrelated to the research.	Focus on the fact that research is being done rather than on the research findings.
Enlightenment model	The influence of scientific and theoretical concepts and perspectives on the way practitioners think.	No assumption that research is actually used.

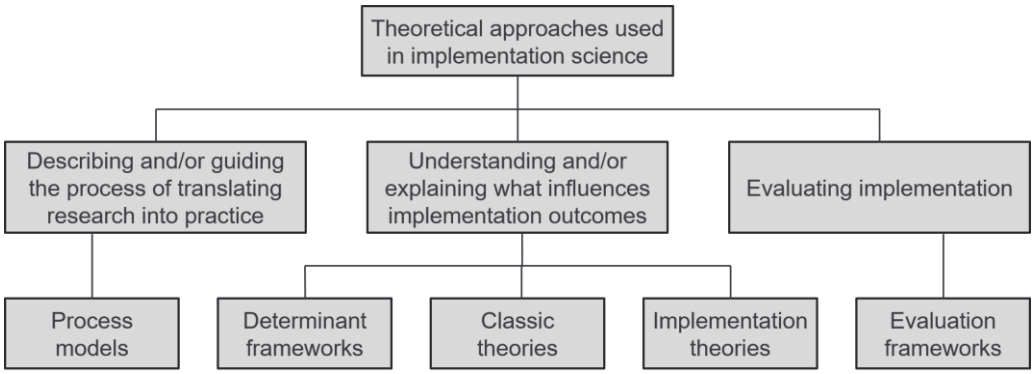
Note. This table summarizes the conceptual models of research utilization according to Weiss (1979).

Implementation Science

Weiss's (1979) research laid the groundwork for implementation science, which is defined as "the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice" (Eccles & Mittman, 2006, p. 1). Various disciplines, especially medicine, have developed theories and models to explain EBP implementation. Nilsen (2015) elegantly described the landscape of these models and developed a taxonomy of implementation science theories involving three theoretical approaches and five categories (see Figure 2).

Figure 2

Nilsen's (2015) Taxonomy of Implementation Science Theories



Note. From "Making Sense of Implementation Theories, Models and Frameworks," by P. Nilsen, 2015, *Implementation Science*, *10*(Article 53), p. 4 (https://doi.org/10.1186/s13012-015-0242-0). Copyright 2015 by Nilsen.

The first approach involves the category of "process models," which are theories that describe the steps in which research is translated into practice (Nilsen, 2015, p. 3). The second approach is theories that explain the influences, such as facilitators and barriers, on implementation. This approach involves three categories of theories based on determinants, classical social science, and implementation. The third approach involves the category of "evaluation frameworks," which seek to assess the effectiveness of implementation (p. 3). Nilsen's (2015) second approach is consistent with the purpose of this systematic review to determine how various factors influence EIDM.

Within this second approach, the determinant category seeks to explain how individual determinants (each of which may include various facilitators and barriers) influence implementation outcomes. As such, this category is considered to include general frameworks rather than theories, since they do not discuss change or causal processes (Nilsen, 2015). Because determinant frameworks are developed for specific purposes (mostly in the healthcare discipline) and attempt to isolate specific determinants, they are more rigid than the classical theories. For example, the widely used framework for Promoting Action on Research Implementation in Health Services (PARIHS) is focused on clinical use with the patient as the end user (Kitson et al., 1998). Greenhalgh et al. (2004) conducted a systematic

review of the dissemination of innovations in service organizations, which led to their conceptual model featuring inner organizational and outer interorganizational factors.

Many implementation theories have been developed mainly from adaptations of existing theories to isolate specific constructs (Nilsen, 2015). Some relevant theories relate to the organization's implementation climate, organizational change readiness, and absorptive capacity (Klein & Sorra, 1996; Weiner, 2009; Zahra & George, 2002). Michie et al. (2011) developed a "behavior change wheel," based on how capability, opportunity, and motivation lead to behavior change (COM-B). This theory proposes an interaction between these behavioral factors, intervention functions, and policy categories.

Similar to determinant frameworks, implementation theories are built for specific purposes, thus limiting the generalizability for understanding research utilization in management decision-making. Michie et al.'s (2011) behavior change wheel has been used primarily in explaining the implementation of specific evidence-based interventions in healthcare. However, at least part of this theory holds promise for explaining the use of research evidence in management decision-making. The COM-B behavioral model from Michie et al.'s (2011) framework is based on classical behavior theory and may be able to explain how different factors influence EIDM.

Nilsen (2015) described classical theories as original change theories derived "from other fields, such as psychology, sociology and organizational theory" (p. 7). Among classical theories, Rogers's (1995) diffusion of innovations theory and Ajzen's (1991) planned behavior theory have been widely used to explain EIDM uptake (Gill, 2018; Denise M. Rousseau & Gunia, 2016; Speicher-Bocija & Adams, 2012). These theories, however, describe change at the individual level alone. Nilsen (2015) suggests that while organizational-level theories are not as commonly used to explain EBP implementation, "the context of implementation is becoming more widely acknowledged as an important influence on implementation outcomes" (p. 7). Thus, change should be assessed at different levels of analysis.

Innovation Diffusion

Conceptualizing EIDM as a "technical innovation to improve decision-making accuracy," managers can use diffusion, dissemination, and implementation strategies to facilitate its uptake

(Speicher-Bocija & Adams, 2012, p. 300). In this sense, Rogers's (1995) diffusion of innovations theory has dominated thought in the research utilization field since the mid-twentieth century (Estabrooks et al., 2008). This theory has been used to explain evidence diffusion in social work, education, and medicine (Austin & Claassen, 2008; Charlier et al., 2011; Titler & Everett, 2001).

Rogers's (1995) theory posits that five independent variables serve as determinants to innovation diffusion: relative advantage, compatibility, trialability, observability, and complexity. Relative advantage refers to the benefit the innovation provides over the status quo, whether perceived or measured through more objective means, such as return on investment. Compatibility is the extent to which the innovation is consistent with current practice and values. Trialability is the ability to experiment with the innovation or implement it in phases. Observability is the extent to which the innovation is perceived as having visible or immediate results for users. Complexity refers to the degree to which the innovation is difficult to use. Relative advantage, compatibility, trialability, and observability are positively correlated with innovation diffusion, and complexity is negatively correlated. Rogers (1995) also posited that the diffusion process begins with innovators introducing the innovation to early adopters who are opinion leaders. The early adopters facilitate the diffusion process for other users, including the early majority, late majority, and laggards.

Behavioral Science

While Rogers's (1995) innovation factors may serve as independent variables, the actual use of EIDM by management practitioners is the end goal. Thus, behavioral factors may be considered as dependent variables. Similar to Rogers's (1995) diffusion of innovations theory, Ajzen's (1991) theory of planned behavior has been widely used to predict research utilization in several fields, including mental health, human resources, and healthcare administration (Burgess et al., 2017; Gill, 2018; Guo, 2015). Additionally, a meta-analysis of 123 interventions in multiple disciplines demonstrated that Ajzen's (1991) planned behavior theory can be effective for developing behavior change interventions (Steinmetz et al., 2016).

Ajzen (1991) proposed that attitude, subjective norms, and perceived behavioral control positively influence behavioral intent, which mediates actual behavior. Attitude refers to the extent to which perceived outcomes of the behavior are desirable. Subjective (or social) norms refers to the degree to which the behavior is positively viewed by persons from whom approval is desired. Perceived behavioral control describes the extent to which an individual perceives they are capable of performing the behavior.

Rousseau and Gunia (2016) recommended integrating Ajzen's (1991) theory with Vroom's (1964) expectancy motivation theory to conceptualize EIDM as "a form of goal-related behavior" (p. 673). Vroom's (1964) theory posits that motivation is a function of expectancy, instrumentality, and valence. Expectancy refers to the perception that a goal is attainable, based on self-efficacy, goal difficulty, and perceived behavioral control. Instrumentality refers to the expectation of a reward for achieving the goal. Valence refers to the value placed on the behavior's reward. The combination of Ajzen's (1991) and Vroom's (1964) theories can be conceptualized through an ability-motivation-opportunity (AMO) framework similar to Michie et al.'s (2011) COM-B model. Rousseau and Gunia (2016) described how this framework could be conceptualized to explain EBP implementation. In this case, ability refers to the extent to which individuals have the knowledge and skills to perform EBP. Motivation is a function of Ajzen's (1991) original formula of attitude, subjective norms, and perceived behavioral control, as they pertain to beliefs about EBP. Opportunity is the degree to which individuals perceive being in a context where they can practice EBP. In recent years, scholars have recommended additional research on EBP uptake using the AMO model (Gough, Stewart, & Tripney, 2017; Rynes & Bartunek, 2017).

Although Rousseau and Gunia's (2016) model is conceptual, Michie et al. (2011) provide a more developed framework that considers the multi-directional influence of the variables and different levels of analysis. Furthermore, Michie et al.'s (2011) model has been used in numerous studies, including two studies on EIDM (Atkins et al., 2017; Langer et al., 2016). Rousseau and Gunia's (2016) conceptualization, on the other hand, is more recent and has not yet been operationalized in any studies.

In the Michie et al. (2011) model, capability is the individual's psychological and physical capacity to perform a behavior. Psychological capability refers to thought processes, such as comprehension and reasoning. Physical capability refers to the skills and knowledge acquired. Capability can influence motivation and behavior, and can be influenced by behavior.

Opportunity is based on all factors external to the individual that make behavior possible or lead to it. Opportunity involves physical and social aspects. Physical opportunity is based on whether one's physical environment is conducive to a behavior. Social opportunity involves one's cultural and social environment, which influences one's thoughts and beliefs. Opportunity can influence motivation and behavior, and can be influenced by behavior.

Motivation is based on the individual's brain processes that stimulate behavior. Motivation includes both reflective and automatic processes. Reflective processes involve evaluation and planning, such as analytical decision-making. Automatic processes involve responses based on emotions and impulses, including habits. Motivation can influence behavior, and can be influenced by capability, opportunity, and behavior.

Behavior is contextual and can influence and be influenced by one, two, or all three of the capability, motivation, and opportunity factors. The individual, group, and environmental levels of analysis have equal status in determining behavior.

Organizational Culture

The innovation and behavioral theories primarily address the individual level of analysis. However, Nilsen (2015) suggested considering organizational theories to explain collective behavior. Organizational culture may clarify the extent to which an organization values using academic research for decision-making. The most prevalent organizational culture theory is Schein's (1990) levels of culture. He defined organizational culture as the shared artifacts, values, and assumptions of an organization, and conceptualized these as three levels that provide a deepening understanding of the culture.

Artifacts are the most superficial level. They include the structures, processes, products, protocol, emotions, and other elements of the organization that are seen, felt, or otherwise sensed. Such artifacts

reflect the organization's espoused values, which is the next more in-depth level. Values represent how the organization views itself and desires to be viewed. Such values are often enshrined in mission, vision, or value statements. Such values often reflect the organization's ideals and aspirations, which may not always be manifested in the behavior of its members. However, values also set norms that reinforce accepted behavior. At an even deeper level, these values are based on the organization's basic assumptions. Often taken for granted, these "underlying… assumptions… determine perceptions, thought processes, feelings, and behavior" (Schein, 1990, p. 112). Schein (1990) compared these three levels to an iceberg in which only the artifacts are visible, with thicker buried layers of values and assumptions. Therefore, any culture change attempt must begin with the underlying assumptions, and then make its way into the values and artifacts successively (Austin & Claassen, 2008).

While Schein's (1990) framework considers culture at the organizational level, Baba (1995) argued that organizations do not reflect one culture but a cultural ecology. Thus, culture also needs to be examined at the individual level and its interactions with the broader organization. This systems approach acknowledges that within the organization there are multiple overlapping and competing cultures. This multicultural view of the organization represents the dynamic make up of its members. Recognizing that organizations are composed of a cultural landscape, the receptivity of individuals and pockets within the organization toward academic research utilization should be considered (Potworowski & Green, 2012).

Scholars have considered cultural measures of receptivity to EBP. Austin and Ciaassen (2008) suggested that the organization's cultural uniformity might influence EBP adoption. An organization with a strong culture aligned with evidence use may take up EIDM more easily because of the greater control over the organization's artifacts, values, and assumptions (Ahmed, 1998). However, an organization with a uniform culture that does not harmonize with evidence use may impede EIDM adoption. Other research suggests that the less uniform an organization's culture, the more willing the organization is to take risks and innovate (Jaskyte & Dressler, 2005). Thus, less cultural uniformity may facilitate experimentation with academic evidence in management practice.

Kovner and Rundall (2006) proposed that organizations with a “questioning culture” are more likely to adopt EIDM (p. 15). Having a questioning culture involves a sense of curiosity about what works and why, distinguishing between degrees of trustworthiness of evidence, and being inquisitive about how and why decisions are made (Barends & Rousseau, 2018, p. 308). Challenging the status quo and the logic behind decisions can help organizations make more thorough and effective decisions and reduce risks.

However, Kovner and Rundall (2006) pointed out a vulnerability in the tolerance for such questioning. If the questioning of management decisions is perceived as excessive, it may produce anxiety for decision-makers and discount the value of professional judgment and experience (another valid source of evidence). Barends and Rousseau (2018) suggested identifying “socially effective ways” to raise such questions in order to “avoid being dismissed as a mere naysayer” (p. 308). Kovner and Rundall (2006) proposed several interventions to increase this questioning mindset: promoting the use of research, analyzing previous decisions, encouraging professional development, rewarding the use of evidence, and requiring the use of evidence in decision-making. Of course, such interventions may constitute a degree of EIDM implementation, which is the desired end state.

In a cross-sectional study among mental health practitioners, Aarons and Sawitzky (2006) suggested that constructive cultures promote more favorable attitudes toward EBP. They defined constructive cultures as those which value “achievement and motivation, individualism and self-actualization, and being humanistic and supportive” (p. 62). In defensive cultures, on the other hand, members seek approval and consensus, and are conventional, conforming, dependent, and subservient. This study corresponds with a systematic review finding that a culture of organizational learning enables innovation and the generation of new knowledge (Greenhalgh et al., 2004).

Potworowski and Green (2012) considered alignment with three normative cultural dimensions they claimed essential to the adoption of EBMgt. These three dimensions derive from eight cultural dimensions proposed by Detert, Schroeder, and Mauriel (2000) for examining organizational improvements. Potworowski and Green's (2012) first dimension is that subjective, formally collected

knowledge is of greater value than that which is less formal and subjective. Second, EBMgt is oriented toward change rather than stability. Organizations that are driven by innovation, progress, and other forms of change will better adapt to EIDM than those which place a greater value on stability. Third, EBMgt seeks to balance internal and external focus through multiple sources of evidence. Organizations that are solely internally or externally focused will not be as successful in implementing EIDM as those that are balanced in these areas. If an organization is to embrace academic evidence, its members must align with these epistemic beliefs about the nature and value of evidence.

Organizational Change Management

In order to understand how managers can facilitate organizational EIDM uptake, organizational change theory should be considered. Lewin (1947) established the foundation of organizational change management theory with his model of planned change involving three stages: unfreezing, moving, and freezing. Some claim Lewin's (1947) change model is less relevant in our more modern complex world, arguing that it is simplistic, non-transformational, ignores power and politics, and is a top-down approach (Dawson, 1994; Peters & Waterman, 1982). However, Burnes (2004) argues the opposite. He claims Lewin understood the fluid and unpredictable nature of organizations, that rapid change is sometimes possible, that change involves different values and power structures, and that change can come from any level within the organization. Other seminal scholars have highlighted the continued relevance of Lewin's theory (Argyris et al., 1985; Schein, 1988). Furthermore, a recent review of modern change management theories demonstrated that these theories all fit within the context of Lewin's model (Stouten et al., 2018).

Lewin's (1947) change model cannot be applied without considering a "force-field analysis" of "driving" versus "restraining" forces for change (p. 28). He described organizations as not being static, but rather in a "quasi-stationary equilibrium" described by a force field (p. 13). Within the EIDM implementation context, the desire for greater accountability could be a driving force, and an autocratic leadership style could be a restraining force. After considering all the driving and restraining forces, a manager desiring to implement EIDM would address potential solutions for increasing the strength of driving forces and decreasing the strength of restraining forces.

One challenge with this force-field analysis approach is the effect of Newton's third law of motion, as applied to management—equal and opposite forces exist for any decision. Lewin (1947) referred to "social habit" as a restraining force that counteracts the drive for change (pp. 32-33). For example, an autocratic leader may approve using academic evidence to increase organizational accountability, so long as they decide which evidence is considered in the decision, and so long as the results of the evidence do not oppose the leader's views. Of course, this outcome would invalidate the purpose of using evidence to increase accountability in the first place. Soon enough, the organization would be looking for evidence to solely justify the leader's decisions while ignoring or downplaying disconfirming evidence. Thus, in performing a force-field analysis, consideration must be given to the consequences of intervening to change the balance of forces.

The first stage of Lewin's (1947) three-stage model (unfreezing) is initiated by destabilizing the current force-field. This destabilization often comes through a "catharsis" necessary to "break open the shell of complacency" (Lewin, 1947, p. 35). Because of the restraining force of social habit, the second stage of movement (or change) cannot be accomplished by an individual alone but requires a group decision. Lewin (1947) argued that it is easier to change a group than one individual in an organization—group adoption of new values associated with a change produces a social force (peer pressure) that facilitates the individual's adoption of the new standard.

Lewin (1947) advocated for separating groups during the change stage into workshops to create "cultural islands" that facilitate change, especially when the planned change is at odds with the broader organizational context and culture (p. 37). The creation of a strong subculture within the change group, followed by explicit actions based on the decision, enable the change. These commitments, actions, and catharsis enable the permanence of the new status quo in the final freezing (or re-freezing) stage, as the group members work to follow through with their individual decisions and group commitments once the group returns to the broader organization (Lewin, 1947).

Schein (1996) developed a "managed learning" framework, which sought to "unpack" Lewin's change theory within the context of organizational culture (pp. 59-60). He described the unfreezing stage

as involving three processes: disconfirmation, survival anxiety, and psychological safety. Disconfirmation refers to the development of a sense of dissatisfaction that initiates the desire for change or learning. Disconfirmation leads to the second process, "survival anxiety," which is a sense of guilt from accepting the disconfirming evidence that leads one to believe that an objective will not be met unless there is a change (p. 60). In this process, one must overcome "learning anxiety," which is the restraining force that opposes disconfirmation and fights to maintain the inertia of the force field (p. 60). This learning anxiety is a feeling of vulnerability associated with the fear of potential personal loss that can come from change. Schein (1996) explained that overcoming learning anxiety leads to change. Overcoming learning anxiety promotes "psychological safety," which facilitates an unfreezing process involving a continued sense of disconfirmation and survival anxiety that maintains the motivation for change (p. 61).

Lewin (1947) and Schein (1996) acknowledge that motivation is insufficient to produce change—actions are necessary. Lewin emphasized that "for change to be effective, it must take place at the group level, and must be a participative and collaborative process which involves all of those concerned" (Burnes, 2004). Once individuals are unfrozen, a "cognitive redefinition" or "cognitive restructuring" needs to take place (Schein, 1996, p. 61). This process involves a paradigm shift in which "semantic redefinition… cognitive broadening… [and/or] new standards of judgment or evaluation" change the way the group defines reality (61). Essentially, they learn to redefine words, broaden conceptual understandings, and update their values and expectations based on the new reality.

The information that enables cognitive redefinition comes from learning from others and/or trial-and-error (Schein, 1996). Learning from others involves using role models (positive or negative) with whom individuals associate positively or defensively. Such role models help individuals understand different perspectives. If no role models are available, or in addition to learning from them, individuals can also learn from "scanning" or trial-and-error (p. 62). Scanning is not necessarily an ad hoc exercise—a good manager establishes the conditions for creative learning by giving group members options to help them discover or create solutions independently. Such options may include "reading, traveling, talking to people, hiring consultants, entering therapy, going back to school, etc." (p. 63).

After experiencing some cognitive redefinition, group members must put their learnings to practice by testing new behaviors, often through trial-and-error and self-learning. In this process, they either reinforce their new reality or begin a new disconfirmation cycle (Schein, 1996). This process presents change managers with opportunities to provide practice exercises in the regular work environment and to identify exercises that are a good fit with personality and culture.

Individuals enter Lewin's (1947) re-freezing stage as they make the new behavior their own (Schein, 1996). While such personal re-freezing is essential, it must also occur at the relational level. Schein (1996) advises training together "the entire group that holds the norms that support the old behavior" for this relational re-freezing to happen (p. 63). The group must collectively discover their implicit norms and set standards for their new norms. As they all re-freeze at the personal and relational levels, the new standards are normalized.

Theoretical Framework

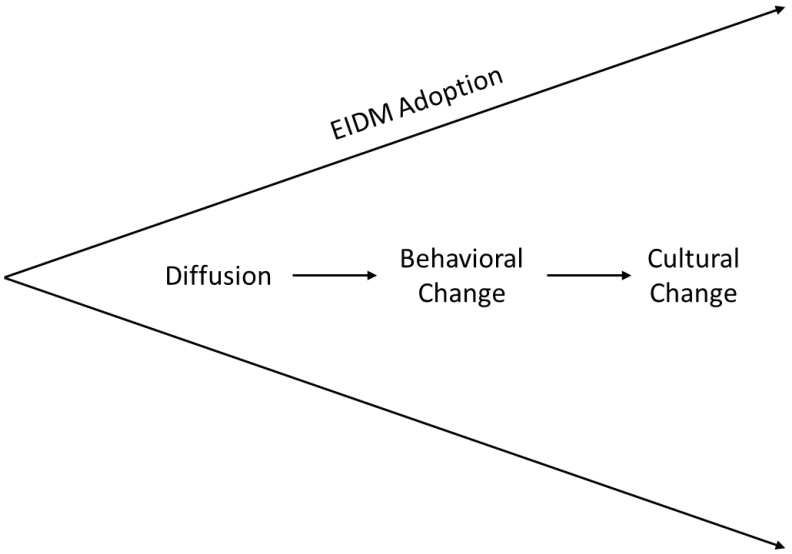
The theoretical framework for this study includes a conceptual theory of change for EIDM adoption that brings together theoretical perspectives from innovation diffusion, behavioral science, and organizational culture, within the context of implementation science and organizational change management. Furthermore, a capability maturity model is proposed as an operational model to aid practitioners in facilitating EIDM adoption within their organizations.

Theory of Change

The literature landscape around EIDM implementation can be summarized through a basic theory of change illustrated in Figure 3.

Figure 3

Theory of Change for EIDM Implementation



In this theory of change, EIDM is conceptualized as an innovation that is introduced and diffused within the organization. Rogers's (1995) innovation diffusion mechanisms serve to strengthen the driving forces and weaken the restraining forces proposed in Lewin's (1947) force field analysis. For example, one may present a compelling case for the relative advantage of EIDM, help others feel it is compatible with their practices and norms, facilitate its trialability and observability, or reduce its complexity. Successful diffusion prompts behavior change as practitioners improve their capabilities, expand their opportunities, and enhance their motivation for using academic research in management decision-making (Michie et al., 2011). This behavior change leads to cultural change as efforts are made to align the organization's artifacts, values, and assumptions with epistemic beliefs about the nature and value of evidence (Potworowski & Green, 2012; Schein, 1990). EIDM adoption increases as diffusion leads to behavioral and cultural change.

Being that behavioral and cultural change to adopt EIDM involve significant learning, such change may be characterized by Schein's (1996) managed learning framework based on Lewin's (1947) change management phases of unfreezing, changing, and re-freezing. Lackluster outcomes stemming

from inadequate decision-making rigor may produce a sense of dissatisfaction that triggers the initial organizational unfreezing. EIDM could be presented as a solution to enhance decision-making rigor to produce the desired organizational outcomes. Efforts to increase the facilitators and decrease the barriers to EIDM uptake could produce the psychological safety necessary to lead the organizational unfreezing to behavioral and cultural change. The organization is then ready for a series of change interventions involving the introduction of EIDM and its potential to broaden future outcomes and enhance values and expectations. Practitioners may be presented with role models and opportunities to experiment with academic research, which facilitate the change process. Efforts to reinforce EIDM through organizational culture, practices, and norms can set in the re-freezing of the newly minted evidence-based organization.

Capability Maturity Model

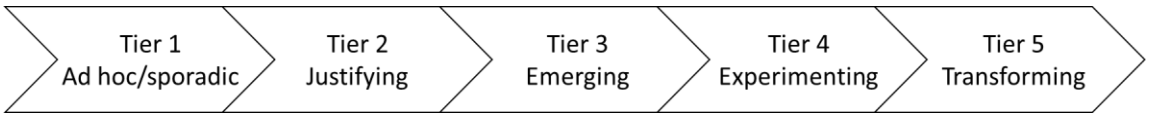
Capability maturity models have been successfully used in many fields to operationalize change management processes because they can provide descriptive diagnostic criteria as well as prescriptive improvement recommendations (Poeppelbuss & Roeglinger, 2011). Maturity models are based on Nolan's (1973) stages of growth theory, which was originally developed to explain how organizations evolve in their computer resource management capabilities. While the first maturity models were developed to increase the U.S. Department of Defense's software capabilities, models soon emerged for developing organizational human resource capabilities (Curtis et al., 2009; Humphrey, 1987). These early maturity models presented five development phases (initial, managed, defined, predictable, optimizing), which are the basis for most modern maturity models.

Thorpe and Howlett (2020) recently developed a maturity model for evidence-based library and information practice. This model also employs five tiers: ad hoc/sporadic, justifying, emerging, experimenting, transforming (see Figure 4). In the ad hoc/sporadic tier, practitioners do not explicitly consider EBP beyond the traditional statistical data collection responsibilities of the library. In the justifying tier, EBP is considered for justifying decisions that have frequently already been made. In the emerging tier, EBP is applied to limited projects and activities. In the experimenting tier, the organization supports practitioners in experimenting with EBP, which is "seen as a desirable and attainable

organizational goal" (Thorpe & Howlett, 2020, p. 96). Finally, in the transforming tier, EBP is a daily activity and "a way of working," and high-quality evidence is effectively used to inform decision-making (p. 96). While this first-published maturity model for EBP was developed for library and information science, it holds promise for describing the EIDM implementation process for management practitioners across different disciplines.

Figure 4

EBP Capability Maturity Model Tiers



Note. Adapted from "Understanding EBLIP at an Organizational Level: An Initial Maturity Model," by C. Thorpe and A. Howlett, 2020, *Evidence Based Library and Information Practice*, *15*(1), p. 95 (https://doi.org/10.18438/EBLIP29639). Copyright 2020 by Thorpe and Howlett.

Chapter Summary

This chapter reviewed the literature on EIDM and research utilization drawn from implementation science, innovation diffusion, behavioral science, organizational culture, and organizational change management. A conceptual EIDM theory of change is presented, which summarizes the literature landscape. This theory of change proposes that EIDM diffusion efforts may lead to individual behavioral change, and ultimately organizational cultural change. As this process takes place, organizational EIDM adoption is expected to increase. The change management process may be operationalized by employing a capability maturity model. While no such maturity model currently exists for EIDM, a recently-developed EBP maturity model for library and information science holds promise for application in broader management practice (Thorpe & Howlett, 2020).

Chapter 3: Method

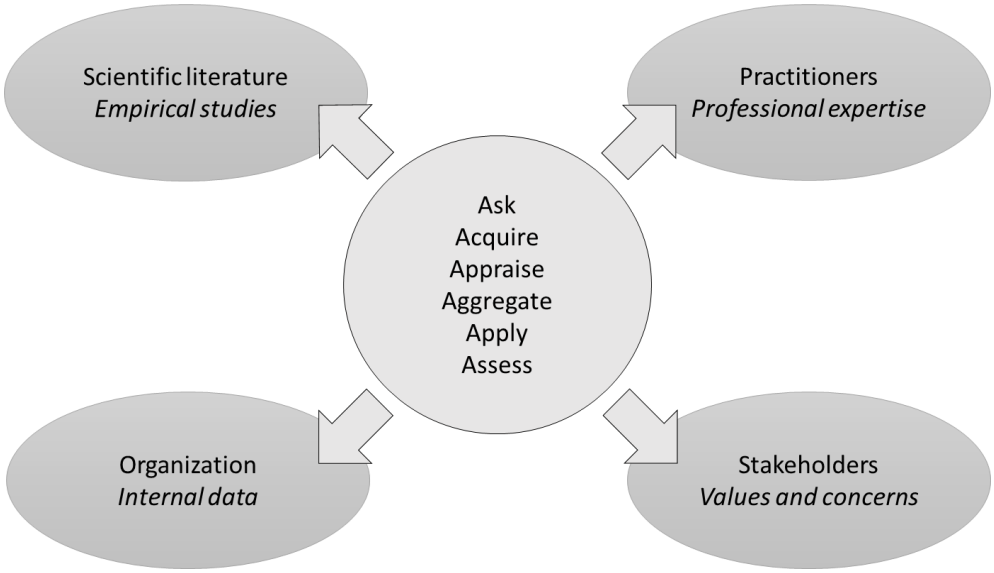
The purpose of this dissertation is to examine the factors that influence practitioner EIDM, or the use of academic research evidence in management decision-making. This chapter explains the research methods used in this study. The evidence-based research framework is reviewed, and the systematic review methodology and process are explained. A discussion of the review initiation addresses the scoping review, use of subject matter experts (SMEs), and the development of the research question. The search strategy is reviewed, including the databases searched, search terms, inclusion and exclusion criteria, other search methods, and the process for documenting the search efforts. The quality appraisal process is discussed, including data extraction and the guidelines and employment of Gough's (2007) weight of evidence (WoE) framework. The analysis and synthesis are explained, including the thematic synthesis method, use of descriptive analytics, the qualitative coding process, the steps of the synthesis process, and the confidence assessment of the findings. Finally, the methods for the conclusions and implications are addressed, including the development of recommendations and use of SMEs to validate the relevance of the management implications.

The Evidence-Based Research Framework

As this study pertains directly to EBMgt, a history and overview of EBMgt was presented in Chapter 1. Additionally, the literature landscape in Chapter 2 presented a theoretical background on research utilization. In this discussion, the general framework for EBMgt research is reviewed as presented by Barends and Rousseau (2018). The EBMgt framework is based on the principle that a synthesis of the best available evidence from multiple sources can lead to better decision-making than relying on less rigorous evidence sources or a single source of evidence. The synthesis produced from a heterogeneity of high-quality data fills knowledge gaps, produces new insights, and results in decisions made with greater rigor and transparency and less risk. The EBMgt framework involves using evidence from four reliable sources: scientific literature, the organization, practitioners, and stakeholders. It also involves six steps referred to as the six As: ask, acquire, appraise, aggregate, apply, and assess. This framework is presented in Figure 5.

Figure 5

EBMgt Framework



Note. From *Evidence-Based Management: How to Use Evidence to Make Better Organizational Decisions* (p. 5), by E. Barends and D. M. Rousseau, 2018, Kogan Page. Copyright 2018 by Center for Evidence-Based Management.

Barends and Rousseau's (2018) Six As of EBMgt

Ask. The first step is to identify a management problem or decision to be made and turn it into an answerable question. Efforts should be made to develop this research question in a rigorous, transparent, and relevant manner, capable of producing a practical solution. A logic tool can help guide the development of the research question. While there are several such logic tools, Barends and Rousseau (2018) recommend using PICOC (population, intervention, comparison, outcome, context) due to its comprehensiveness. This process involves identifying the target population for the research, the intervention intended to influence that population, a comparison to either a different intervention or no intervention at all, the desired outcome, and the context relative to the population or intervention. Addressing each of the PICOC elements helps ground the research question in practical reality while promoting a rigorous and transparent research methodology.

Acquire. A search is done for evidence capable of answering the research question. To the extent possible, all four sources of evidence should be searched employing a search strategy appropriate for the evidence source. Academic research may be found in academic databases, libraries, and bibliographies. Organizational data may be found in computer and physical records, as well as through meetings, conversations, and observation. Evidence from practitioners and stakeholders may be sought through interviews and surveys, among other methods. While practitioners and stakeholders may overlap, they are not necessarily the same, and the evidence sought from each one is different. Experiential knowledge is sought from practitioners who are SMEs in their disciplines. Evidence regarding values and concerns is sought from stakeholders, who are people in positions to influence or be influenced by the problem or decision being studied.

Appraise. The evidence is assessed to determine its quality. There are several formal quality appraisal tools that may be employed for academic research. While no consensus in the academic community exists on the best appraisal tool, the rigor, relevance, and transparency of each study should be evaluated, recognizing that different research methodologies may need to be evaluated differently. Barends and Rousseau (2018) provided checklists for appraising methodological quality based on different research designs (pp. 168-170). Organizational data can be similarly assessed through rigor, relevance, and transparency measures. According to Barends and Rousseau (2018), the most objective experiential evidence comes from practitioners who have "numerous opportunities to practice" their disciplines, can provide "direct, objective feedback," and have "a regular, predictable work environment" (p. 63). Stakeholder evidence may be appraised by considering the extent to which the decision's impact on the stakeholder is of practical and ethical relevance. Additionally, the methods used in collecting practitioner and stakeholder evidence may be assessed for rigor.

Aggregate. The appraisal process informs the value of different pieces of evidence to answer the research question. The best available evidence may be highlighted by weighing the evidence accordingly. The evidence is then synthesized, which may be done through several methods. The confidence of the

findings may also be assessed through different methods. (Details on the synthesis and confidence assessment methods for this review are discussed later.)

Apply. The initial PICOC logic may be revisited to determine its alignment with the application of the findings from the evidence synthesis. The relevance, actionability, and risk versus benefit may be considered. A plan for disseminating and implementing the evidence may be developed and executed. Potential moderators that may affect the desired outcomes should be considered.

Assess. The results of the decision are assessed employing the most rigorous methods possible, such as a randomized controlled trial, or at the very least an after-action review. The extent to which the decision was executed as planned is assessed, and any deviations from the plan should be addressed. Reliable outcome measures should be used to determine the effect of the decision, including its reach, response, and impact on stakeholders. If the desired outcome is not attained, the six As may be repeated, incorporating the new organizational evidence obtained from the first round of applying EBMgt.

Systematic Reviews

While it is useful to understand the broad context of the EBMgt research framework, using the full EBMgt framework is outside the scope of this dissertation, which is focused on academic research evidence. To a small extent, practitioners and stakeholders were consulted as SMEs as part of the research process. However, the systematic review methodology is an appropriate approach for studying academic research evidence because it mirrors the six As of the EBMgt framework. It begins by asking a research question that fills a knowledge gap relevant to management practice. Evidence is then systematically acquired, appraised, and aggregated (synthesized). This process culminates in application and assessment recommendations for practice. The systematic review is an ideal method for EBMgt research because it combines flexibility and power in synthesis with a practitioner orientation.

Gough, Oliver, and Thomas (2017a) defined a systematic review as “a review of existing research using explicit, accountable rigorous research methods” (p. 2). The power of a systematic review is that it synthesizes the best available evidence about what is known and unknown to inform a practical problem (Briner & Walshe, 2014). This power of synthesis overcomes many of the limitations of relying on a

single study. Furthermore, it provides practitioners a reasonable way to digest scientific evidence without scouring through volumes of journals and appraising the evidence themselves (Gough, Oliver, & Thomas, 2017a).

The management discipline was a late adopter of the systematic review methodology, which has roots in the statistical meta-analysis methods popular among more positivist disciplines, such as the medical field (Petticrew, 2001; Tranfield, Denyer, & Smart, 2003). As efforts grew to make the medical field more evidence-based during the 1990s, systematic reviews and meta-analyses of randomized controlled trials became new gold standards in healthcare research (Davies & Nutley, 1999). As Petticrew (2001) wittingly stated, systematic reviews can be done in any field of study "from astronomy to zoology" (p. 98). Besides medicine and other hard sciences, systematic reviews have been done in soft sciences, such as education, criminal justice, and social work (Davies, 2004; Laycock, 2000; Macdonald, 1999). Systematic reviews in the management discipline began with healthcare management, but have now spread into diverse management areas (Briner & Denyer, 2012).

Unlike meta-analyses, which require statistical data on effect sizes, systematic reviews are more flexible—they can synthesize studies with any type of research design, including qualitative methods. This synthesis can seek to aggregate homogeneous evidence to identify what is known about a very detailed research question. Systematic reviews can also configure heterogeneous data to explore and develop theories about a broader research question (Thomas et al., 2017).

Systematic Review Process

In the early 2000s, systematic reviews were uncommon in the management field, and the pioneering reviews had no standard protocols. Tranfield et al. (2003) recommended developing formal systematic review protocols for the management discipline. Briner and Denyer (2012) and Gough, Oliver, and Thomas (2017b) developed such review protocols. A combination of these protocols was used for this review. The steps in this review are (a) initiation, (b) search strategy, (c) quality appraisal, (d) analysis and synthesis, and (e) conclusions and implications. This review protocol reflects the six As of evidence-based management referenced above (Barends & Rousseau, 2018).

First, initiation involved identifying a review problem based on a practical management gap. This gap was identified from the literature and further verified through a scoping literature review and consultations with SMEs. The problem statement and rationale for this review were then developed. A focused research question was crafted using the PICOC logic (Barends & Rousseau, 2018). A theoretical framework was also developed based on the scoping literature review.

Second, a strategy was developed to identify evidence to answer the research question. The PICOC logic was used to guide the search strategy and find relevant and generalizable evidence. Search strings were created to perform an exhaustive search of evidence in multiple databases. Efforts were made through bibliographic snowball searches to identify additional studies not found in database searches. These searches were narrowed down with inclusion and exclusion criteria focused on the research question.

Third, a quality appraisal of the selected evidence was performed. This appraisal assessed the methodological quality of the individual studies themselves, as well as their appropriateness and relevance to this review's research question. Key data were extracted from each study and a quality appraisal tool was employed to support this appraisal process. Studies not meeting the appraisal standards were excluded from this review.

Fourth, the selected studies were analyzed and synthesized thematically. Most of the data was heterogeneous and configured through inductive conceptual interpretation characteristic of thematic synthesis. Evidence about facilitators and barriers was also aggregated. Gough and Thomas (2017) explained that "all reviews have some aspects of configuration and aggregation," although the analysis in this dissertation was primarily configurative (p. 65). The data were coded into descriptive themes, from which higher-order analytical themes emerged. Due to the nature of dissertation research, only one researcher synthesized the data. Electronic tools were used to triangulate the themes coded by the researcher to reduce bias and enhance validity and reliability. Additionally, the findings that emerge from the research were assessed for confidence.

Finally, the practical implications of the findings were interpreted to answer the research question and develop relevant conclusions and recommendations for management practitioners. Limitations and areas for future research were identified. The following sections delve into detail about this systematic review's methodology.

Review Initiation

The review was initiated by identifying a gap in research, which if filled, could advance a practical management problem. The review author identified research establishing that managers are least likely to seek out academic research for decision-making compared to other evidence sources (Barends et al., 2017; Rynes et al., 2002). A scoping review of the literature was conducted, and SMEs were consulted to better understand the problems associated with this gap in management practice. A research question was then developed using the PICOC logic.

Scoping Review. A scoping review of the current research landscape helped develop a broader understanding of why management practitioners are less likely to use academic research compared to other types of evidence. Sources for this scoping review included seminal books on EBMgt (Barends & Rousseau, 2018; Gough, Oliver, and Thomas, 2017b; Pfeffer & Sutton, 2006; Rousseau, 2012b). The websites of the Center for Evidence-Based Management, the EPPI-Centre, and the Campbell Collaboration were searched for articles and other resources relevant to EBMgt. The review author also searched a personal collection of academic articles on EBMgt that were gathered throughout the course of the doctoral program. Forward and backward bibliographic snowball searches of several sources revealed additional records that informed the scoping review. Searches were also conducted in Google Scholar for highly cited articles using the search terms *evidence-based management* and *evidence-informed decision-making*.

Subject Matter Experts (SMEs). In addition to the scoping review of EBMgt literature, academic and practitioner SMEs were consulted to enhance rigor and relevance in the development of the review question and methodology. Two University of Maryland Global Campus (UMGC) dissertation

advisors who are university professors with doctoral degrees were regularly consulted throughout the dissertation process. A UMGC research librarian was also consulted for developing the search strategy.

In addition to UMGC resources, six scholars associated with different academic and research institutions in the United States and the Netherlands were consulted regarding theoretical grounding and methodological rigor. These scholars have all authored management literature and have practitioner experience in different industries as executives, senior managers, entrepreneurs, and consultants. Three of the scholars are staff members from the Center for Evidence-Based Management. Aside from scholars, three non-academic senior managers were consulted regarding the research relevance. These management practitioners represent the private, public, and non-profit sectors in the fields of finance, trade, and humanitarian work. Of note is that these practitioners were not previously familiar with the term EBMgt nor its concepts.

Research Question. The scoping review and consultations with SMEs informed the development of the research question. Furthermore, the PICOC logic guided the research question formulation, as discussed in Chapter 1. The research question is: *What factors influence practitioner use of academic research evidence in management decision-making?*

There were several assumptions associated with the research question which related to bias and other limitations. These assumptions were:

1. Academic research evidence is indeed the most under-utilized source of evidence in management decision-making.
2. Using academic evidence to inform decision-making will result in better outcomes.
3. Once management practitioners understand the basic principles behind EBMgt, they will believe that it can add value to decision-making.
4. Practitioners are capable of learning how to use academic evidence in management practice.
5. High-quality and up-to-date academic research evidence exists that is relevant, generalizable, and accessible to management practitioners.

Efforts were made to overcome possible bias and limitations in this dissertation. The PICOC logic and consultation with a research librarian supported the development the research question and guided the search strategy. The studies included in this dissertation were appraised for quality. The findings of this dissertation were assessed for confidence. Furthermore, scholar and practitioner SMEs were consulted to validate the rigor, relevance, and transparency of this dissertation.

Search Strategy

The search strategy involved searching for key terms in academic databases, as well as forward and backward bibliographic snowball searches. Keywords were identified and built into a search string. Relevant academic databases were identified, and the search string was adapted as necessary for each database. During initial search attempts, inclusion and exclusion criteria were developed to refine the search further. Mendeley was used for saving and curating relevant records.

Databases Searched. Numerous databases were searched for evidence regarding the research question. All database searches were conducted using online resources from the UMGC Library. The UMGC Library's OneSearch database aggregator was searched, which is a collection of 57 indices and databases, including many highly relevant sources, such as Business Source Complete, ScienceDirect, and SocINDEX. Additional relevant databases not included in OneSearch were searched for further evidence. Three ProQuest databases were searched using the ProQuest database aggregator: ABI/INFORM Collection, Healthcare Administration Database, and Dissertations & Theses Global. A further search was also conducted on Scopus. The complete list of databases searched is in Appendix A.

This extensive collection of databases was used to conduct a comprehensive search for evidence, due to the limited availability of empirical research on EBMgt implementation. Furthermore, many databases were searched from non-management disciplines, such as health, psychology, and education, which also included research on EBP and related topics. Such non-management sources provided additional insight for answering the research question.

Search Terms. The PICOC logic used in developing the research question was also employed to develop search terms. Table 2 harmonizes the search terms to their related PICOC elements. Search

strings were developed using Boolean, proximity, and wildcard operators to efficiently use the search terms in the databases. Some initially included search terms were discarded from the final search strings, because they either resulted in mostly unrelated records or did not result in any relevant records. A list of these terms with the reasons for removing them from the search is in Table 3. The initial search string also returned many irrelevant records, especially about EBMed. To limit such records, the search was restricted to the title, abstract, and subject fields, with the following terms as part of a NOT operator: *medicine, medical, clinic, clinician, clinical, nurse, nursing, physician*. These changes enabled the search to include management studies in the healthcare industry while limiting non-management medical studies. The final search strings used are in Table 4.

Table 2

Association Between PICOC Elements and Search Terms

PICOC elements	Search terms
Population: Management practitioners	Manager, management, manage, managing, practice, practitioner, leader
Intervention: Interventions that promote EIDM uptake, including diffusion, behavioral, and cultural interventions	Ability, capability, capacity, knowledge, skill, motivation, attitude, perception, perceive, value, belief, believe, incentive, opportunity, context, environment, culture, climate
Comparison: Facilitators and barriers relative to EIDM uptake	Facilitator, facilitate, enabler, enable, barrier, impediment, impede
Outcome: Practitioner use of academic research evidence	Evidence-based, evidence-informed, evidence use, evidence utilization, evidence translation, evidence implementation, evidence uptake, research-based, research-informed, research use, research utilization, research translation, research implementation, research uptake, knowledge translation
Context: Management decision-making in all sectors and geographic locations	Decision, decide, management, organization, business, company, corporation, corporate

Table 3

Search Terms Considered but Not Used

Reason for not using the term	Excluded terms
Large focus on artificial intelligence and databases	Knowledge-based, knowledge-informed, knowledge use, knowledge utilization, knowledge diffusion
Large focus on cognitive processes	Knowledge uptake, knowledge adoption
General information focus	Knowledge dissemination
Focus on one very specific approach that could bias the study	Knowledge broker, research broker, evidence broker
Very little on EBMgt	Knowledge mobilization, research adoption, research diffusion, research dissemination, evidence adoption, evidence diffusion
No search hits	Evidence mobilization

Table 4

Search Strings Used

Databases	Search string
OneSearch	(“evidence based” OR “evidence informed” OR “evidence use” OR “evidence utili?ation” OR “evidence translation” OR “evidence implementation” OR “evidence uptake” OR “research based” OR “research informed” OR “research use” OR “research utili?ation” OR “research translation” OR “research implementation” OR “research uptake” OR “knowledge translat*”) N5 (manag* OR practic* OR decision* OR decid*) N10 (abilit* OR capabilit* OR capacit* OR knowledge OR skill* OR motivat* OR attitud* OR perception* OR perceiv* OR value* OR belief* OR believ* OR incentiv* OR opportunit* OR context* OR environment* OR cultur* OR climate* OR barrier* OR imped* OR facilitat* OR enabl*) N10 (organi?ation* OR business* OR compan* OR corporat* OR manag* OR leader* OR practitioner*) NOT (medic* OR clinic* OR nurs* OR physician*)
Scopus	(“evidence based” OR “evidence informed” OR “evidence use” OR “evidence utili?ation” OR “evidence translation” OR “evidence implementation” OR “evidence uptake” OR “research based” OR “research informed” OR “research use” OR “research utili?ation” OR “research translation” OR “research implementation” OR “research uptake” OR “knowledge translat*”) W/5 (manag* OR practic* OR decision* OR decid*) W/10 (abilit* OR capabilit* OR capacit* OR knowledge OR skill* OR motivat* OR attitud* OR perception* OR perceiv* OR value* OR belief* OR believ* OR incentiv* OR opportunit* OR context* OR environment* OR cultur* OR climate* OR barrier* OR imped* OR facilitat* OR enabl*) W/10 (organi?ation* OR business* OR compan* OR corporat* OR manag* OR leader* OR practitioner*) AND NOT (medic* OR clinic* OR nurs* OR physician*)
ProQuest	(“evidence based” OR “evidence informed” OR “evidence use” OR “evidence utili?ation” OR “evidence translation” OR “evidence implementation” OR “evidence uptake” OR “research based” OR “research informed” OR “research use” OR “research utili?ation” OR “research translation” OR “research implementation” OR “research uptake” OR “knowledge translat*”) N/5 (manag* OR practic* OR decision* OR decid*) N/10 (abilit* OR capabilit* OR capacit* OR knowledge OR skill* OR motivat* OR attitud* OR perception* OR perceiv* OR value* OR belief* OR believ* OR incentiv* OR opportunit* OR context* OR environment* OR cultur* OR climate* OR barrier* OR imped* OR facilitat* OR enabl*) N/10 (organi?ation* OR business* OR compan* OR corporat* OR manag* OR leader* OR practitioner*) NOT (medic* OR clinic* OR nurs* OR physician*)

Inclusion and Exclusion Criteria. Besides limiting the search to the title, abstract, and subject fields, as well as excluding specific medical terms as described, additional inclusion and exclusion criteria were applied. The inclusion criteria consisted of empirical studies and systematic reviews related to practitioner use of academic research, based on the PICOC criteria, and published in the English language between January 1, 2000, and February 29, 2020. All database searches were filtered by source for peer-

reviewed academic journals, conference papers and proceedings, and dissertations and theses, to exclude a large volume of records unlikely to contain empirical research.

Studies from the search results were excluded from this dissertation if the studies were not empirical or did not involve management. Systematic reviews were included if they were based on an empirical data set. If the abstracts from the studies in the search results provided insufficient detail to determine if a study was empirical, the body of the study was reviewed to determine if it was empirical.

Barends et al. (2017) posited that "managers tend to follow a pattern common among practitioners in other fields" (p. 12). However, Tranfield et al. (2003) argued that there are fundamental differences between the fields of medicine and management concerning the use of evidence. For example, while the use of EBP and systematic reviews is growing in the management field, management is still very much a divergent discipline, compared to the more convergent nature of medicine. As a result, medical research tends to be more positivistic, whereas management includes a large degree of phenomenological perspectives. For these reasons, studies involving different industries, including healthcare, social work, and education, were included if they were about management decision-making. Clinical or technical studies that were not management-related were excluded. Studies about implementing specific evidence-based practices that did not involve practitioner use of academic research in decision-making were also excluded. The excluded studies were considered for use as background information and to further elaborate the scoping review.

Other Search Methods. In addition to database searches, bibliographic snowball searches were conducted on certain articles to identify relevant studies not found through the database searches. Backward snowball searches identified articles in the bibliographies of the source articles. Forward snowball searches using Scopus and Google Scholar identified records that cited the source articles. Besides bibliographic snowball searches, additional records came from a personal collection of EBMgt articles the researcher gathered throughout the doctoral program, references provided by SMEs, and references from the websites of the Center for Evidence-Based Management, the EPPI Centre, and the Campbell Collaboration.

Documenting Search Efforts. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method was used to document the search efforts (Moher et al., 2009). This four-step approach involved the (a) identification of potentially relevant articles, (b) screening for relevance, (c) assessing articles for eligibility, and (d) documenting the final number of studies included in the qualitative synthesis. The results of this process are discussed in Chapter 4.

In the identification step, the number of records identified through database searching and other sources were documented. Then, duplicates were removed from the total of all records found. The titles and abstracts of the de-duplicated records were screened, and non-relevant records were excluded. In the third phase, the remaining records underwent a full-text eligibility assessment involving the quality appraisal process described in the next section. Articles not meeting the quality appraisal criteria were excluded, leaving the remaining articles to be included in the systematic review.

During the identification, screening, and eligibility phases, the articles were curated using Mendeley Desktop. The articles were organized into folders based on the search method and on whether they were being considered as evidence for the systematic review or background information for theory, methods, or other insight. During this process, memos and annotations were made in Mendeley for the purposes of organizing ideas. The articles selected for inclusion in the systematic review were transferred to NVivo 12 Plus for coding analysis (addressed later in this chapter).

Quality Appraisal of the Included Studies

Data Extraction. In preparation for the assessment, the selected articles were reviewed to extract key data for meta-methodological coding (Barends & Rousseau, 2018; Tranfield et al., 2003). The extracted data (see Chapter 4 and Appendix B) includes author(s), year of publication, research design, discipline field, sample composition, sample size, outcome measures, theory or framework, sources of evidence addressed, research question(s) or purpose, main findings, independent variables, dependent variables, mediators or moderators, effect size, and confidence interval. This data informed the quality appraisal process.

Gough's (2007) Weight of Evidence (WoE) Framework. The quality appraisal was performed using Gough's (2007) WoE framework, which employs four criteria labeled WoE A-D. WoE A is a generic judgment of the quality of the evidence, regardless of the systematic review at hand. WoE B is a judgment of whether the methodological design of the evidence is fit for the purpose of answering this systematic review's research question. WoE C is an assessment of the relevance and appropriateness of the evidence for answering this systematic review's research question. WoE D is an overall assessment, based on the weights assigned to WoE A, B, and C.

Preliminary Assessment. A two-step appraisal process was used, in which the appraised studies needed to meet preliminary methodological quality standards as part of WoE A prior to any additional assessment. This preliminary assessment strengthened the structure and rigor of the methodological quality appraisal. Barends and Rousseau's (2018) guidelines on methodological appropriateness and quality were employed in this preliminary assessment (pp. 137-171).

The preliminary assessment was based on three questions. The first assessed the extent to which the study's findings are of practical relevance, including consideration of measures of effect or difference. The second question assessed the precision and confidence of the findings. The third question assessed the methodological trustworthiness, or the extent to which the findings were measured validly and reliably. The answers to these three questions were given a numerical score from 0-3, (0 for studies not meeting the criteria, 1 for studies that minimally meet the criteria, 2 for studies that partially meet the criteria, and 3 for studies that fully meet the criteria). Any study with at least one 0 or two 1s among the three preliminary assessment questions were automatically excluded from the systematic review.

Studies that met the minimal criteria of being relevant to practice, precise, and measured appropriately were assessed for general methodological appropriateness. The methodological appropriateness was assessed by the extent to which the methods were appropriate for answering the research question of the individual study. Barends and Rousseau's (2018) table on assessing methodological appropriateness was used as a guide (p. 158). Based on this table, the methodological

appropriateness was graded with a letter grade A-D (A being the highest). If a study did not qualify for the lowest grade (D), it was excluded from the systematic review.

Guidelines for the WoE Criteria. The WoE A methodological quality rating was assessed by downgrading the letter grade from the general methodological appropriateness in the preliminary assessment, based on the number of methodological weaknesses in the study. The grade was downgraded one letter grade if two major weaknesses were identified. For each additional major weakness found beyond two, the grade was again downgraded by one letter grade. Barends and Rousseau's (2018) checklists to assess methodological weakness based on the research design were used as a guide for identifying methodological weaknesses (pp. 168-170). After quality weakness downgrades (if any), this grade became the rating for WoE A.

Barends and Rousseau's (2018) methodological appropriateness guidelines were also applied to WoE B in assessing the extent to which the studies' methodological design is fit for answering this systematic review's research question (p. 158). WoE C was unaltered from Gough's (2007) original guidelines for assessing the relevance and appropriateness of the evidence for answering this systematic review's research question. Any concerns of propriety or ethics were considered as part of WoE C.

Each WoE criterion was rated using the letter grade system (A-D) instead of a number-based system (such as for the preliminary methodological assessment). A letter grade system provides greater flexibility in assessing the overall value of an article due to the qualitative nature of the evidence reviewed. An appraised study was excluded from this systematic review if it did not qualify for at least the lowest grade (D) in one of the three individual WoE criteria, or if it received a grade of D in more than one criterion. The exclusion reason for any individual excluded article during any phase of the appraisal process was documented. The results of the WoE grading rubric are presented in Chapter 4.

Gough (2007) left the weighing criteria open to the researcher, as researchers may choose to weigh WoE A, B, and C the same or differently, depending on what is most important for the review being done. In this study, equal weight was initially considered for all WoE criteria. In most cases, the grade for WoE D was the average of WoE A-C. When there was an uneven distribution of grades for

which it was not possible to produce an exact average (such as A-C-C), the researcher gave greater value to WoE A and C. The reason for weighing WoE B lower in these cases is because multiple research designs were appropriate for contributing to this systematic review, due to the configurative nature of the inductive analysis. Table 5 is a sample of the rubric used for the preliminary and WoE quality appraisal. Chapter 4 addresses the results of the quality appraisal. The full appraisal rubric, including assessment limitations, is in Appendix C.

Table 5

Sample of Quality Appraisal Rubric

Article	Preliminary assessment				WoE assessment			
	PR	Prec	MT	GMA	WoE A	WoE B	WoE C	WoE D
Atkins et al., 2017	3	3	3	A	A	A	C	B
Barends et al., 2017	3	3	3	A	A	A	A	A
Bezzina et al., 2017	3	2	3	A	B	A	A	A

Note. PR = practical relevance; Prec = precision; MT = methodological trustworthiness; GMA = general methodological appropriateness; WoE = weight of evidence. WoE A assesses methodological quality. WoE B assesses methodological appropriateness for this systematic review. WoE C assesses relevance and appropriateness for this systematic review. WoE D is the overall assessment.

Analysis and Synthesis

The studies that met the quality appraisal standards underwent a qualitative coding process to develop descriptive and analytic codes that characterized the key topics and themes addressed in the studies. These codes and the previously extracted data from each study were reviewed to identify overarching themes relative to answering the research question. Coded references, extracted data, and other memos were thematically synthesized to identify key findings. The confidence of the findings was then assessed.

Method of Synthesis. A thematic synthesis approach was adopted for this systematic review due to this method's flexibility to synthesize various types of research methodologies (Gough, 2007; Thomas & Harden, 2008). Thematic synthesis was chosen because the research involved an emergent subject with

a more open-ended initial theoretical framework rather than that of a framework synthesis (Thomas et al., 2017). On the other hand, the initial framework of this dissertation is less abstract than in a meta-ethnographic context (Thomas et al., 2017). Furthermore, thematic synthesis is an ideal method for interpreting the findings from a pool of qualitative data. Through this interpretive approach, the articles' findings were thematically coded, leading to higher-order themes (Noblit & Hare, 1988). In other words, the studies were indexed and tagged with codes from which descriptive and analytical themes emerged.

Descriptive Analysis. A preliminary descriptive analysis was done based on the data extracted from each study during the quality appraisal process. This descriptive analysis provided details to characterize the included studies. This analysis also offered transparency in the narrowing down of the data pool using the PRISMA method. Chapter 4 discusses information on the sources of the included studies, their methodological designs, outcome measures, sample compositions, and other relevant detail.

Coding Process. Three phases of qualitative coding were employed using the NVivo 12 Plus qualitative data analysis software, and combining Gough, Oliver, and Thomas's (2017b) thematic synthesis approach with Levitt's (2018) qualitative meta-analysis coding process. In the first stage, the studies were coded based on emergent themes. In developing these primary codes, efforts were made to preserve the meaning and process of the source studies. The only initial a priori themes were *facilitators* and *barriers*. All other codes emerged from the studies' themes inductively.

The constant comparison method was used to develop higher-order descriptive themes in stage two and analytical themes in stage three (Glaser & Strauss, 1967). In the process of developing the higher-order codes, efforts were made to preserve the meaning, process, and sentiment of the subcodes and the original research on which they were based, while also reconciling any conflicts in meaning. This aided the development of "an understanding of findings versus a description of an entire literature" (Levitt, 2018, p. 374). As codes were identified as being associated with facilitators or barriers (or neither in the case of insufficient data), NVivo's Matrix Coding tool was used to identify trends regarding these facilitators and barriers. Using this analytic tool helped triangulate the coding across the studies. Tables with the codes are presented in Chapter 4.

Synthesis Process. After the coding was complete, the code tree was printed out for a full view to compare with the findings from the individual studies summarized on the extraction table. The codes and individual study findings were critically reviewed in an iterative manner to identify potential answers to the research question. Individual articles and references were reviewed as necessary during this process. During this iterative critical reflection process, initial loose themes were identified and consolidated with other themes to develop overarching findings from the synthesis. Coded references from the reviewed studies that characterized the final themes were identified for potential use as examples that described those themes. Chapter 4 presents a discussion of this dissertation's synthesis findings.

The evidence used to formulate the synthesis findings was based on a heterogeneous combination of findings from the studies included in this dissertation. In other words, varying degrees of evidence of different quality and quantity contributed to each synthesis finding in this dissertation. These differences may raise questions regarding the confidence placed in a synthesis finding being "a reasonable representation of the phenomenon of interest" (Lewin et al., 2015, p. 5). Thus, a method for assessing the confidence of synthesis findings may help management practitioners and others using the synthesis findings to "judge how much emphasis they should give to these findings in their decisions" (Lewin et al., 2015, p. 2). The Confidence in the Evidence from Reviews of Qualitative Research (CERQual) method provides a way to assess the confidence of qualitative synthesis findings (Lewin et al., 2015).

Confidence Assessment of Synthesis Findings. The CERQual method was used in this dissertation to assess the confidence of the synthesis findings. This method provides a "structured approach" to judging the confidence of synthesis findings (Lewin et al., 2015, p. 5). This approach results in greater rigor and transparency and a reduction in dissemination bias, making it easier for practitioners to apply the dissertation findings with a greater degree of confidence. It involves assessing the confidence of synthesis findings in four components: methodological limitations, coherence, adequacy, and relevance. It is important to note that CERQual is not a critical appraisal tool. It is not used for appraising individual studies, but rather for assessing the confidence of synthesis findings in this dissertation. Table 6 provides definitions of the four CERQual components.

Table 6

Definitions of the CERQual Components

Component	Definition
Methodological limitations	The extent to which there are concerns about the design or conduct of the primary studies that contributed evidence to an individual review finding
Coherence	An assessment of how clear and cogent the fit is between the data from the primary studies and a review finding that synthesises that data. By 'cogent', we mean well supported or compelling
Adequacy of data	An overall determination of the degree of richness and quantity of data supporting a review finding
Relevance	The extent to which the body of evidence from the primary studies supporting a review finding is applicable to the context (perspective or population, phenomenon of interest, setting) specified in the review question

Note. From "Applying GRADE-CERQual to Qualitative Evidence Synthesis Findings: Introduction to the Series," by S. Lewin, A. Booth, C. Glenton, H. Munthe-Kaas, A. Rashidian, M. Wainwright, M. A. Bohren, Ö. Tunçalp, C. J. Colvin, R. Garside, B. Carlsen, E. V. Langlois, & J. Noyes, 2018, *Implementation Science*, *13*(Article 2), p. 5 (https://doi.org/10.1186/s13012-017-0688-3). Copyright 2018 by The Author(s).

Each of the four CERQual components was assessed with one of four confidence levels (high, moderate, low, very low) as described in Table 7. The collection of studies that contributed to each dissertation finding was considered to make these assessments. Because some studies contributed more heavily than others to individual findings, and some studies had stronger critical appraisals than others, the confidence level assigned to a finding was not as simple as calculating an average score over the collection of contributing findings. In fact, "to numerically score assessments for each component as this may give a false sense of precision regarding these assessments" was not recommended by the scholars who developed the process (Lewin, Bohren, et al., 2018, p. 16). Rather, CERQual provided a method for documenting the reasons for subjective confidence assessments to make "judgements as explicit and transparent as possible" (p. 16).

Table 7

Definitions of the CERQual Confidence Levels

Level	Definition
High confidence	It is highly likely that the review finding is a reasonable representation of the phenomenon of interest
Moderate confidence	It is likely that the review finding is a reasonable representation of the phenomenon of interest
Low confidence	It is possible that the review finding is a reasonable representation of the phenomenon of interest
Very low confidence	It is not clear whether the review finding is a reasonable representation of the phenomenon of interest

Note. From "Applying GRADE-CERQual to Qualitative Evidence Synthesis Findings: Introduction to the Series," by S. Lewin, A. Booth, C. Glenton, H. Munthe-Kaas, A. Rashidian, M. Wainwright, M. A. Bohren, Ö. Tunçalp, C. J. Colvin, R. Garside, B. Carlsen, E. V. Langlois, & J. Noyes, 2018, *Implementation Science*, *13*(Article 2), p. 6 (https://doi.org/10.1186/s13012-017-0688-3). Copyright 2018 by The Author(s).

To assess the CERQual criterion of methodological limitations, the WoE A assessment of methodological quality, along with the extracted notes on limitations, were considered for the studies contributing to each finding. Coherence was assessed by the extent to which the collection of studies contributing to the dissertation findings contained contradicting or unclear evidence, or plausible alternative interpretations could be provided for the data they presented (Colvin et al., 2018). The adequacy of data of the synthesis findings was assessed based on the extent to which the data provided by the collection of studies contributing to a dissertation finding was of sufficient quantity and richness. Quantity refers to the number of studies contributing to this dissertation's systematic review findings, along with the number of participants in those studies. Richness refers to the extent to which the data has sufficient detail for this dissertation's researcher to "interpret the meaning and context" (Glenton et al., 2018, p. 45). For relevance, the WoE C assessment from the collection of studies contributing to a finding was considered. Additional relevance considerations were based on the extent to which the studies contributing to a finding had indirect relevance ("one or more aspects of context are substituted with

another"), partial relevance ("evidence is lacking for the complete context"), or unclear relevance (important factors are not identifiable) (Noyes et al., 2018, p. 56).

The complete CERQual assessment was summarized in two tables. The CERQual Summary of Qualitative Findings summarizes of all the dissertation findings, and their respective contributing studies, assessment of confidence, and explanation of judgment. For each finding, a more detailed CERQual Qualitative Evidence Profile also provides the assessments for each of the four components along with a justification for those judgments. The details of these summaries for this dissertation are discussed in Chapter 4.

Conclusions and Implications

The final part of the systematic review process is perhaps the most important because it is in the conclusions and implications that the review findings are translated for practitioner consideration and implementation. The final answers to the research question are presented in Chapter 5. Implications and recommendations for management are discussed. Implications for researchers, the limitations of the study, and areas for future research are also addressed.

Development of Recommendations. Recommendations were developed based on the descriptive and analytical data from the findings. During the analysis and synthesis phase, a log was kept with potential recommendations that either emerged directly from the data or were interpreted from the analysis. Recommendations also emerged through critical reflection of the findings. The list of potential recommendations was printed out and manually de-duplicated and harmonized through a coding process. The management implications and recommendations were also considered within the framework of an EIDM capability maturity model adapted from Thorpe and Howlett (2020) (described in the Chapter 2 theoretical framework discussion).

Use of Subject Matter Experts (SMEs). An executive summary of this review, including the recommendations for practice, was provided to the three previously mentioned management practitioner SMEs. These practitioners provided feedback to validate the relevance and utility of this review. The SMEs were asked to respond to the following questions based on the executive summary:

- Are the recommendations relevant and actionable? In what way?
- Does the maturity model make it easier to apply the recommendations? How?
- Do you believe you could benefit from applying the recommendations? How?
- Do you see any potential negative unintended consequences of applying the recommendations? If so, what are they, and what would you recommend for overcoming them?

The feedback from these practitioner SMEs is addressed in Chapter 5.

Chapter Summary

This chapter reviewed the overarching EBMgt research framework, including the four sources of evidence (research, organizational, practitioner, and stakeholder) and the EBMgt process involving the six As (ask, acquire, appraise, aggregate, apply, and assess). The primary source of evidence used in this dissertation is academic research (a type of research evidence). Some of the evidence found in the academic research reviewed in this dissertation was based on organizational data. Consultation with SMEs also provided perspectives from practitioners and stakeholders. However, the focus of this dissertation was on academic research evidence, and broad use of the four sources of evidence is outside the scope of this study. This chapter presented the systematic review as an effective research design for synthesizing academic research to identify what is known about a practical problem or decision.

The five steps of the systematic review process (initiation, search strategy, critical appraisal, analysis and synthesis, and conclusions and implications) were discussed as they pertain to this review. In the initiation step, a scoping review was done to broaden understanding of the research problem and theoretical frames that could explain the problem. Scholar and practitioner SMEs were consulted to strengthen the methodological rigor and practical relevance of the research. In particular, the practitioner SMEs provided feedback on the relevance of the findings and recommendations in this dissertation. The scoping review and SME consultations, along with the PICOC logic, informed the development of the research question.

In the search strategy step, relevant databases and other search methods were identified. Search terms, based on the research question and PICOC logic, were developed into search strings, and inclusion and exclusion criteria were applied. Efforts were made to document the evidence search transparently. In the critical appraisal step, relevant data were extracted from the studies, and the quality of the studies was assessed using the weight of evidence (Gough, 2007) framework. In the analysis and synthesis step, thematic synthesis was explained as the method of synthesis. The preliminary descriptive analysis and the deeper thematic coding process was explained, along with the synthesis process and CERQual confidence assessment of the dissertation's findings. Finally, the approach for presenting the conclusions and implications was discussed, including the process for developing recommendations and the use of the practitioner SMEs to validate the relevance of the recommendations.

Chapter 4: Analysis and Findings

This systematic review assessed the factors that influence practitioner EIDM, or the use of academic research evidence in management decision-making. This analysis presented in this chapter can help organizational leaders and management practitioners more effectively apply EIDM to improve organizational outcomes. It also contributes to the body of research on EBMgt to broaden understanding of research utilization, which is the source of evidence least utilized by management practitioners.

This chapter presents an analysis of the studies included in this review and a synthesis of the review findings. The data set is described, including the process of narrowing down the data pool and a summary of the data collection efforts. The data quality appraisal results are presented. This is followed by the results of the synthesis, including a detailed description of the themes that emerged from the data analysis. Finally, the findings are presented and discussed, along with a confidence assessment of each finding.

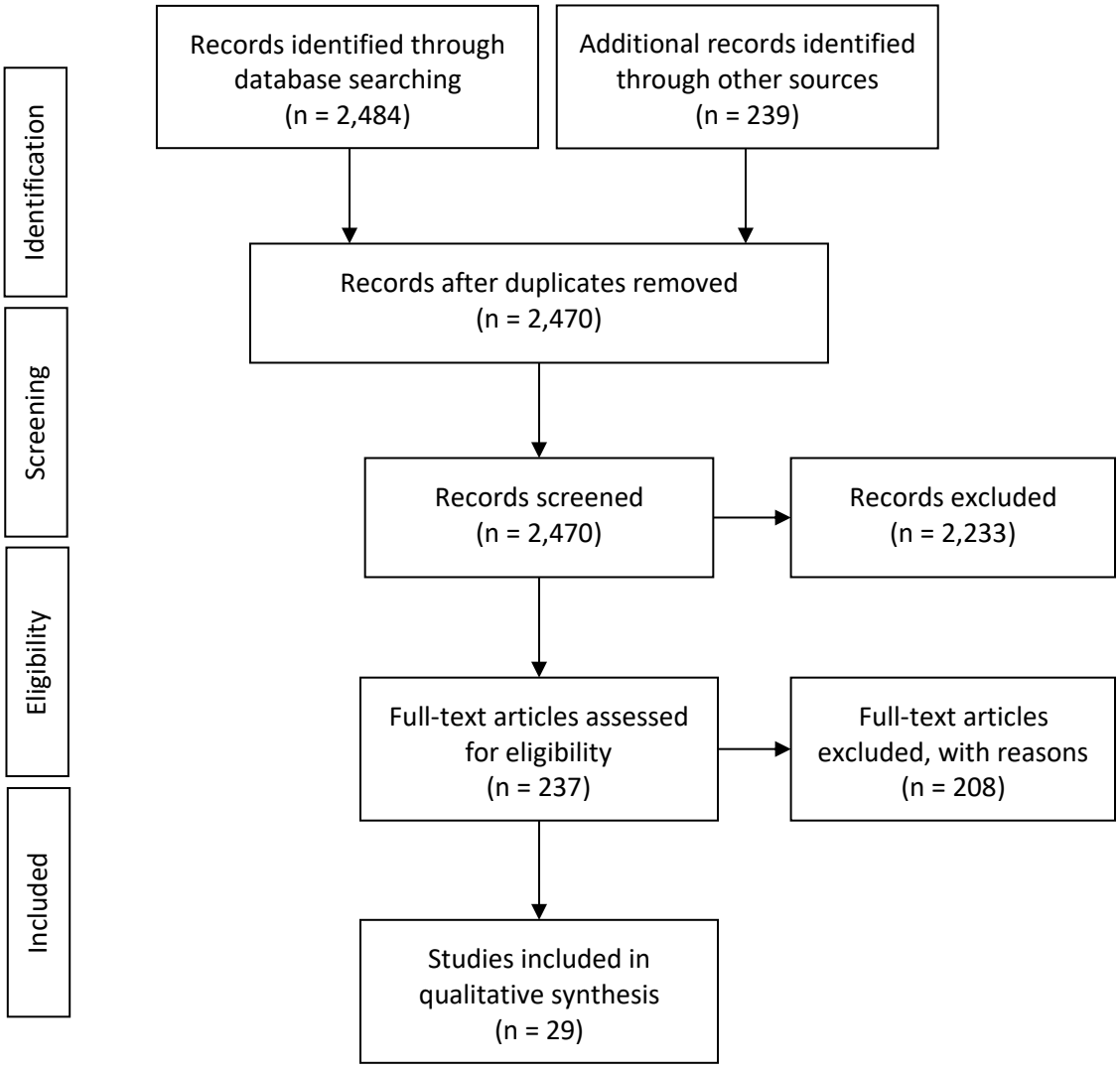
Description of the Data Set

The final data set included 29 studies. Initially, 2,470 de-duplicated records were identified from scholarly databases and other sources using the search strategy described in Chapter 3. The titles and abstracts of these records were screened for relevance, and 237 records were selected for a full-text review. During this final eligibility review, 208 records were excluded with documented reasons. The PRISMA process of narrowing down the data set is illustrated in Figure 6 (Moher et al., 2009).

The database searches took place between January 5 and March 27, 2020, with most occurring on March 16-18. Although most records identified in databases were scholarly articles, conference materials and dissertations and theses were also searched. Other sources for searching for records included references from previous research conducted by the review author, recommendations from subject matter experts, and forward and backward snowball searches of key articles (forward searches done on Scopus and Google Scholar). The websites of the Center for Evidence-Based Management, the EPPI Centre, and the Campbell Collaboration were also searched for relevant references.

Figure 6

PRISMA Diagram of the Narrowing of the Data Pool



All included studies were published between 2002 and 2020. Two sets of two articles were based on the same research data, but analyzed different perspectives (Ellen et al., 2013, 2014; Liang et al., 2011a, 2011b). Most included studies were articles from peer-reviewed academic journals, except for three gray literature records. Of the three gray literature studies, one is a doctoral dissertation, which resulted from searching ProQuest Dissertations and Theses Global (Guo, 2015). Another, obtained through communication with one of the authors (D. Rousseau, personal communication, October 6, 2019), was published at a conference (Jepsen & Rousseau, 2019). The third study is a review of reviews

from the EPPI Centre (Langer et al., 2016). The Langer et al. (2016) study includes a systematic review of reviews on EIDM and a conceptual scoping review of social science literature that can be adapted to EIDM. In this case, evidence from Langer et al.'s (2016) conceptual scoping review was not used in this dissertation. Although there was no documentation of a peer review of the Jepsen and Rousseau (2019) and Langer et al. (2016) studies, all three of these studies were conducted by leading EBMgt scholars and were assessed as having good (B) or higher methodological quality (WoE A) through the quality appraisal process.

This dissertation included studies with various methodological designs, including qualitative, quantitative, mixed methods, and systematic reviews. Table 8 describes the different types of research designs included along with their outcome measures. The studies included in this dissertation also represent various disciplines, half of which are healthcare related. The inclusion and exclusion criteria required all studies to be about management decision-making. Studies exclusively about clinical or other non-management decisions were excluded, although some of the included studies dealt with both management and non-management decision-making. All studies addressed using academic research evidence in decision-making, as defined in Chapter 1. However, several studies also addressed other sources of evidence and empirically-supported interventions. Another limitation is that 20 of the 29 included studies had samples exclusively from Western English-speaking countries. This result speaks to the need for more research on EIDM in different parts of the world. Table 9 breaks down the different disciplines and sample compositions.

Records were excluded either for not being an empirical study, having low methodological quality (WoE A), lacking relevance or appropriateness (WoE C), or other reasons, including not meeting the overall minimum quality appraisal requirements (WoE D). Since various types of quantitative, qualitative, and mixed-methods methodologies are necessary to answer the research question, no study was excluded solely due to poor methodological appropriateness for this review (WoE B). A breakdown of the number of studies excluded with documented exclusion reasons is listed at Table 10.

Table 8

Frequency of Research Designs and Included Outcome Measures

Studies	Research design	Outcome measures
9	Qualitative	Semi-structured interviews, focus groups, observation, written reflections, including case study designs
9	Quantitative	Open- and closed-ended cross-sectional surveys and a randomized controlled trial
6	Systematic Reviews	Quality and relevance appraisals; thematic, narrative, and framework syntheses; including a review of reviews
5	Mixed Methods (quantitative and qualitative)	Open- and closed-ended cross-sectional surveys, focus groups, interviews, including pre- and post-test designs

Table 9

Frequency of Disciplines and Sample Compositions

Studies	Discipline	Sample compositions
13	Healthcare	Executives, administrators, policymakers, and managers in health systems (national, regional, non-profit), public and community health, hospitals, primary care, professional associations, academia, and non-government organizations, primarily from Western English-speaking countries (3 systematic reviews included studies from non-Western countries)
3	Human resources	Managers involved in HR or people management in the United States, South Korea, and five European nations (different languages) in different organization types
3	Social services	Executives, administrators, managers, supervisors, and front-line workers in local authorities and agencies dealing with welfare, family, and health services in Western English-speaking countries
3	Cross-disciplinary	Studies involved (1) healthcare workers and employed MBA students in Australia, (2) managers in various levels and organizations in 5 Western countries, and (3) practitioners in practice and policy contexts in different disciplines and countries (systematic review largely involving healthcare sector)
3	Other management areas	Studies involved (1) Canadian chartered business valuators, (2) senior managers in Australian construction and design firms, and (3) senior and mid-level Australian accounting managers
2	Education	Undergraduate management students in U.S. and Australian universities
2	Public policy	Policymakers at various management levels involving various sectors in national, regional, or local government organizations in various countries (one study exclusively in Australia)

Table 10

Studies Excluded with Reasons

Studies	Exclusion reason
33	Not empirical study
26	Low methodological quality (WoE A)
138	Lack of relevance or appropriateness (WoE C)
10	Other reasons (including WoE D)

The category with the largest number of excluded studies was WoE C. These included various contextual reasons, such as not being about management practice or practitioners, academic research utilization, or decision-making. Several studies were also excluded because they were focused on the application of specific evidence-based practices unrelated to academic research utilization by practitioners. A list of the excluded studies with details about the exclusion reasons is in Appendix D.

For each included study, relevant data was extracted, and Table 11 provides an abbreviated version of the comprehensive data extraction tables in Appendix B. For each included study, Table 11 provides details about the research design, discipline, sample, outcome measures, and main findings. All studies specifically included management practitioners (e.g., managers, supervisors, administrators, executives, policymakers) in their sample, except for three. Two of these three studies had samples composed of undergraduate management students (Caprar et al., 2016; Wright et al., 2018). The third study, which was about subordinate perceptions of manager evidence use, had a sample involving two groups, non-management eldercare employees and employed part-time MBA students (Jepsen & Rousseau, 2019). None of these three studies addressed how many of the students were current management practitioners. Five of the studies, two of which were systematic reviews, included non-management staff in the sample, in addition to management practitioners (Cherney et al., 2015; Ellen et al., 2013, 2014; Gray et al., 2013; Langer et al., 2016).

Table 11

Abbreviated Data Extraction Table

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Atkins et al., 2017	Qualitative	Healthcare	Public health managers in England	31	Semi-structured interviews	Local government health officials see a conflict between national evidence-based guidelines and local evidence. In cases where such conflict is present, they give preference to the local evidence.
Barends et al., 2017	Cross-sectional	Cross-disciplinary	Managers from various types of organizations in Belgium, the Netherlands, the United States, the United Kingdom, and Australia	2789	Closed and opened-ended survey	Most managers have positive attitudes towards EBP. However, lack of time and a limited understanding of scientific research are perceived as major barriers to the uptake and implementation of EBP in management.
Bezzina et al., 2017	Mixed methods	Human resources	Generalist managers supervising people in major firms in Poland, Croatia, and Malta	274 surveys, 20 interviews	Closed-ended survey and semi-structured interviews	Managers largely believe in HR practices that are not evidence-based. This belief in non-evidence-based HR practices increases with experience managing people. Managers have little awareness of and time to consult academic HR literature. Managers prefer to get knowledge about HR from popular sources.
Booker et al., 2012	Qualitative	Business valuation	Chartered business valuators from three Canadian provinces found through a professional association	15	Semi-structured interviews	The business valuation discipline promotes the use of academic research evidence for decision-making. The use of non-academic intermediaries can serve as a means for academic knowledge transfer. Such intermediaries include conferences, workshops, webinars, professional services, e-mail-based newsgroups, books, and internal training.

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Bowen et al., 2009	Qualitative	Healthcare	Public healthcare administrators in Manitoba, Canada	17 from focus groups, 53 interviews	Focus groups and semi-structured individual interviews	Barriers to evidence-based decision-making include the perception that EIDM deals only with using research evidence; perceived conflict between politics and evidence; lack of time and resources; perception that barriers are mainly external in nature; leadership, communication, and organizational structure issues; a "crisis management" culture; workload management; support of technology.
Caprar et al., 2016	RCT	Education	Undergraduate management students in a Midwestern U.S. public university	370	Student academic records review and closed-ended surveys	Acceptance of evidence is influenced by self-motivated processes of self-enhancement and self-protection.
Champagne et al., 2014	Qualitative	Healthcare	Mid- and senior-level healthcare managers in national and provincial healthcare systems in Canada	84	Multiple case study involving semi-structured interviews	The primary impact of research skills training was in the trainees' immediate work environment. However, it was easier for the trainees to transfer to their colleagues their attitudes resulting from the training than to transfer trained skills. Several factors that influence skill and knowledge transfer were identified.

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Cherney et al., 2015	Cross-sectional	Public policy	Executives, managers, officers, and analysts in various Australian national and state government organizations	2084	closed and open-ended survey	Practitioners in disciplines that value research are more willing to look for research evidence. The value that practitioners place on research evidence depends on the access they have to it and the association (relevance) they make with it. The available infrastructure affects the extent to which practitioners consult evidence.
Criado-Perez et al., 2020	Mixed methods	Built environment	Senior managers involved in the inception, design, or development of office buildings in Australia	187 surveys, 18 interviews	Closed-ended survey and semi-structured interviews	Managers trust personal experience, organizational knowledge, and consultant advice in decision-making, but scientific research is largely neglected. Managers focus more on practice-based knowledge and interpret EBP more flexibly, often for the purpose of justifying decisions, rather than guiding decisions. Learning goal orientation and cultural norms may foster EBP, but EBP adoption is also hindered by established routines that reinforce experiential evidence.
Ellen et al., 2013	Qualitative	Healthcare	Senior managers, library managers, and knowledge brokers from Canadian regional health authorities, hospitals, and primary care practices	57	Semi-structured interviews	Supports that facilitate EIDM are facilitating internal research-promoting roles, ties to external researchers and opinion leaders, research access infrastructure, and EIDM training programs.

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Ellen et al., 2014	Qualitative	Healthcare	Senior managers, library managers, and knowledge brokers from Canadian regional health authorities, hospitals, and primary care practices	57	Semi-structured interviews	Common barriers to EIDM were limited resources, time constraints, and negative attitudes. Facilitators were interest from decision-makers, and particularly their investing of money and resources, as well as developing of an EIDM culture. Participants believe that priorities to enabling supports for EIDM are implementing technical infrastructure for research access and support, as well as the development of ties to external researchers and knowledge brokers.
Gray et al., 2013	Systematic review	Social services	Empirical studies including executives, managers, and front-line workers in various organizational, service, and country settings	11	Quality appraisal and thematic synthesis	Barriers to EBP uptake include inadequate resources (time, research access, funding), insufficient skills & knowledge of practitioners, organizational culture, research relevance to practice, negative or indifferent attitudes to EBP, and inadequate supervision in EBP process. Facilitators (tentative evidence) include: a designated research implementation officer, audio recordings of research summaries, research supervision training, a strategic management approach to training, and partnerships with universities.
Guo, 2015	Cross-sectional	Healthcare	Senior hospital administrators in the U.S.	154	Closed-ended survey	Attitude and perceived behavioral control, but not subjective norms, significantly correlated with intention to use EBMgt. Education positively moderated between attitude and intention to use EBMgt. Unfamiliarity, access to EBMgt resources, and organizational culture also related to intention to use EBMgt.

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Guo et al., 2016	Cross-sectional	Healthcare	Hospital managers in Idaho	48	Closed-ended survey	Most management decisions are not evidence-based. Practitioner attitude toward EBMgt correlated positively with a higher number of decisions being evidence-based. Practitioners have generally favorable attitudes toward EBMgt. Most have not received any type of EBMgt training and would favor receiving such training.
Humphries et al., 2014	Systematic review	Healthcare	Studies on the use of evidence in program management in various healthcare settings in Canada, the United Kingdom, and Poland	14	Quality appraisal and narrative synthesis	Barriers and facilitators were identified relative to information, organizational structure/process, organizational culture, individual skills, and interaction.
Jack et al., 2010	Qualitative	Social services	Canadian child welfare administrators from 9 agencies	27	Multiple case study including observation and semi-structured interviews	The organizational culture of Canadian child welfare organizations appears to be shifting toward EBP. Individual, organizational, and environmental barriers were identified. Developing internal evidence champions and a culture that values EBP were identified as facilitators.
Jepsen & Rousseau, 2019	Cross-sectional	Cross-disciplinary	Eldercare employees in a residential care facility and employed part-time students in an MBA program in Australia	796	Closed-ended survey administered at two times for both groups	A measure of perceived evidence use was developed. Employees' perceptions of evidence use by their managers positively correlates with leader-member exchange, trust in manager, and work-based learning. It also has a positive effect on perceived organizational performance.

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Kovner & Rundall, 2006	Qualitative	Healthcare	Healthcare managers in U.S. non-profit health systems organizations	68	Semi-structured interviews	Manager use of academic research was uncommon and they did not refer to using any management academic journals. Manager use of research evidence may be influenced by accountability demands and structure, organizational culture, and participation in research.
Langer et al., 2016	Review of reviews	Cross-disciplinary	Systematic reviews of effects in practice and policy contexts in different disciplines (largely healthcare) and countries	36	Quality appraisal and framework synthesis	Interventions involving research evidence communication and access were only effective if they increased practitioner motivation and opportunity. Research skill development interventions were only effective if they increased practitioner capability and motivation. Interventions involving changes to decision-making structure and process may be effective but lack sufficient evidence. Unstructured interventions between decision-makers and researchers appear to be ineffective. Simpler interventions appear to be more effective than multi-faceted interventions.
Liang et al., 2011a	Mixed methods	Healthcare	Middle and senior health service managers in Victoria, Australia	116	Closed and open-ended survey with focus groups before and after the survey	Managers generally believe evidence use is important, but they define evidence broadly. Managers rarely use research evidence, preferring organizational data, followed by external best practices and personal experience.

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Liang et al., 2011b	Mixed methods	Healthcare	Middle and senior health service managers in Victoria, Australia	116	Closed and open-ended survey with focus groups before and after the survey	Top barriers to research evidence use are lack of time, insufficient financial resources, and perceived irrelevance. Enablers include presenting research findings appropriately, the existence of high-quality research, and the relevance of it to local context. Professional associations can be especially helpful in promoting evidence-based management at the researcher, organizational, and practitioner levels.
McBeath et al., 2015	Cross-sectional	Social services	Administrators, middle managers, and supervisors in 11 county public human service agencies located in the San Francisco Bay Area	497	Closed-ended survey	Managers use evidence moderately, including research literature. Evidence use positively correlated with access to performance measurement systems, being an administrator, being innovation-minded, and being responsive to organizational change.
Oliver et al., 2014	Systematic review	Public policy	Primary research and systematic reviews of national, regional, or local policymakers in various countries	145	Relevance appraisal and thematic synthesis	Common barriers to research use are lack of access and time. Common facilitators are collaborations with researchers and improved relationships and skills.

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Orton et al., 2011	Systematic review	Healthcare	Empirical studies of public health decision-makers at various organizational levels and from different countries	18	Quality appraisal and narrative synthesis	Various types of research evidence are used in policymaking, but their influence in decision-making is indirect, and there is insufficient evidence regarding the extent to which research evidence is used. Barriers include decision-maker perceptions of research evidence, the academic-practitioner divide, organizational culture, competing influences, and practical constraints. Facilitators include research relevance and clarity and building the capacity of decision-makers to use research.
Rynes et al., 2002	Cross-sectional	Human resources	Managers who are members of the Society for Human Resource Management (SHRM) in the United States	959	Closed-ended dichotomous survey	There are large discrepancies between HR practitioner beliefs and research evidence. HR managers are generally not aware of research. HR managers prefer to turn to industry journals and popular sources for information, which often contradict research evidence. Research often lacks relevance for practitioners. Managers with higher job levels, professional certifications, and who read academic literature have beliefs more aligned with research evidence.

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Main findings
Sarkies et al., 2017	Systematic review	Healthcare	Studies on evidence use in policy and management decisions in various healthcare organizations internationally	19	Quality appraisal, narrative synthesis, thematic synthesis	Factors that may facilitate research implementation include management mandate, trust among stakeholders, a shared vision, enabling change, effective communication, and providing the necessary resources. Helpful interventions in specific cases included using policy briefs citing expert opinion, training, technical support, and awareness messages.
Tenhiälä et al., 2016	Cross-sectional	Human resources	Managers who are members of HR professional associations in Finland, South Korea, and Spain	429	Closed-ended dichotomous survey	There are large discrepancies between HR practitioner beliefs and research evidence. Interpersonal aspects of managers are more dependent on culture than technical aspects. While practitioner attitudes of academics are generally positive, practitioners are not likely to turn to academics or academic literature to resolve HR problems.
Tucker & Lowe, 2014	Mixed methods	Accounting	Senior and mid-level managers from the top four accounting professional associations in Australia	19	Closed and open-ended survey and semi-structured interviews	The two biggest barriers for practitioner use of research evidence are accessing and understanding research findings.
Wright et al., 2018	Qualitative	Education	Undergraduate management students in a large Australian university	222	Written reflections	Using EBMgt as a way of doing business is understood in four ways: unrealistic, contextually applicable, generally useful, and ideal. An individual's understanding was based on their perceptions of the utility of evidence, their stance toward scientific evidence, and their focus of reflection about EBMgt.

Results of the Quality Appraisal of the Data Set

The quality of the evidence was appraised using Gough's (2007) weight of evidence (WoE) method, as described in Chapter 3. Table 12 presents the results of the WoE quality appraisal with an explanation of any limitations resulting in the downgrading of any of the WoE categories. A more detailed quality appraisal, which includes the preliminary assessment discussed in Chapter 3, is in Appendix C. The studies were assumed to be of excellent quality (grade A) unless they had limitations which resulted in downgrades to good (B), moderate (C), or low (D) quality. Methodological quality limitations resulted in a downgrade of WoE A. Limitations in the methodological appropriateness for this review resulted in a downgrade of WoE B. Limitations in relevance and appropriateness with respect to the purpose of this review resulted in a downgrade of WoE C. WoE D was based on the overall assessment of WoE A, B, and C. The overall appraisal (WoE D) of most (17) studies was rated as good (B), with six studies rated as excellent (A) and six studies rated as moderate (C).

While this appraisal was based on the researcher's judgment, efforts were made to ensure that all studies were appraised with the same standards. Barends and Rousseau's (2018) methodological appraisal standards and checklists were used in assessing WoE A (pp. 137-171). WoE B was downgraded if the methods used in the study were missing elements or otherwise lacked coherence that could have better contributed to answering this review's research question. Because various types of methodologies can contribute to answering the research question, WoE B was given less consideration in the overall assessment. In assessing WoE C, the extent to which the study's findings answer this review's research question was considered. In doing so, close attention was given to ensuring the study in question dealt with management practice, decision-making, and the use of academic research evidence.

Table 12

Weight of Evidence (WoE) Quality Appraisal

Article	WoE A	WoE B	WoE C	WoE D	Assessment limitations
Atkins et al., 2017	A	A	C	B	Small purposive sample of public health managers. Recommendations are not specific enough to be actionable beyond simple prescriptions. An emphasis on academic research evidence is implied, but it is difficult to distinguish between different evidence sources.
Barends et al., 2017	A	A	A	A	Convenience sample and uneven response rate between countries
Bezzina et al., 2017	B	A	A	A	Purposive sample. Confidence interval for effect not reported.
Booker et al., 2012	D	B	B	C	Small purposive sample of a very specialized career field. The methodology explanation is very brief and could have more details about quality control. Some of the data could have been collected more objectively through a survey.
Bowen et al., 2009	A	A	B	B	Limited generalizability due to socialized healthcare context. Different interpretations of what constitutes evidence from participants.
Caprar et al., 2016	B	B	C	B	Management student convenience sample in a classroom environment may not be generalizable to the real management environment. The research evidence presented involved only one very specific area--belief in evidence on hiring based on intelligence. It did not address the extent to which other research evidence generally challenges self-concepts.
Champagne et al., 2014	B	A	A	A	Focus on two very specific training models limits generalizability. Rigid theoretical framework susceptible to introduction of bias.
Cherney et al., 2015	B	A	A	A	Self-reported data by self-selected participants in 21 different agencies could produce response bias. Surveys administered over a 3-year period. Measure of research use was wide (having consulted research over a 12-month period).
Criado-Perez et al., 2020	B	B	B	B	Does not explain the sampling methods. Australian built environment may not be generalizable to broader management context. Confidence interval for effect not reported.
Ellen et al., 2013	B	A	B	B	Purposive sample with a lower number of participants than ideal. Sample limited to organizations that have been successful in implementing EBP policies. Generalizability may be limited to health professionals.

Article	WoE A	WoE B	WoE C	WoE D	Assessment limitations
Ellen et al., 2014	B	A	B	B	Purposive sample with a lower number of participants than ideal. Sample limited to organizations that have been successful in implementing EBP policies. Generalizability may be limited to health professionals. Note: this was a continuation of the Ellen et al. (2013) study.
Gray et al., 2013	B	B	C	B	Very restrictive selection criteria and few studies included. No studies excluded on methodological grounds. Although it is focused on human services and has a partial management sample, the focus is not on the clinical evidence itself, but on the ability to implement processes for EBP.
Guo, 2015	B	B	B	B	Confidence intervals not addressed. Does not provide details about how the survey questions were developed, other than stating they are research-based and that the survey was pilot-tested. Findings may not be generalizable beyond healthcare management. Other barriers and facilitators may have been identified through qualitative data sources.
Guo et al., 2016	D	B	B	C	Small, purposive, self-selected sample from healthcare administrators. Little details were discussed on the nature of the survey instrument. Although it was pre-tested, this makes it difficult to understand how the variables were measured or replicate the study. Confidence interval not discussed. Findings discuss evidence generally, making it difficult to distinguish between academic research and other sources of evidence.
Humphries et al., 2014	A	A	B	A	Only 14 studies were included, yet the authors claim to have attained saturation. Could have included more studies by broadening the inclusion criteria. Analysis was superficial in nature. An emphasis on academic research evidence is implied, but it is sometimes difficult to distinguish between different evidence sources.
Jack et al., 2010	A	B	B	B	Small purposive sample. Limited generalizability for management outside of social services. Evidence use about social science, not management science.
Jepsen & Rousseau, 2019	B	B	C	B	Confidence interval for effect not reported. Self-reported measures. Purposive healthcare and MBA student samples.
Kovner & Rundall, 2006	B	A	B	B	Methodological details are not clear; however, this article references an unpublished study that is expected to have these details. Also, the study is from a seminal author. All managers were from the healthcare field, making generalizability limited.

Article	WoE A	WoE B	WoE C	WoE D	Assessment limitations
Langer et al., 2016	A	B	C	B	Very stringent inclusion criteria only included systematic reviews of effects. Scoping review portion of the study not considered in this review because it was not focused on EIDM and included non-empirical research. Secondary research nature of review of reviews. Vast majority of reviews included in systematic review were from healthcare. Many decision-makers were at the practice level, however clinical studies were excluded, and the results focus on management aspects.
Liang et al., 2011a	C	A	B	B	Small, self-selected sample of healthcare managers may have limited generalizability. Did not present statistical data or correlations (although stated they were performed). Did not address effect or confidence intervals.
Liang et al., 2011b	C	A	B	B	Small, self-selected sample of healthcare managers may have limited generalizability. Did not present statistical data or correlations (although stated they were performed). Did not address effect or confidence intervals.
McBeath et al., 2015	B	A	B	B	Data is self-reported. Findings may not be generalizable beyond human services managers. Large confidence intervals spanning weak to strong effects were not explained.
Oliver et al., 2014	B	B	C	C	Methodological quality of studies was not assessed. Synthesis process not clearly explained. A few of the included studies did not define "evidence," and some variables lack clarity. Majority of reviews included were from healthcare. Much of the research use revolves around non-management areas, however clinical studies were excluded, and the results focus on management aspects.
Orton et al., 2011	A	A	C	B	Limited generalizability due to public health focus. Some of the research used in decision-making is focused on health outcomes. Data extraction table not presented in article (although submitted to journal).
Rynes et al., 2002	C	C	C	C	Self-selected sample. Methodological limitations not addressed in article. Confidence interval for effect not reported. Study did not focus on the managers' use of research evidence, but rather the extent to which their beliefs align with evidence. Practitioner recommendations not explicit but inferred.
Sarkies et al., 2017	A	A	B	A	Small number of studies included. Generalizability may be limited to healthcare management.

Article	WoE A	WoE B	WoE C	WoE D	Assessment limitations
Tenhiälä et al., 2016	C	C	B	C	Self-selected sample. Effect sizes and confidence intervals not addressed. Study did not focus on the managers' use of research evidence, but rather the extent to which their beliefs align with evidence.
Tucker & Lowe, 2014	A	B	B	B	Limited generalizability due to small sample of managers from authorities interested in evidence use. Provides little detail on practice recommendations.
Wright et al., 2018	B	A	C	C	Self-selected sample of management students has limited generalizability. Self-reported data subject to social desirability bias. Data collected at one point in time. Not just about research use, but about the four sources of EBMgt evidence.

Results of the Analysis of the Articles in the Data Set

After the extraction and appraisal process, the full-length records were reviewed again, focusing on the findings to search for answers to the research question. This additional review facilitated the identification of factors that influence the use of academic research evidence in management decision-making. These factors were mainly open-coded, although a priori codes were used to identify if the factor was considered a barrier or facilitator, or if there was insignificant or insufficient evidence to make such a determination.

During the first coding pass, three levels of analysis emerged, and codes were developed for these levels of analysis. The levels of analysis are individual (relating to the individual management practitioner), organizational (relating to the management practitioner's organization or business unit), and external (relating to environmental influences external to the organization, including stakeholders and scholars). These levels of analysis were consistent with the theoretical framing of several included studies and influenced the development of this review's theoretical framework (discussed later) (Champagne et al., 2014; Humphries et al., 2014; Jack et al., 2010; McBeath et al., 2015).

The studies were reviewed in full-length two additional times for descriptive and analytical codes and to strengthen the reliability of the codes that emerged. During these reviews, adjustments were made for coding consistency. Memos were also annotated to facilitate the researcher's recollection of highlights and thought processes. A total of 1,247 references were coded in the 29 studies. Tables 13-15 identify the

codes developed, and the number of studies in which these codes were associated with barriers or facilitators, or instances when there was insignificant or insufficient evidence to make such a determination.

Based on this analysis, 14 major factors were identified as influencing EIDM. These factors are the second-level codes on Tables 13-15, after the top-level codes for the levels of analysis (individual, organizational, external). Table 16 lists all 14 of these factors with the number of studies that identified them as either barriers or facilitators. Many studies identified both enabling and disabling elements of the same factor. Indeed, all factors can serve as either barriers or facilitators, based on how they influence the practitioner (e.g., positive or negative attitude).

Table 13

Individual Factor Codes with Number of Studies that Cited Them as Barriers, Facilitators, or Insignificant/Insufficient Evidence

Individual factors	B	F	I	Individual factors	B	F	I
1. Individual Total	27	27	7	1.4. Experience Total	10	8	2
1.1. Attitude Total	20	20	3	1.4.1. Professional experience	4	2	2
1.1.1. Attitude about change	5	2	0	1.4.2. Research experience Total	7	4	0
1.1.2. General attitude	2	4	2	1.4.2.1. Reading research	4	1	0
1.1.3. Goal orientation	1	3	0	1.4.2.2. Research involvement	3	3	0
1.1.4. Self-perceptions	6	4	0	1.4.3. Seniority	2	3	0
1.1.5. Trust or belief	13	12	0	1.5. Practice context Total	24	21	2
1.1.6. Use of research	4	4	1	1.5.1. Access to research	19	10	1
1.2. Awareness Total	14	9	1	1.5.2. Autonomy	1	2	0
1.2.1. Common understanding	6	2	1	1.5.3. Compatibility with practice	5	3	1
1.2.2. Familiarity	7	4	1	1.5.4. Critical thinking	1	5	0
1.2.3. Knowledge	7	6	0	1.5.5. Perceived complexity or ease	13	7	0
1.3. Demographic Total	7	8	3	1.5.6. Social norms	8	7	1
1.3.1. Age	1	3	2	1.5.7. Time pressures	21	7	0
1.3.2. Education Total	5	7	3	1.6. Purpose Total	7	13	0
1.3.2.1. Education level	2	5	2	1.6.1. Cherry picking	5	1	0
1.3.2.2. Prior education	3	3	1	1.6.2. Pressure to use evidence	0	4	0
1.3.3. Language	2	0	0	1.6.3. Value creation	2	10	0
1.3.4. Other demographic	0	1	0	1.7. Research skills	11	10	2

Note. B = barriers, F = facilitators, I = insignificant or insufficient evidence.

Table 14

Organizational Factor Codes with Number of Studies that Cited Them as Barriers, Facilitators, or Insignificant/Insufficient Evidence

Organizational factors	B	F	I	Organizational factors	B	F	I
2. Organizational Total	25	22	6	2.3. Org support Total	15	20	5
2.1. Collaborations Total	9	19	2	2.3.1. Accountability Total	2	10	0
2.1.1. Discussing or sharing research	2	7	1	2.3.1.1. Accountability for research use	2	6	0
2.1.2. General networking	0	4	0	2.3.1.2. Incentives	1	7	0
2.1.3. Internet groups	0	3	0	2.3.2. Communication and dissemination	5	11	1
2.1.4. Journal clubs	0	3	0	2.3.3. Leader support	6	16	0
2.1.5. Knowledge brokers Total	2	14	1	2.3.4. Multifaceted approach	0	3	1
2.1.5.1. Champions	0	4	0	2.3.5. Org structure	4	8	2
2.1.5.2. General knowledge brokers	2	9	0	2.3.6. Strategic planning Total	7	9	1
2.1.5.3. Opinion leaders	1	1	1	2.3.6.1. Other strategic planning	6	5	0
2.1.6. Participation in research	0	8	0	2.3.6.2. Policy	2	6	1
2.1.7. Partnerships with researchers	6	14	2	2.3.7. Training Total	8	14	2
2.2. Org environment Total	15	16	0	2.3.7.1. Conferences and seminars	0	4	0
2.2.1. Competing priorities	9	0	0	2.3.7.2. Research skills training	8	13	2
2.2.2. General context	2	4	0	2.4. Resources Total	16	16	1
2.2.3. Org climate	1	5	0	2.4.1. Funding	8	6	0
2.2.4. Org culture Total	14	13	0	2.4.2. General resources	7	8	1
2.2.4.1 Flexibility	7	1	0	2.4.3. Human resources Total	7	7	0
2.2.4.2. General org culture	5	5	0	2.4.3.1. Internal expertise	1	3	0
2.2.4.3. Performance-based Total	8	0	0	2.4.3.2. Librarian support	3	1	0
2.2.4.3.1. Crisis management	5	0	0	2.4.3.3. Other human resources	5	5	0
2.2.4.3.2. Task-focused	4	0	0	2.4.3.4. Supervising EBP work	1	2	0
2.2.4.4. Reflection & learning	2	6	0	2.4.4. Technology Total	11	10	1
2.2.4.5. Value of research	7	4	0	2.4.4.1. Other tech tools	5	5	0
2.2.5. Visibility of research use	0	3	0	2.4.4.2. Research databases	9	6	1

Note. B = barriers, F = facilitators, I = insignificant or insufficient evidence.

Table 15

External Factor Codes with Number of Studies that Cited Them as Barriers, Facilitators, or Insignificant/Insufficient Evidence

External factors	B	F	I
3. External Total	23	19	1
3.1. National culture	1	0	0
3.2. Research characteristics Total	21	14	1
3.2.1. Availability of research	11	3	0
3.2.2. Real world environment	7	2	0
3.2.3. Relevance to practice Total	18	12	1
3.2.3.1. General relevance	12	10	0
3.2.3.2. Instrumentality	5	7	1
3.2.3.3. Specificity	6	2	0
3.2.3.4. Timeliness	5	0	0
3.2.4. Scholars	6	7	0
3.2.5. Understandability	12	8	0
3.3. Stakeholder influences Total	10	10	0
3.3.1. External accountability	2	6	0
3.3.2. Other stakeholders	3	0	0
3.3.3. Political influence	9	0	0
3.3.4. Professional associations	1	6	0

Note. B = barriers, F = facilitators, I = insignificant or insufficient evidence.

Table 16

Factors that Influence EIDM and Number of Studies Referencing them as Barriers or Facilitators

Barrier	Factor	Facilitator
27	**Individual**	**27**
24	Practice context	21
20	Attitude	20
7	Purpose	13
11	Research skills	10
14	Awareness	9
10	Experience	8
7	Demographic	8
25	**Organizational**	**22**
15	Organizational support	20
9	Collaborations	19
16	Resources	16
15	Organizational environment	16
23	**External**	**19**
21	Research characteristics	14
10	Stakeholder influences	10
1	National Culture	0

Findings and Discussion

In developing the findings for this synthesis, the extracted data, the coded references, and the 14 major factors and their respective sub-elements were synthesized into 10 themes which answer the research question. The confidence of each of these 10 findings was assessed using the CERQual assessment method as explained in detail in Chapter 3 (Lewin, Booth, et al., 2018). The CERQual method assesses the methodological limitations, relevance, coherence, and data adequacy of each finding based on the synthesis of studies that contributed to the finding. The possible confidence levels in descending order are high, moderate, low, and very low.

Table 17 describes a summary of the review findings, including the studies that contributed toward the findings, and the reasoning for the CERQual confidence assessments. Four of the 10 review findings were assessed to be of high confidence, and the remaining six were of moderate confidence. These confidence levels mean that the dissertation findings were "highly likely" (high confidence) and "likely" (moderate confidence) to be "a reasonable representation of the phenomenon of interest" (Lewin, Booth, et al., 2018, p. 6). Additional details and definitions of terms associated with the CERQual assessment are found in Tables 6-7 in Chapter 3.

Besides increasing the rigor and relevance of the review findings, these confidence ratings mean that practitioners and researchers can trust with a fairly high degree of certainty that the findings are a reasonable representation of the factors that influence the use of academic research evidence in management decision-making (Lewin, Booth, et al., 2018). Appendix E presents a more detailed CERQual Qualitative Evidence Profile, which provides a confidence rating and explanation for each of the CERQual criteria (methodological limitations, relevance, coherence, adequacy) for each finding.

Table 17

CERQual Summary of Qualitative Findings

Review finding	Studies contributing to the review finding	Assessment of confidence	Explanation of judgment
1. Practitioner perceptions of misalignment between academic research evidence and management context impeded EIDM.	Atkins et al., 2017; Booker et al., 2012; Bowen et al., 2009; Cherney et al., 2015; Criado-Perez et al., 2019; Ellen et al., 2014; Gray et al., 2013; Humphries et al., 2014; Liang et al., 2011b; Orton et al., 2011; Rynes et al., 2002; Sarkies et al., 2017; Tenhiälä et al., 2016; Tucker & Lowe, 2014	High confidence	Minor concerns regarding methodological limitations and relevance.
2. Having a purpose for practitioner use of academic research evidence facilitated EIDM.	Barends et al., 2017; Bezzina et al., 2017; Booker et al., 2012; Bowen et al., 2009; Caprar et al., 2016; Criado-Perez et al., 2019; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Guo et al., 2016; Humphries et al., 2014; Kovner & Rundall, 2006; Liang et al., 2011a; Rynes et al., 2002; Sarkies et al., 2017; Tenhiälä et al., 2016; Tucker & Lowe, 2014; Wright et al., 2018	Moderate confidence	Minor concerns regarding methodological limitations, relevance, and coherence.
3. Practitioner engagement with research and researchers facilitated EIDM.	Booker et al., 2012; Champagne et al., 2014; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Humphries et al., 2014; Kovner & Rundall, 2006; Langer et al., 2016; Liang et al., 2011b; Oliver et al., 2014; Sarkies et al., 2017	Moderate confidence	Minor concerns regarding methodological limitations, relevance, and adequacy.
4. Practitioner use of knowledge brokers facilitated EIDM.	Booker et al., 2012; Champagne et al., 2014; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Jack et al., 2010; Jepsen & Rousseau, 2019; Liang et al., 2011b; Oliver et al., 2014; Sarkies et al., 2017	High confidence	Minor concerns regarding methodological limitations and relevance.
5. Practitioner adoption of EIDM depended on leader support.	Bowen et al., 2009; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Humphries et al., 2014; Jack et al., 2010; Jepsen & Rousseau, 2019; Kovner & Rundall, 2006; Liang et al., 2011b; McBeath et al., 2015; Sarkies et al., 2017	Moderate confidence	Minor concerns regarding methodological limitations, relevance, and adequacy.
6. Practitioner adoption of EIDM depended on social support and norms.	Barends et al., 2017; Champagne et al., 2014; Cherney et al., 2015; Criado-Perez et al., 2019; Guo, 2015; Jepsen & Rousseau, 2019; Langer et al., 2016; Liang et al., 2011b; Orton et al., 2011; Sarkies et al., 2017; Tenhiälä et al., 2016	Moderate confidence	Minor concerns regarding methodological limitations, relevance, and coherence.

Review finding	Studies contributing to the review finding	Assessment of confidence	Explanation of judgment
7. A strong performance culture impeded EIDM, while a learning culture facilitated EIDM.	Booker et al., 2012; Bowen et al., 2009; Champagne et al., 2014; Criado-Perez et al., 2019; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Humphries et al., 2014; Jack et al., 2010; Kovner & Rundall, 2006; Langer et al., 2016; McBeath et al., 2015; Orton et al., 2011; Sarkies et al., 2017; Tucker & Lowe, 2014	Moderate confidence	Minor concerns regarding methodological limitations, relevance, and adequacy.
8. Time pressures on practitioners impeded EIDM.	Atkins et al., 2017; Barends et al., 2017; Bezzina et al., 2017; Bowen et al., 2009; Cherney et al., 2015; Criado-Perez et al., 2019; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Humphries et al., 2014; Jack et al., 2010; Liang et al., 2011b; Oliver et al., 2014; Orton et al., 2011; Rynes et al., 2002; Sarkies et al., 2017; Tenhiälä et al., 2016; Tucker & Lowe, 2014; Wright et al., 2018	High confidence	Minor concerns regarding methodological limitations and relevance.
9. Having the resources and organizational structure for academic research utilization facilitated EIDM.	Bezzina et al., 2017; Booker et al., 2012; Bowen et al., 2009; Champagne et al., 2014; Cherney et al., 2015; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Humphries et al., 2014; Jack et al., 2010; Kovner & Rundall, 2006; Langer et al., 2016; Liang et al., 2011b; McBeath et al., 2015; Oliver et al., 2014; Orton et al., 2011; Sarkies et al., 2017	High confidence	Minor concerns regarding methodological limitations and relevance.
10. Practitioner skills, knowledge, and experience associated with research facilitated EIDM capability.	Barends et al., 2017; Bezzina et al., 2017; Champagne et al., 2014; Cherney et al., 2015; Ellen et al., 2013; Gray et al., 2013; Guo, 2015; Guo et al., 2016; Humphries et al., 2014; Kovner & Rundall, 2006; Langer et al., 2016; Liang et al., 2011b; McBeath et al., 2015; Orton et al., 2011; Rynes et al., 2002; Sarkies et al., 2017; Tucker & Lowe, 2014	Moderate confidence	Minor concerns regarding methodological limitations, relevance, and coherence.

1. Practitioner Perceptions of Misalignment Between Academic Research Evidence and Management Context Impeded EIDM (High Confidence)

Academic research evidence was less likely to be used by management practitioners when they perceived it as irrelevant, incompatible, or in conflict with the management context. Thus, "the day-to-day pressures and constraints faced by [practitioners] may serve to reinforce various patterns of behaviour relating to seeking out and using academic research" (Cherney et al., 2015, p. 183). Such pressures, constraints, and other influences occurred at three different levels: individual (relating to the individual management practitioner), organizational (relating to the management practitioner's organization or business unit), and external (relating to environmental influences external to the organization, including stakeholders and scholars).

Individual factors that influenced context included perceptions about compatibility with the practice environment, social norms, complexity, and time pressures. Impacting organizational factors included the extent to which the organizational climate and culture were conducive (or not) for using academic research evidence, and the organizational support for research utilization. External elements that influenced the context included stakeholders that control accountability and exert political forces, as well as research characteristics, such as the extent to which academic research findings were understandable, accessible, actionable, and reflective of real-world conditions.

Academics and practitioners were found to "speak different languages," literally and conceptually (Tucker & Lowe, 2014, p. 412). In a literal sense, practitioners viewed academic literature as highly technical. A practitioner described academics as "talking in betas and you can't follow them" (Booker et al., 2012, p.126). Conceptually, practitioners viewed EIDM as an ideal in a "'platonic world' where evidence drives implementation, contrasted with the 'real world' where other factors influence implementation" (Atkins et al., 2017, p. 4). While research-based recommendations were likely to improve organizational outcomes, they sometimes did not consider contextual constraints. For example, two organizations could not apply evidence-based recommendations because they implied "more work or

change... than could be handled" (Sarkies et al., 2017, p. 16). Thus, semantic and experiential differences between scholar and practitioner contexts perpetuated practitioner perceptions that academic research is less relevant to management practice.

Practitioners often believed the evidence base lacked specificity and was not generalizable to their context. For instance, local public health managers who were provided with national evidence summaries mistrusted them because they were either "too broad to capture complexity... not relevant to a local population... or were viewed as missing the 'big picture'" (Atkins et al., 2017, p. 5). Similarly, the available human resource management (HRM) research evidence was viewed as "heavily US-based or Western" by non-Western management practitioners (Tenhiälä et al., 2016, p. 195). This perception affected the credibility of HRM evidence outside of Western contexts. Yet, scholars acknowledged that even within U.S. and Western countries, HRM research was often focused on "rather abstract characteristics of people..., whereas most recruitment and selection activities are designed around the job" (Rynes et al., 2002, p. 164). These challenges in aligning research evidence with management context made it difficult for decision-makers to use academic research evidence and practice EIDM, so long as academic research was perceived to be inaccessible or irrelevant.

2. Having a Purpose for Practitioner Use of Academic Research Evidence Facilitated EIDM (Moderate Confidence)

Another challenge was the perceived utility of academic research evidence. Managers often claimed positive attitudes toward academic research but were hesitant to use it in practice. One management practitioner explained that while most practitioners philosophically agreed about the desirability of EIDM, "when it comes to actually doing the work though, you start getting push back" (Kovner & Rundall, 2006, p. 17). A study concluded that while most managers had good attitudes towards research evidence, they found organizational data, external best practices, and expert opinion as more useful (Liang et al., 2011a). This finding was representative of the studies in this systematic review when it comes to practitioners' level of perceived utility of academic research evidence. Alternatively, the

frequent finding of positive attitudes toward research evidence may be attributed to social desirability bias, as practitioners may want to be viewed as being informed and knowledgeable.

Part of the problem was that academic research was sometimes perceived by practitioners negatively and even as threatening. Outside of the healthcare field, many organizations were not accustomed to disseminating or discussing research. Some studies found that negative attitudes towards research evidence resulted from practitioners having bad experiences attempting to fit research evidence to practice (Ellen et al., 2014; Gray et al., 2013; Humphries et al., 2014). Additionally, scholars expressed concern about decision-makers perceiving research evidence as threatening or second-guessing decision-makers' decisions, "creating a sense that managerial judgment and expertise is perceived by colleagues as inadequate or not trustworthy" (Kovner & Rundall, 2006, p. 17). Caprar et al. (2016) recommended, based on a study of management students' acceptance of research evidence, that prior to presenting research findings individuals first consider the potential for their audience to perceive the evidence as threatening. When this potential exists, Caprar et al. (2016) recommended those presenting the research evidence to "consider alternative approaches to presenting the findings" in more acceptable ways (p. 222). For example, discussing how the findings were developed and eliciting critical discussion on the findings is likely to reduce potential threats to self in the audience and open up discussion on how the evidence relates to practice. Hence, while practitioner sometimes viewed academic evidence negatively and even as threatening, some evidence proposed potential solutions for scholars and practitioners to present academic research evidence in ways that are more acceptable to the practice environment.

While a negative attitude towards research evidence impeded its use, a positive attitude alone was of little help because practitioners were primarily interested in the practical utility of the evidence. Practitioners did not usually "use academic material for their own edification," rather, "when they have a need to learn about a specific issue" (Booker et al., 2012, p. 125). Practitioners sought simple solutions to practical management problems "to get to the bottom line fast – literally" (Tucker & Lowe, 2014, p. 412). For example, practitioners sought "examples of best-practice and benchmarks against which they can compare themselves," to solve a problem quickly and effectively (Tucker & Lowe, 2014, p. 412). Thus,

practitioners were more likely to turn to academic evidence when it provided a practical solution or exemplars to aid them in accomplishing an objective.

This utilitarian perspective made it difficult for practitioners and academics to arrive at a common understanding of evidence when academics traditionally focused on the long-term pursuit of knowledge more than its short-term utility. Because of this, practitioners often turned to personal experience, other practitioners, organizational evidence, and popular sources of knowledge before considering academic research evidence. However, Tucker and Lowe (2014) recommended using a precedent set by medical practitioners in the management field: just like medical patients are not interested in "lecture 101 in anatomy and surgery…, practitioners… seek usable, functional and often normative 'solutions' to their particular problems (ailments). Although the ability to "diagnose" requires considerable expertise…, it is the advice (prescription) that is valued" (pp. 412-413). Having access to a scholar, consultant, or internal research expert who can translate research evidence into practical advice made it more likely for practitioners to view academic research as useful for practice.

Some practitioners were compelled to use academic research evidence in their accountability to stakeholders. For example, Canadian chartered business valuators regularly used academic research as "impartial authoritative sources... [to] inform and support their decisions" before clients, judges, and other stakeholders (Booker et al., 2012, p. 125). However, such pressure was not always beneficial, as it sometimes led practitioners to seek evidence to legitimize previously made decisions. Such "cherry picking" and "decision-based evidencing" (Criado-Perez et al., 2020, p. 32) was common in the design and construction, social services, healthcare, and HR sectors (Criado-Perez et al., 2020; Jack et al., 2010; Orton et al., 2011; Rynes et al., 2002). This backward use of evidence sometimes led to cynicism and skepticism about research utilization, particularly in highly bureaucratic organizations, where practitioners were asked to "[find] evidence to support the decisions that have already been made" (Bowen et al., 2009, p. 93). Earlier research warned of such unintended consequences stemming from the politicization of research evidence (Weiss, 1979). While practitioner accountability to stakeholders in supporting decisions with research evidence sometimes led to effective EIDM, searching for evidence to

support a pre-determined decision often led practitioners to not use the best available evidence and ignore disconfirming evidence. The antithesis of EIDM, such decision-based evidence-making has been an unfortunate trend in the anti-science movement.

Ultimately, having a purpose for turning to academic research evidence facilitated practitioner evidence use. For example, healthcare managers were more likely to use research evidence when it added value to organizational and societal needs (Sarkies et al., 2017). Similarly, some human resource (HR) managers considered academic research in developing objectives with stakeholders to improve HR practices (Bezzina et al., 2017, p. 696). Thus, practitioners were more likely to use academic research evidence if they believed they had a purpose in using it.

3. Practitioner Engagement with Research and Researchers Facilitated EIDM (Moderate Confidence)

Practitioners collaborating with researchers and interacting with research evidence were associated with greater research utilization. Such mechanisms included discussing and disseminating academic research evidence, participating in internal research projects, and consulting with researchers or knowledge brokers. Such engagement also included participating in research training and seminars, as well as in professional associations that promote research. At the individual level, important factors included relationships of trust with research purveyors, having a purpose in the acquisition and use of research, and perceived social norms supportive of research.

Relationships between managers and researchers helped bridge the research-practice divide by building mutual understanding and trust (Liang et al., 2011b; Sarkies et al., 2017). There was some evidence that even informal relationships between practitioners and researchers encouraged practitioner academic evidence utilization (Langer et al., 2016; Oliver et al., 2014). However, Langer et al. (2016) cautioned that a direct causal link between practitioner-researcher interactions and practitioner academic evidence use has not been established. The inability to establish this causal link was primarily because its effect has not been independently measured. However, Langer et al. (2016) added that conceptual and causal variables in the relationship between practitioner-researcher interaction and practitioner academic research utilization need to be further developed and understood.

Organizational factors that facilitated academic research use included the provision of resources and opportunities to engage research evidence. Some organizations facilitated opportunities for practitioners to get involved in developing research agendas, which was often "the most appealing aspect of possible partnerships between decision makers and researchers, and maximises the value of the research to managers" (Liang et al., 2011b, p. 18). However, Langer et al. (2016) cautioned that there is a lack of evidence on the effectiveness of developing a mutual agreement between researchers and decision-makers on relevant policy questions and the evidence to answer them. Thus, while such researcher-practitioner cooperation on policy and research is likely to facilitate EIDM, more research is needed to understand the effect of such cooperation. Nevertheless, an organizational culture that values research, and leaders that promote and champion research engagement, were also important organizational factors that facilitated EIDM.

At the external level, some stakeholders and professional associations have promoted research engagement and accountability for rigor. Scholars have encouraged professional associations to play a more significant role in facilitating collaborations between practitioners and scholars (Rousseau, 2007; Rynes et al., 2002). For instance, such organizations have organized conferences, promoted research in key areas, and disseminated evidence summaries. Some evidence showed that professional associations were able to successfully promote practitioner research engagement, and that practitioners expected such organizations to fill this role (Booker et al., 2012; Liang et al., 2011b). Thus, industry organizations promoting practitioner research engagement is likely to facilitate EIDM.

4. Practitioner Use of Knowledge Brokers Facilitated EIDM (High Confidence)

Knowledge brokers, such as scholars, consultants, or internal experts, were able to facilitate EIDM by translating academic research evidence for practitioners. While manager engagement with knowledge brokers can fit within the finding 3, this theme was separated into a separate finding because it involved a more specialized form of engagement with researchers. A separate discussion on the role of knowledge brokers in facilitating EIDM is likely to provide greater utility to practitioners. Furthermore,

this finding emerged from a slightly different set of articles included in this systematic review, and it had a greater confidence level than finding 3.

Knowledge brokers, including champions, opinion leaders, and research experts, served as important links for enabling EIDM. Knowledge brokers internal to the organization included librarians, researchers, and other individuals accountable for research use. External to the organization, knowledge brokers included academics, consultants, and professional services. Knowledge clearing houses also provided evidence brokering services. As discussed, there is evidence that individual and organizational relationships of trust with knowledge brokers, both formal and informal, were associated with positive attitudes towards and greater use of research evidence by practitioners.

While many practitioners had positive attitudes toward research evidence, they often neither had the time nor the skills to acquire and translate research evidence. Knowledge brokers were able to fill this gap. There is evidence that internal librarians and designated implementation officers were able to facilitate evidence use for busy practitioners by performing the hard work of acquiring, appraising, and disseminating curated research summaries (Ellen et al., 2013; Gray et al., 2013; Jack et al., 2010). Consultants and specialized services were also effective in disseminating research to practitioners online or in person (Kovner & Rundall, 2006). Thus, use of a knowledge broker bypassed some of the constraints that keep practitioners from engaging academic research evidence, making it easier for practitioners to make evidence-based decisions.

EIDM champions were also useful in promoting research utilization and a culture that embraces research evidence. Jack et al. (2010) recommended granting such evidence champions sufficient authority to be credible to front-line workers and executive leaders. In another study, senior managers championing EIDM were often more effective change agents than mid-level managers, who in some cases believed their efforts were “seen as an imposition” (Champagne et al., 2014, p. 10). Such opinion leaders are likely to be influential in developing evidence champion networks and creating momentum to implement and develop EIDM resources and strategies.

5. Practitioner Adoption of EIDM Depended on Leader Support (Moderate Confidence)

Leadership support of EIDM efforts was regularly cited as a top facilitator (or barrier in the lack thereof) to practitioner research evidence use. Leaders demonstrated social support by encouraging follower use of academic research evidence and promoting an organizational culture and climate conducive to EIDM. Leaders also demonstrated material support through allocating financial, human, and technical resources to facilitate access to academic research evidence. Through their positions of authority, leaders were able champion EIDM by making their use of academic research evidence visible in their organizations.

Leaders supportive of EIDM are likely to influence individual perceptions about social norms, attitudes, and purposes for using research. Besides using soft skills leaders also used more tangible measures, such as policies, resources, and accountability to persuade and motivate followers to use research evidence. For example, some literature addressed leaders using EIDM in strategic planning and the development of policies to promote and enforce accountability for academic research utilization. However, Oliver et al. (2014) found a scarcity of evidence for the effect of evidence utilization guidelines and legal support on actual evidence use. Nevertheless, Kovner and Rundall (2006) suggested that if EIDM is "not perceived to be strategically important…, few resources will be devoted to it" (p. 17). Furthermore, healthcare and social services organizations found that while allocating funding and resources to EIDM was the more challenging part, it all began with developing a strategy for research evidence utilization (Ellen et al., 2013; Jack et al., 2010). Thus, leaders are likely to facilitate EIDM within their organizations by providing social support in favor of EIDM, such as through use of soft skills and the development of plans and guidelines to promote research utilization.

However, a frequent message in the literature was the need for leadership support to "extend beyond mission statements" and provide the necessary resources for EIDM (Liang et al., 2011b, p. 18). As one healthcare manager put it:

> People will copy the leader and if the leader... values research and that's shown by either putting money toward it or by asking people to justify their choice of action based on data, then that will propagate through the organization. (Ellen et al., 2014, p. 6)

Thus, beyond social support of EIDM, leaders are more likely to facilitate practitioner research evidence use if leaders also provide material support. This material support often came in the form of budget allocations, but it was ultimately necessary to execute those allocations to ensure organization had the human and technical resources to support EIDM.

As leaders champion EIDM efforts, they can serve as role models by visibly using research evidence and demonstrating that they value research use. Several studies emphasized the need for senior managers to serve as role models of using academic research evidence in decision-making (Guo, 2015; Jack et al., 2010; Jepsen & Rousseau, 2019). In addition, Jepsen and Rousseau (2019) found that subordinate perception of manager evidence use was also associated with other positive workplace outcomes, including a culture of learning and reflection, positive leader-member exchange, trust in the manager, positive attitudes toward the organization, and psychological safety. Thus, leader role-modeling of EIDM is likely further bolster the practitioner research utilization that leads to EIDM.

6. Practitioner Adoption of EIDM Depended on Social Support and Norms (Moderate Confidence)

In addition to support from leaders, support from peers and others in one's work environment also influenced research use and EIDM. On the surface, leader and social support have similar aspects, however, findings 5 and 6 had different nuances and merited separate discussions. They were also based on different sets of studies included in this systematic review. Rather than focusing on hierarchical support and the power to control resources that are inherent in leadership, finding 6 focuses on lateral and community support within the organization. Practitioner relationships with peers and the broader organizational community were an important source of less formal but powerful influence in practitioner use of academic research evidence.

Individual perceptions about research use were influenced by peers and leaders, as well as by cultural norms in the organization and industry. Positive relationships with researchers and knowledge

brokers also facilitated EIDM, along with evidence use expectations from professional associations and external stakeholders. However, a challenge is that while most managers across various sectors and countries had positive attitudes toward research evidence use, they perceived their colleagues to have a limited understanding of academic research and less favorable attitudes toward evidence use than their own (Barends et al., 2017). While these perceptions imply a potential resistance toward using social norms to promote EIDM, Barends et al. (2017) also suggested this may be due to self-serving bias. In other words, practitioners are likely to view themselves as more educated and evidence-based than their peers. Hence, there were facilitating and impeding influences associated with individual perceptions about research use.

There was also divergent evidence about the influence of social norms on evidence utilization. For example, two cross-sectional studies with samples taken from different populations arrived at different conclusions about the effect of social norms on intentions to use research evidence. Criado-Perez et al. (2020) found social norms to have a strong effect on Australian built environment managers' intentions to use research evidence in decision-making. On the other hand, Guo (2015) found that social norms had no significant effect on the intent of healthcare managers in the United States to use research evidence in decision-making. The difference between these two findings suggests that various cultural factors, such as organizational and national, are likely to influence social norms regarding EIDM.

Practitioners trying to introduce EIDM in their organizations commented that it is a slow process involving "a growing and emerging sensitivity to the need for research and the need to use evidence;" but "you can see it's spreading. You can hear it in the language as people talk about a new thing" (Champagne et al., 2014, p. 8). Nonetheless, several studies agreed that social norms toward using research evidence were associated mainly with organizational culture and "whether the occupational milieu... values academic research" (Cherney et al., 2015). In some organizations, engaging with academic evidence was "seen as 'non-work' amongst those who needed to appear to be taking action" (Orton et al., 2011). Accordingly, many task-oriented practitioners perceived academic evidence use as irrelevant to getting their jobs done. Additionally, one study found that the extent to which manager

beliefs in some HRM practices aligned with academic research evidence varied by national culture (Tenhiälä et al., 2016). Thus, social support for academic evidence utilization took time to build up and was influenced by organizational and national culture.

7. A Strong Performance Culture Impeded EIDM, while a Learning Culture Facilitated EIDM (Moderate Confidence)

Although various aspects of organizational culture influence academic research utilization, the balance between the drive for performance versus learning was paramount. EIDM was more difficult to achieve in organizations and individuals with a strong performance goal orientation and easier in those with a learning goal orientation (Criado-Perez et al., 2020; Jack et al., 2010). Performance-oriented organizations were characterized as more rigid and bureaucratic, risk-averse, and with less autonomy for individual practitioners to make decisions. Such organizations often had a crisis management culture, where practitioners have heavy workloads, competing priorities, and time pressures. While performance and learning are both important, the challenge for most organizations was keeping them balanced. External stakeholders and career disciplines also had expectations and values that often influenced the organizational culture.

Practitioners in performance-oriented cultures focused their goals on task completion and performance objectives:

> [Practitioners] aren't concerned about what happens in the hallowed halls of learning, except for the skills of the graduates they produce. Academic research and the value they can get from it isn't on their radar. They're too busy trying to increase profits, deal with customers and grapple with day-to-day-problems. (Tucker & Lowe, 2014, p. 410)

Because of this operational focus, practitioners tended to "view EIDM as an 'add-on' requiring additional time, rather than a change in the way business is done" (Bowen et al., 2009, p. 93). This underlying theme of "too busy dealing with the urgent, can't get to the important" was reflected in how practitioners frequently "spent an inordinate amount of time 'keeping up' with e-mail, and that the e-mail culture

demanded an instant, rather than thoughtful, response" (pp. 95-96). This fast-paced performance culture contrasts with the slower-moving learning processes.

Further complicating matters, "blame cultures" were far less flexible to evidence utilization and its implied organizational changes (Gray et al., 2013, p. 163). Such cultures, common in highly bureaucratic environments, were often punitive and reactive, and restricted practitioner agency from working outside standard norms and procedures. Policymakers in bureaucratic and politicized environments commented, "we develop policy in a highly prescriptive environment," and "major policy initiatives were not based on research, they were based on political needs at the time" (Jack et al., 2010, p. 90). As previously discussed, such tense reactive environments are likely to lead practitioners to use evidence (if it is used) as a means to justify predetermined decisions—decision-based evidence-making—rather than for informing problem-solving—evidence-based decision-making.

Risk-averse and crisis management cultures faced similar challenges. For instance, a consultant in the building industry observed, "there's a large extent to which, over time, things become this is the way it's been done in the past, and no one's been sued, therefore we'll stick to this" (Criado-Perez et al., 2020, p. 33). A child welfare administrator similarly commented about being "in a business where you don't take your eye off the ball. If you do, some kid is going to end up dead. So it's very easy to stay very operation-influenced and deal with what's coming through the door" (Jack et al., 2010, p. 91). Thus, in such high-stakes environments, practitioners relied heavily on personal experience and established routines and procedures. They perceived little time or tolerance for experimenting with non-traditional or new decision-making sources, including academic research literature.

On the other hand, organizations that focused more on learning outcomes were more open to EIDM. Kovner and Rundall (2006) found a "questioning culture as a precondition for evidence-based management" (p. 18). These organizations operationalized questioning, reflection, and learning into a "cycle of action and reflection," leading to long-term outcomes (Champagne et al., 2014, p. 11). Their members expressed a belief that research is important, and they established learning goals. These organizations tended to be more organic and innovative, allowing individuals greater decision-making

autonomy and time for critical thinking and professional development. This type of learning culture facilitated an environment conducive to EIDM.

8. Time Pressures on Practitioners Impeded EIDM (High Confidence)

Perceived lack of time was associated with the performance culture familiar to many management practitioners. Such time pressures were consistently identified as a barrier to EIDM throughout the literature. Although time pressure is a very specific theme associated with the performance culture from finding 7, finding 8 was based on a greater number of studies than the previous finding. Furthermore, the confidence level of finding 8 was greater than that of finding 7. Thus, a separate discussion on time pressures is of value to practitioners.

Often cited as the most significant barrier to research utilization, practitioners worldwide agreed that they wished they had more time to read academic research (Rynes et al., 2002; Tenhiälä et al., 2016). Practitioners complained that even when they had the ability and motivation to use research evidence, they often believed they did not have time during the workday to search for, read, or appraise academic research. They had too many competing priorities and learning and reflection activities were often pushed aside.

Using academic research evidence was more complicated than simply having the time to read the scholarly literature. Research utilization "requires lots of reflection, preparation, adaptation to the business or management needs" (Bezzina et al., 2017, p. 696). A practitioner commented, "it's more than just getting someone to do a literature review. It's about having a discussion and considering the evidence" (Ellen et al., 2014, p. 5). Even in organizations wanting to use research evidence, it was "generally read after work hours during personal time" (Jack et al., 2010, p. 94). Thus, practitioner perceptions of having insufficient time in the workday to process academic research impeded EIDM.

An accounting manager pointed out that at least part of the time challenge resided in cultural differences between scholars and practitioners: "The academic agenda is to go on a journey. Practitioners are interested in the destination – and getting there fast" (Tucker & Lowe, 2014, p. 412). This mentality resulted in a cycle in which practitioners did not take the time to engage with academic research because

they perceived it as incompatible with their workload. Because practitioners believe they did not have time to engage academic research, when they used it, they wanted to find answers quickly. Since research utilization requires time and reflection, practitioners often believed that "the time lag between research evidence being produced, synthesised and informing recommendations" was incompatible with the "perceived speed of... decision-making" (Atkins et al., 2017, p. 6). This led practitioners to seek "convenient 'quick checks,' as an alternative to expending a large amount of time and resources to become familiar with existing and emerging research" (Cherney et al., 2015, p. 178). The result was that practitioners made decisions based on less reliable, but easier to access forms of evidence, such as other colleagues, best practices, and popular sources.

Another aspect of time related to the characteristics of research evidence, which was sometimes viewed as outdated by practitioners. Regardless of the extent to which this may or may not be correct, many practitioners believed that the "labour market, companies and reality of work changes so quick now that studies do not… keep up with the changes" (Bezzina et al., 2017, p. 697). Thus, practitioner perceptions of academic research evidence as outdated or irrelevant to their current work environment impeded EIDM.

9. Having the Resources and Organizational Structure for Academic Research Utilization Facilitated EIDM (High Confidence)

Having the resources and organizational structure for academic research utilization was more likely to create a climate conducive to EIDM. However, providing such EIDM resources was "often a service where we begin to realize its added value, but we still tend not to increase the budget (…) It is often the 'poor relative' and unfortunately it should not be that way" (Ellen et al., 2014, p. 5). Organizations were more likely make evidence-informed decisions when they deliberately invested in financial, human, and technical resources to facilitate access to academic research evidence. This investment included research databases and positions that are accountable for and support research efforts. Because human and technology resources are often costly, a test of the organization's commitment to EIDM was the extent to which it invested in facilitating access to academic research.

Academic research was primarily physically accessed through bibliographic databases on the internet. Even in disciplines that value research, practitioners who do not have access to research databases expressed frustration: “We don’t have access to it... We don’t have any way to get into those journals” (Booker et al., 2012, p. 126). Another practitioner lamented that after receiving EIDM training, “you come back all pumped up and energized and thinking yeah, yeah I need to use evidence for everything from now on, right? […] Then you come here and there’s no access […] Game over” (Ellen et al., 2013, p. 11). Those with access to research databases often considered it “like a little miracle. When I talk to people… that don’t have that, I just keep thinking – I don’t know how I would function” (Ellen et al., 2013, p. 7). Practitioners seeking access sometimes went to the extent of using other colleagues’ login credentials to research databases (Ellen et al., 2013). Additionally, from an external perspective, it served practitioners well for academics to summarize findings and practice implications in a way that is understandable and relevant to non-academics. Access to academic research databases and availability of relevant academic evidence were foundational to EIDM. But beyond access to and availability of academic research evidence, broader organizational structure considerations facilitated EIDM.

Organizational structures that promote flexibility, organic decision-making, open communication, accountability, and incentives for research utilization facilitated EIDM. A systematic review found that efforts to provide access to research databases without motivational features or targeted evidence dissemination were ineffective (Langer et al., 2016). An example of a successful dissemination effort involved providing both access to online databases with “weekly tailored messages alerting decision-makers to new content relevant to their area of expertise” (p. 27). Tracking key performance indicators tied to evidence use and providing individual incentives (monetary or otherwise) for evidence use signaled to practitioners that EIDM was important to the organization and resulted in an increase of research evidence utilization (Kovner & Rundall, 2006; Langer et al., 2016; Liang et al., 2011b). Such structures moved practitioners to “derive personal gain” from EIDM and view it “as an opportunity rather than an obligation” (Sarkies et al., 2017, p. 14). Thus, organizational structures that motivated practitioners to use academic evidence facilitated EIDM.

Formalized HR structures dedicated to research utilization also facilitated EIDM. Two systematic reviews found that managers capable of supervising others in research evidence utilization resulted in greater capability for EIDM (Gray et al., 2013; Langer et al., 2016). Two additional studies reported a negative impact on EIDM efforts from turnover of staff who had supported EIDM (Ellen et al., 2014; Oliver et al., 2014). This outcome suggests that EIDM often depended on individual champions. Other evidence suggests reasons for this outcome were that that few managers had the requisite research skills and physical access to research, and that an evidence-based culture required significant momentum (Champagne et al., 2014, Ellen et al., 2013). Formally designating individuals or committees accountable for evidence use was more likely to help institutionalize EIDM and retain knowledge and momentum within the organization even after a champion left the organization (Kovner & Rundall, 2006). Having HR structures with formal research utilization responsibilities promoted EIDM capability, knowledge retention, and institutionalization.

One position that was particularly useful for EIDM efforts was that of a research librarian. Such librarians were considered "integral figures in facilitating the use of research evidence" (Ellen et al., 2013, p. 7). While most management practitioners had positive attitudes toward academic research and believed it could be important to decision-making, it was often not realistic to expect practitioners to be involved in acquiring, appraising, and aggregating research. A research librarian commented, "it seemed like there was almost, again, 'we're really busy, we don't have time to run around looking for research or how to figure out how to deal with it.... Can you just go off and do it for us?'" (Ellen et al., 2013, p. 11). While a high level of practitioner proficiency in research utilization was difficult to attain in many organizations, having a research librarian or other positions exclusively dedicated to research translation often multiplied organizational EIDM efforts. Thus, access to a research librarian or specialist helped provide practitioners with ready-to-use research evidence to apply to decision-making.

Having an organizational structure for EIDM often influenced individual attitudes, perceptions, and social norms regarding academic research utilization. External stakeholders, organizational and industry culture, and leader support often influenced the development of this organizational structure. A

qualitative study among Canadian child welfare administrators found that "organizational cultures where learning and continuing education was valued were characterized as making research from peer-reviewed publications more accessible to staff through different internal distribution modes and encouraging the use of work time to engage in critically appraising studies" (Jack et al., 2010 p. 92). Having an EIDM organizational structure promoted a learning culture and provided opportunities to learn and develop research skills, further strengthening the organization's EIDM capabilities.

10. Practitioner Skills, Knowledge, and Experience Associated with Research Facilitated EIDM Capability (Moderate Confidence)

An organization's EIDM capacity was associated with the capabilities of its management practitioners to utilize academic research. Cherney et al. (2015) described access to academic research as having "cognitive and physical dimensions" (p. 177). Lacking either access to research databases or the skills to search for, comprehend, critically appraise, and translate research "[resulted] in frustration and false starts in attempts to implement [EIDM]" (Kovner & Rundall, 2006, p. 20). Research and critical thinking skills, prior experience with and knowledge of research, and prior education associated with research enabled a practitioner's EIDM capability. Seniority, post-graduate education, and management certifications were also associated with greater practitioner EIDM capability.

Prior general research experience resulted in positive attitudes toward academic research and greater use of EIDM (Barends et al., 2017; Humphries et al., 2014; Kovner & Rundall, 2006). Three studies found seniority positively associated with practitioner evidence use and beliefs aligned with research evidence (McBeath et al., 2015; Rynes et al., 2002; Sarkies et al., 2017). Most studies associated higher education level with more academic evidence use in practice. However, Guo et al. (2016) found no significant correlation between education level and attitudes toward evidence use among U.S. healthcare managers. Additionally, Barends et al. (2017) found a small positive correlation among managers from various disciplines in Western countries. Another study involving healthcare managers in Idaho, United States, found that practitioners who were older, had more education, and had greater EIDM experience tended to have positive attitudes towards evidence use (Guo, 2015). However, this study also found that

this group of managers perceived practicing EIDM as more difficult, compared to younger, less educated, and less experienced practitioners. Guo (2015) suggested that this perception from more experienced practitioners may be because they understand the complexities associated with EIDM. As has been discussed, such complexities include various individual, organizational, and external considerations. Nonetheless, greater research experience, seniority, and education tended to be associated with greater use of research evidence in decision-making.

However, there was conflicting evidence regarding the effect of general professional experience on attitudes toward research use. Two studies found that attitudes toward evidence use were not associated with age or professional experience (Barends et al., 2017; Guo et al., 2016). Curiously, a study of HR managers in three European countries found a small but significant positive correlation between experience supervising people and beliefs that diverge from the HRM research findings (Bezzina et al., 2017). However, this study indicated that most HR managers in the sample lacked formal education in HRM. The authors suggested that while people management expertise is important, coupling it with "formal evidence-based training and education in HRM" is likely to result in better organizational decisions and performance (p. 698). It is likely that experience with evidence use is what made the difference in Guo's (2015) previously mentioned finding of positive attitudes towards evidence utilization from an older, more educated sample.

Regardless, positive attitudes towards academic research and access to research databases were insufficient if practitioners did not have the requisite knowledge and skills to acquire, understand, and translate research evidence. Additionally, a review of systematic reviews found a lack of evidence on the effect of interventions designed to build awareness and attitudes for EIDM on actual evidence use because such interventions could not be independently assessed (Langer et al., 2016). The studies generally agreed that most management practitioners lacked research utilization skills. An international study of managers from different organizations found that only 37% were "familiar with online research databases," compared to 88% among doctors and nurses (Barends et al., 2017, p. 9). Furthermore, a lack of skills in bibliographic database searching and a lack of awareness of scientific research suggests that

managers are not likely to use such databases even if they had access to them. When surveyed about why they did not use bibliographic databases they had access to, Australian policymakers primarily responded that they preferred to use internet search engines such as Google, perhaps due to the ease and familiarity of such search engines (Cherney et al., 2015). The CEO of an Australian accounting firm contextualized,

> If you asked 100 management accountants for the names of academic journals published research [*sic*], I'd say no more than two could tell you. They don't know where to find it, and in fact, many of them don't fully understand what accounting research is all about. They can relate to medical research, scientific research, but accounting research to these hard-nosed business types is pretty 'airy-fairy' stuff. They're not going to go looking for it. (Tucker & Lowe, 2014, p. 413)

Strong evidence indicated that sustained, ongoing, formal professional development programs involving academic research utilization benefited the institutionalization of EIDM (Kovner & Rundall, 2006; Langer et al., 2016; Sarkies et al., 2017). These studies also indicated that such professional development programs were successful in strengthening the organization's research culture and increasing practitioner capability and motivation to use research evidence, as well as actual evidence utilization. Some successful professional development opportunities included participating in formal training, internal research efforts, research discussions (such as in journal clubs), and research and industry conferences. Disseminating relevant research findings and encouraging associations with researchers and knowledge brokers also provided effective opportunities to develop EIDM capabilities. Furthermore, many professional associations provided professional development opportunities.

There were also some challenges associated with EIDM training and development. Light training approaches, such as "passive presentation of EIDM skills" or a "one-off half day capacity-building programme" were not effective at increasing EIDM capacity (Langer et al., 2016, p. 36). Senior managers receiving EBMgt training were more successful at promoting EBMgt than middle managers (Champagne et al., 2014). Participants in a training program combining management and research skills found that while many were able to positively influence attitudes towards EIDM within their organizations, it was much more challenging to transfer their research skills to others. One participant observed, "it is almost

like changing the way they work, which is difficult. So, I think it is a much more iterative long-term process to get you there" (Champagne et al., 2014, p. 8). Yet another challenge was that some management practitioners did not desire EIDM training. In one study, although over half of the participants considered evidence utilization skills as important, they considered receiving training as not very useful for developing EIDM capability (Liang et al., 2011b). The authors of this study suggested this may be the result of social desirability bias in that participants are overestimating their EIDM capability. While all training programs are likely to have challenges, these challenges indicate opportunities to improve such programs. An effective professional development program involving academic evidence utilization is likely to strengthen an organization's EIDM capabilities.

Summary of Findings

This study sought to explore the factors that influence the use of academic research evidence in management decision-making. The 14 factors initially identified were condensed into 10 findings, which also considered a synthesis of extracted key data and specific references from the studies. These findings revealed factors that can serve as barriers or facilitators to EIDM uptake, depending on the circumstances. Such factors included alignment between scholars and practitioners, practitioner perception of purpose behind academic evidence use, practitioner engagement with research and researchers, employment of knowledge brokers, leader and social support, organizational culture, time pressures, organizational structure, access to resources, and skills, knowledge, and experience associated with research.

Revised Conceptual Model/Framework

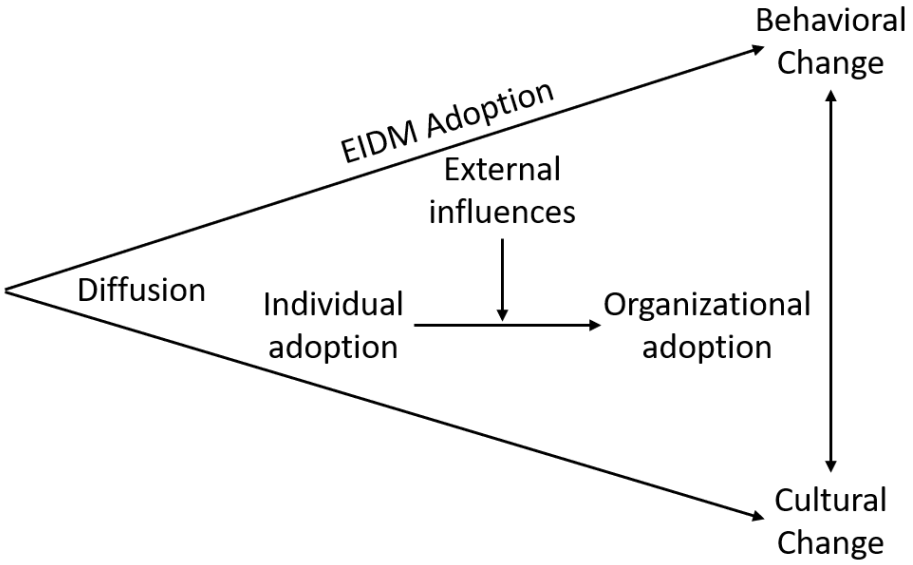
The findings suggested a revision of the theoretical framework presented in Chapter 3. The theory of change for EIDM implementation previously discussed implied that a linear relationship between diffusion, behavioral change, and organizational cultural change resulted in increasing levels of EIDM adoption. However, the evidence in this review did not point to such a linear relationship. While individual behavior and organizational culture are likely to influence each other, EIDM diffusion appeared to be able to influence both individual behavior and organizational culture at the same time.

Where the evidence did suggest a linear relationship was in the degree of EIDM adoption from the individual to the organizational levels of analysis. Furthermore, the external level of analysis appeared to function as a moderator between the individual and organizational levels. This movement from individual to organizational adoption was consistent with the capability maturity model discussed in Chapter 3 and suggests this maturity model is likely to be appropriate for operationalizing EIDM. Recommendations for using the maturity model are discussed in Chapter 5.

The theoretical model in Figure 7 is a revised conceptualization of the model presented in Chapter 3 (see Figure 2), based on the findings from this study. A study of effects between the theoretical constructs was beyond the scope of this dissertation. However, this revised model presents researchers with a more accurate conceptualization of EIDM adoption, which may be useful for future studies.

Figure 7

Revised Theory of Change for EIDM Implementation



Chapter Summary

This chapter described the final data set, including a discussion of how the data pool was narrowed down, the contents of the data set, the quality appraisal process, and the analysis process for the included studies. The results of the analysis presented individual, organizational, and external factors that serve as barriers and facilitators to EIDM.

The findings were presented and discussed. The confidence levels of the findings were assessed using the CERQual criteria, as described in Chapter 3. Ten findings of high and moderate confidence levels were presented, which answered the research question of identifying factors that influence the use of academic research evidence in management decision-making. The theory of change for EIDM implementation was also revised based on the review findings.

Chapter 5: Conclusions and Implications

This dissertation explored factors that influence practitioner use of academic research evidence in management decision-making. Furthermore, this study's findings can help management practitioners facilitate such evidence-informed decision-making (EIDM) in their organizations. This chapter begins with a brief overview of the research, including the management problem and the research purpose. It summarizes the findings which answer the research question: *What factors influence practitioner use of academic research evidence in management decision-making?*

The main findings and recommendations are presented to help practitioners and organizations make more evidence-based decisions that consider the best available academic research evidence. An EIDM capability maturity model is presented, which can aid practitioners in diagnosing their organization's EIDM maturity level, as well as prescribing actions to help their organization progress in EIDM maturity. The study's limitations are discussed. Finally, implications for scholars to facilitate practitioner EIDM adoption are presented, along with areas for future research.

Review of the Research

Evidence-based management (EBMgt) promotes the systematic use of the best available evidence from multiple sources in management practice. EBMgt can enhance the rigor, relevance, and transparency of management decision-making, leading to "faster and better decisions with less risk," and maximizing the organization's bottom line (Pfeffer, 2010, Ch. 4). While many organizations turn to subject matter experts, stakeholders, and organizational data for evidence, they often face challenges accessing and translating academic research evidence. In fact, academic research is consistently the least likely source of evidence that decision-makers seek (Barends et al., 2017; Liang et al., 2011a; Rynes et al., 2002).

In this dissertation, EIDM is used to refer to the narrower scope of using academic research evidence in management decision-making. Thus, EIDM is used as a subset of EBMgt, which includes organizational, practitioner, and stakeholder evidence, in addition to research evidence. EIDM also focuses on decision-making, whereas EBMgt is more general to management practice. Academic research evidence refers to scientific or scholarly research primarily published in academic journals. More

practitioner-friendly sources of academic research evidence may also be disseminated through conferences, books, trade journals, and professional institutions.

A rich source of underexploited reliable evidence available in the public domain, applying academic research evidence to management practice is very likely to improve decision-making and organizational outcomes. Such EIDM may accelerate disruptive innovation, deliver an edge over competitors, and help organizations succeed in volatile environments. Relying on less-effective sources of evidence, such as personal preferences, tradition, management fads, and political pressures, could mean leaving money—as much as billions of dollars—on the table for others to take (Olivas-Luján & Arreguín, 2008). Thus, using the best available academic research evidence is valuable to organizational decision-making.

While academic research evidence can validate organizational decisions, the evidence from this dissertation raises a caution about using research evidence for this purpose. Systematically searching for and analyzing the best available evidence is useful to help an organization validate previous decisions, acquire insight about the drawbacks of such decisions, and improve future decision-making. However, the practice of exclusively using evidence to validate an unalterable predetermined decision, rather than to inform the direction of decision-making, is likely to lead managers to dangerously pick through the evidence exclusively for findings favorable of the decision. Practitioners using this biased approach tend to select the first favorable evidence found, irrespective of evidence quality, instead of the best available evidence. Worse, practitioners using this biased approach often ignore valid evidence that diverges from the practitioner's views. Ignoring valid divergent evidence could lead to poor decisions and negative outcomes. This practice, which may be termed decision-based evidence-making, is an improper use of research evidence, consistent with anti-science trends, and the opposite of evidence-informed decision-making. Using appropriate research utilization methods, such as Barends and Rousseau's (2018) six As (ask, acquire, appraise, aggregate, apply, assess), is likely to help managers avoiding the pitfalls of improper evidence use, leading to successful EIDM practice and better organizational outcomes.

Answer to the Research Question

This study presented barriers and facilitators that influence practitioner use of academic research evidence in management decision-making. Understanding these factors informs a management practitioner's approach for leveraging academic research utilization and helping their organization adopt EIDM. A thematic synthesis of 29 studies led to 10 findings that answer the research question.

This study's research question was: *What factors influence practitioner use of academic research evidence in management decision-making?* Close to 100 factors emerged from the literature which can be summarized into the following 10 findings:

1. Practitioner perceptions of misalignment between academic research evidence and management context impeded EIDM.
2. Having a purpose for practitioner use of academic research evidence facilitated EIDM.
3. Practitioner engagement with research and researchers facilitated EIDM.
4. Practitioner use of knowledge brokers facilitated EIDM.
5. Practitioner adoption of EIDM depended on leader support.
6. Practitioner adoption of EIDM depended on social support and norms.
7. A strong performance culture impeded EIDM, while a learning culture facilitated EIDM.
8. Time pressures on practitioners impeded EIDM.
9. Having the resources and organizational structure for academic research utilization facilitated EIDM.
10. Practitioner skills, knowledge, and experience associated with research facilitated EIDM capability.

The factors that influence practitioner research utilization and EIDM were considered at the individual, organizational, and external levels. At the individual level, the practice context considered access to research, autonomy for decision-making, the compatibility of research evidence use with practice and social norms, the perceived complexity of research use, time pressures, and the extent of critical thinking in practice. Practitioner attitudes were also important, including their attitudes toward

change and using research, their trust or belief in science, self-perceptions regarding science, and whether their goals were focused more on performance or learning objectives. Related factors were the purpose for which practitioners use research evidence and whether they believed it was of practical utility. Also important were the practitioner's awareness, experience, and skill regarding research.

At the organizational level, support and environmental factors were essential. Support factors included leadership support for EIDM, and whether leaders strategically planed for EIDM and held others accountable for evidence utilization. Leader support was tied to the organizational structure and how evidence was (or was not) communicated or incentivized. This support was reflected in environmental factors, such as the organizational culture and climate, and whether competing priorities made it difficult for practitioners to practice EBMgt. Opportunities for training and collaboration regarding research were important factors. Such opportunities included participation in research initiatives, partnerships with researchers, the use of knowledge brokers, and other opportunities to engage research evidence. The availability of resources for evidence use in the organization was also critical, including funding for EIDM initiatives, human resources responsible for research utilization and management, and technical tools, such as access to research databases.

Among factors external to the organization, research characteristics, stakeholders, and national culture influenced EIDM. Such factors included the relevance of academic research to practice and the extent to which research represented the real-world environment. The availability, accessibility, and understandability of academic research evidence for practitioners was also an important factor. Furthermore, it was imperative for scholars to produce evidence with practitioners in mind. The influence of external stakeholders and the extent to which they valued research was also a factor. Such stakeholders included professional associations that set industry standards, those who wield political influence, and others to whom the organization is accountable. The macro culture, such as at the national level, influenced the use of academic research evidence.

Management Implications and Recommendations

The findings from this dissertation have several management implications and recommendations to facilitate the ability of practitioners and organizations to leverage academic research for decision-making. Five recommendations summarize the implications from this research that practitioners can immediately put to practice:

1. Introduce EIDM to the organization.
2. Promote a learning culture.
3. Develop the organizational structure and resources.
4. Provide research engagement experiences.
5. Facilitate dissemination and demonstration of evidence.

Furthermore, this research identified a capability maturity model that can be adapted to help practitioners implement EIDM in their organizations (Thorpe & Howlett, 2020). This maturity model provides practitioners both diagnostic and prescriptive means to help their organization progress in EIDM maturity. The model can provide a customized action plan that incorporates the recommendations from this research to leverage academic evidence for improved management decision-making.

An executive summary of this review, including its findings and recommendations was provided to three senior-level management practitioners, who provided feedback that served to refine the recommendations addressed here. Furthermore, this feedback strengthened the relevance and validity of this study.

Recommendations

Introduce EIDM to the Organization. The first recommendation is to introduce leaders and management practitioners to EIDM. The Center for Evidence-based Management (CEBMa) (n.d.), for example, provides articles, presentations, and other prepared resources to introduce the principles of research evidence utilization to practitioners. As a bonus, CEBMa also introduces to practitioners how to combine research evidence with other valid sources of evidence, such as organizational data, practitioner expertise, and stakeholder perspectives, for a more comprehensive EBMgt approach. Discuss with

stakeholders the value of making decisions based on the best available evidence, and how academic evidence fits in with other sources of evidence. Consider how academic literature and research experts could help with a variety of organizational aspects. Find opportunities to introduce EIDM throughout the organization. Assess the potential for evidence to threaten individuals, especially leaders, and consider more acceptable ways to present such evidence.

One way to help individuals relate to the utility of academic evidence is to share examples and case studies of how this evidence has contributed to better decisions. Books and other resources are available with examples, case studies, and best practices (e.g. Center for Evidence-Based Management, n.d.; Latham, 2018; Pfeffer & Sutton, 2006b). Demonstrate to leaders how academic evidence can be valuable to validate and inform decisions. Discuss how more access to academic research can benefit the organization. Approach interested leaders and peers about using academic research evidence in projects. Identify and discuss academic evidence relevant to key decisions with influencers and opinion leaders in the organization. Ask these leaders to consider how such evidence could be valuable. Share academic evidence with individuals throughout the organization and discuss how it can add value to objectives and decisions.

Propose a trial of EIDM. Identify and discuss management problems and decisions that could benefit from academic research evidence. Consider areas in which research can make a meaningful impact to improve the organization. Select an organizational decision that could benefit from having research evidence to back it up. Search for relevant academic literature and research experts who can contribute to the decision, and remember to consider evidence that diverges from the organization's position. Procure the necessary resources and time to search for and summarize this evidence. Identify an upcoming project where academic research may be of value and plan out the project so that research literature and researchers are engaged throughout the project. Propose and participate in other high value projects that could benefit from academic research evidence.

Encourage leaders to explore how academic evidence can add value to the organization beyond single projects or decisions. Consider the significance academic evidence can bring to strategy and policy

making. Discuss how EIDM can strengthen the organization's vision and mission. Encourage formal and informal discussions throughout the organization of how evidence adds practical value. Discuss how individuals can benefit from sharing evidence and supporting each other's use of evidence.

Promote a Learning Culture. Discuss with leaders and peers how a culture where learning is valued can advance organizational goals. Invite individuals to explore how reflection and questioning can contribute to organizational objectives. Discuss the value of activities that are important but not urgent. Advocate for a culture and climate where achieving learning objectives is valued as much as achieving performance objectives. Promote questioning, reflecting, learning, and acting as a systematic approach to achieve learning goals. Use these learning activities to empower individuals within their roles. Promote the value of academic research within the organization and with external stakeholders. Provide safe spaces and experimentation in which taking risks and failing are admissible. Discuss what can be learned from risk taking and failure. Be transparent about failures and assess how evidence can be used to improve decision outcomes.

Ask curious questions about the organization's objectives, outcomes, and potential improvement opportunities. Invite others to take a curious attitude toward questioning decisions. Inquire about the evidence behind decisions. Ask open-ended questions about how the evidence would apply with different groups of people and in different circumstances. Consider the best and worst-case scenarios. Challenge individuals to identify evidence gaps in decision-making. Discuss what one would do differently based on disconfirming or contradictory evidence, and how such evidence can empower the organization.

Encourage the setting aside of work time for broader experimentation with academic evidence across the organization. Propose more structured ways to set aside time, such as through a series of lunch and learn sessions, a journal club, or EIDM training opportunities. Establish a regularly scheduled time for research and learning activities. Discuss with leaders the value that can be obtained from setting aside time within the workday for individuals and teams to engage in research activities. Clarify that time is required not just for reading academic literature, but for searching, analyzing, translating, and discussing.

Identify individuals and positions in the organization that are interested in or can benefit from more access to academic research evidence. Consider those who work with data, research, or innovation. Bring interested individuals together to discuss how they can support each other with evidence, including academic research. Encourage these individuals to refine their research skills and engage with the research community. Identify senior leaders who are interested in EIDM and encourage them to be evidence champions. Leverage opinion leaders, evidence champions, and senior leaders to promote EIDM. Encourage leaders to demonstrate to others how evidence can lead to better decisions.

Develop the Organizational Structure and Resources. Invite leaders to include EIDM resources in the budget and establish structure, policies, and accountability supporting academic evidence utilization. Discuss how broader access to financial, human, and technical resources, as well as collaboration and accountability in research evidence use can benefit the organization. It is critical to provide a time during which employees can engage in research utilization. Propose that most individuals be allotted a regularly scheduled time to participate in research activities, such as reading or discussing literature, and developing research utilization skills. Use available resources, such as free internet content, university libraries, and colleagues who may have access to academic databases to identify research that is relevant to key objectives and decisions. However, recognize that paid resources, such as academic databases and training, are essential to provide broad access to academic research evidence. Furthermore, internal positions with explicit knowledge responsibilities, such as librarians and researchers, are crucial assets to the organization's EIDM structure. Identify ways to incentivize evidence use and track its accountability. Enshrine the value of evidence into vision and mission statements, strategy documents, policies, and metrics.

Research skills training is an indispensable resource to ensure the organization's EIDM success. Discuss with senior leaders how research skills training can contribute to more effective decisions. Request for the organization to fund basic research skills training for one or a few individuals with the idea of using it to enhance decision-making. Demonstrate how those research skills contribute to key objectives and decisions. Recommend that more comprehensive training be provided to individuals

involved in data, research, innovation, and related projects. Consider who else in the organization can benefit from this training and how it could be essential to a manager's development. Build support from individuals interested in such training, and ask leaders about providing extensive, sustained training more broadly throughout the organization. Discuss how such training can enhance management abilities and how it could be part of ongoing professional development. Train relevant managers to supervise evidence use and knowledge activities. Recommend that leaders offer tuition reimbursement for more extended EBMgt training programs, such as professional certifications and graduate programs. Encourage leaders to actively promote research skills development opportunities.

Provide Research Engagement Experiences. Create opportunities for most management practitioners to engage with research and researchers, such as projects involving research, journal clubs, reading and discussing research, or networking with researchers. Create opportunities for management practitioners to participate in research projects that contribute to decisions. Enable individuals to experiment with research findings and recommendations relevant to their work. Provide opportunities for practitioners to translate and apply research findings. Consider holding lunch and learn sessions or journal clubs to promote ongoing discussion on academic research. Work in teams to develop and execute research projects to solve relevant management problems. Promote experiences with practicing and learning evidence utilization skills. Encourage participation in the research community, such as by attending or presenting at research or industry conferences.

Introduce the concept of a knowledge broker as a research expert or institution that facilitates the transfer of knowledge into real-world applications. Make a list of scholars, consultants, online services, and other experts or organizations that could be consulted as knowledge brokers on specific topics. Reach out to them for evidence on practical management problems and decisions. Consider also internal knowledge brokers, such as librarians and research experts, who can translate research evidence. Identify how this evidence can inform practical management problems and decisions, and share these findings with leaders. Identify specific projects that could benefit from regular consultation with knowledge brokers to enhance decision-making results. Cultivate relationships of trust with knowledge brokers and

leverage these relationships for the organization's benefit. Facilitate access to scholars, consultants, or internal research experts who can translate research evidence into practical advice. Consider including research experts as management project team members. Assign research experts to advisory roles and as part of decision-making committees. Establish a regular pattern of using knowledge brokers, both from within the organization and external to the organization.

Facilitate Dissemination and Demonstration of Evidence. Establish a regular process for evidence dissemination that is effective for the organization. Raise awareness of the utility of academic evidence by sharing examples of research that supports organizational decisions and objectives. Summarize and share best practices, benchmarks, and case studies that demonstrate how evidence can be translated into practice. Use internal knowledge brokers, such as librarians or researchers, to disseminate academic literature and research summaries to relevant practitioners. Host less-formal discussions, such as lunch and learn sessions and journal club meetings, to present research evidence on topics of interest. Automate research dissemination as much as possible through newsletters or subscription services, and fine tune this process so practitioners receive evidence relevant to their individual roles.

Facilitate access to academic research summaries that are translated for management practitioners and decision-makers, such as systematic reviews, rapid evidence assessments, and critical appraisal topic reports. The Center for Evidence-Based Management (n.d.) provides instructions, references, and other resources for these types of research summaries. Encourage practitioners, especially internal librarians and researchers, to produce their own actionable summaries of translated academic evidence relevant to the organization to inform decision-making.

Share EIDM successes. Demonstrate to leaders and peers how academic research contributes to organizational objectives. Discuss with individuals how academic evidence adds value to decision-making. Have those who employed academic research in projects share their experience with others in the organization. Discuss how academic evidence added value to such projects. Discuss how different individuals and teams can benefit from academic research evidence. Encourage individuals to be inquisitive about the evidence behind decisions and claims. Demonstrate how research skills and learning

activities add value to decision-making. Provide opportunities for individuals to develop and practice research skills. Help them be successful in applying academic research evidence to solve practical management problems.

An EIDM Capability Maturity Model

Thorpe and Howlett (2020) recently proposed a maturity model for evidence-based library and information practice which can be adapted to assist management practitioners in assessing their organization's capability for EIDM and recommending incremental steps to improve this capability. The model's five EBP maturity tiers can be adapted for management practice as follows.

Tier 1: Ad Hoc/Sporadic. Academic research is of little to no relevance to the management context. Positive attitudes toward academic research are mostly superficial. There is little to no engagement with academic evidence and researchers, and little awareness of knowledge brokers beyond consultants or think tanks. Leaders do not consider academic evidence in decision-making, and there are no social norms supportive of academic research. Organizational and individual goals are purely performance driven, and a learning culture is virtually non-existent. Time pressures keep practitioners too busy to consider reviewing academic research. There are no organizational structures or resources explicitly intended for academic evidence use, nor does the organization explicitly promote research skills training.

Tier 2: Justifying. Some academic sources are considered relevant to certain management decisions, but attitudes favor political or instrumental use of academic evidence. Leaders only find academic evidence useful for justifying important decisions, and practitioners engage academic evidence or researchers for this purpose. Organizational learning is valued to the extent that it contributes to key performance objectives. Time pressures lead to quick, non-systematic consideration of academic evidence. Low-cost access to some academic databases and research skills training may be provided on a limited basis.

Tier 3: Emerging. Academic evidence is viewed as compatible with management context in some, but not all activities. Leaders are supportive of research evidence use by certain individuals and in

some projects. Academic research and/or scholars are engaged for certain activities, and some practitioners have regular contact with external knowledge brokers. A few groups set aside time for research activities, support each other's interest in academic evidence, and value learning goals. Specific positions are given access to academic databases and receive research skills training as needed.

Tier 4: Experimenting. Many throughout the organization view academic research as compatible with management practice, and EIDM is seen as useful, desirable, and attainable. Practitioners often engage academic evidence and researchers. The organization has internal knowledge brokering capabilities, evidence is often disseminated to relevant practitioners, and many leaders are championing EIDM. Equal value in both performance and learning goals is expressed. Many in the organization are curious and open about academic research and periodically set aside time for reading and discussing research evidence. Organizational structures and resources are provided which facilitate academic evidence use, including short-term and introductory research skills training.

Tier 5: Transforming. Academic evidence is aligned with the organization's strategic goals and generates important practical and strategic insights and that influence decision-making. The organization has a learning culture and EIDM is an expected organizational norm. Senior leaders are EIDM role models and champions. Practitioners engagement with knowledge brokers and high-quality academic evidence is efficient and effective. Time is regularly scheduled for research and learning activities. Organizational structure and resources efficiently and effectively support EIDM. Research skills are considered critical to the organization's success and practitioners have broad access to ongoing EBMgt training.

Appendix F presents an adaptation of the Thorpe and Howlett (2020) maturity model for EIDM implementation. Appendix G presents a detailed description that may assist practitioners in both diagnosing their organization's EIDM maturity, as well as prescribing specific actionable recommendations to help their organization advance in EIDM maturity. While the effect of the variables and recommendations in this maturity model is beyond the scope of this research, it provides practitioners with an actionable tool based on the findings in this systematic review.

Feedback from Subject Matter Experts

The three management practitioner subject matter experts (SMEs) identified in Chapter 3 provided feedback on an executive summary of this dissertation. This feedback was based on the following questions and an aggregated summary of their feedback follows. Because the SMEs provided this feedback off-the-record, their identities were anonymized and they are identified as SME 1, 2, and 3.

- Are the recommendations relevant and actionable? In what way?
- Would the proposed maturity model make it easier to apply the recommendations? How?
- Do you believe you could benefit from applying the recommendations? How?
- Do you see any potential negative unintended consequences of applying the recommendations? If so, what are they, and what would you recommend for overcoming them?

Relevance and Actionability of the Recommendations. The recommendations were seen as generally relevant and actionable by all three practitioner SMEs, and all three SMEs agreed that EIDM would add value to their organizations. SME 1 expressed concern that recommendation 3 (develop the organizational structure and resources) was likely to be more difficult to achieve in small and mid-size organizations where employees "wear multiple hats" and "would be hard-pressed to carve out time from their busy day to perform research on academic evidence." However, this SME added that when employees lack the time to get involved with academic research is precisely when outsourcing this work to knowledge brokers is most valuable.

All three SMEs shared examples of either failed or successful attempts to use academic research evidence for decision-making in their organizations. SME 2 lamented how recommendations from an academic literature review, which he conducted as part of a certification course, were not taken seriously by a former employer, even though this academic research evidence provided solutions to help the company improve in an underperforming area. SME 2 emphasized that good leaders help the organization recognize the benefits from applying academic research to their work. The three SMEs agreed that the

recommendations in this dissertation are likely to help leaders promote better decision-making through academic research utilization.

Using the Maturity Model to Apply the Recommendations. The three SMEs expressed an expectation that using the proposed EIDM Capability Maturity Model is likely to help them apply the recommendations more easily than not using the model. Their reasons for this expectation included that the model "provides a roadmap" (SME 1) with categories that are "easy to remember" (SME 2). SME 3 stated that introducing the model is likely to "help alleviate some of the upfront implementation sticker shock by allowing leaders to make educated prioritization decisions" on how and when to implement the components of EIDM. Thus, the SMEs believed that the organized piecemeal approach of the maturity model is more likely help organizations implement EIDM than haphazardly trying to apply all the recommendations.

Personal Benefit from the Recommendations. The three SMEs agreed that applying the recommendations from this dissertation is likely to benefit their work in their organizations. SME 1 expressed concern that, although most organizations could benefit from many of the recommendations, it would be difficult for small and mid-size organizations to progress to tiers four or five of the maturity model. SME 1 argued that "certain types of organizations" are more likely to be successful in achieving a high EIDM maturity level, such as government organizations, large companies with a research component, and established businesses seeking to diversify from their base. SME 2 expressed that the recommendations in this dissertation encouraged him to seek more opportunities to use academic research evidence in his work, beginning with the resources "that the organization already has at its disposal." SME 3 believed that introducing EIDM into his work would "increase research rigor... accelerate innovation… [and] result in significant cost avoidance." Thus, although it may be challenging for some organizations to achieve a high degree of EIDM maturity, all three SMEs agreed that the recommendations from this dissertation are likely to produce beneficial results in their work.

Potential Unintended Consequences of Applying the Recommendations. All three SMEs cited potential unintended consequences of applying the recommendations. SME 1 suggested that academic

research utilization may draw resistance if it is seen as adding to the workload. Additionally, SME 2 expressed concern that practitioners lose interest in adopting EIDM because it appears "too theoretical." SME 3 cautioned that business leaders may become discouraged from perceiving a high cost to building EIDM organizational capability. SME 1 further cautioned that implementing the recommendations in this dissertation could disproportionately emphasize academic research evidence over other "real world" valid sources of evidence, such as organizational data, practitioner expertise, and stakeholder perspectives.

To overcome such unintended consequences, the SMEs recommended early leadership involvement in developing an organizational EIDM implementation strategy. They recommended approaches that implement EIDM capabilities in small pieces over time to "defray the costs of a broad-base, aggressive implementation" (SME 3). Using the maturity model to slowly build EIDM momentum and capability over several years is more likely to lead to broader buy in and support as EIDM becomes part of the organizational culture. This slow implementation approach also helps leaders better understand how much time to build into project plans for employees to adequately research the academic evidence without feeling overburdened by this responsibility. Lastly, SME 1 recommended "weighing academic evidence in proportion with other types of evidence" to inform decision-making more comprehensively. Indeed, using multiple sources of evidence is a foundation of the broader EBMgt framework, to which this dissertation contributes.

Limitations of the Study

This dissertation had several limitations. First, the sample composition had some generalizability weaknesses. Half of the studies had samples from the healthcare sector. This distribution is understandable because EBMgt emerged from evidence-based medicine (EBMed). Thus, healthcare management has significant experience with academic research utilization. Additionally, most of the evidence on academic research utilization is from Western English-speaking countries. These sampling limitations reflect the current research landscape and point to the need for more sample diversity in research on EIDM and EBMgt. However, efforts were made to search for studies in different management fields and from different countries.

Another limitation lies in the subjective nature of qualitative synthesis. Another researcher could have interpreted the data differently and arrived at different or additional conclusions. Due to the doctoral dissertation requirements, the author was the only primary researcher involved in conducting this study. To reduce bias and strengthen reliability and validity, it is recommended for systematic reviews to be done by a team of individuals. To mitigate this limitation, standardized methods were used to appraise the quality of the studies included in this systematic review and to assess the confidence of the dissertation findings. Additionally, several subject matter experts, including scholars and practitioners, were consulted throughout the study and to validate recommendations.

Third, this study did not assess the effectiveness of the factors that influence EIDM adoption. Such a study requires more quantitative research on the effect size of specific variables. However, most of the studies included in this systematic review were qualitative. Thus, while the barriers and facilitators suggest potential interventions, it is unknown how effective the recommended interventions would be with different populations and under different conditions.

A final limitation is the emergent nature of the proposed maturity model. This is indeed the first known maturity model proposed for EIDM. The model was adapted from a novel model proposed for evidence-based library and information practice (Thorpe & Howlett, 2020). There may be additional influencing factors or recommendations that were not considered in this model. The reality of an organization may not reflect the linear progressive relationships suggested by this maturity model. However, the maturity model is an initial attempt at explaining EIDM adoption and other researchers are invited to further improve upon it.

Implications for Scholars

The findings from this study stress the influence that scholars can have on helping management practitioners make more evidence-based decisions. While scholars should not discontinue their focus on the pursuit of knowledge, they can do more to bridge the gap between scholars and practitioners. Scholars can use research literature and personal relationships more effectively to reach management practitioners and help them solve practical problems.

Developing more robust relationships with practitioners has several advantages. It can inform scholars of the problems in which practitioners have the most interest. Scholar-practitioner interactions can make practitioners aware of relevant research implications for practice. Moreover, such linkages can establish social ties that facilitate bridging the scholar and practitioner worlds. Scholars can help practitioners by finding and translating research evidence, training practitioners on research skills, and contributing to research projects from practitioner organizations. Scholars can build their networks with practitioners through social media, professional associations, and speaking engagements. Scholars can also benefit from gaining experience as a practitioner. In fact, scholar-practitioners are often highly respected by practitioners because practitioners feel they can relate to these scholars better (Booker et al., 2012).

Scholars should write practitioner-oriented pieces that summarize research in plain business language and use real-world examples, success stories, case studies, and benchmarks. They can make their research more relevant to practitioners by providing actionable management implications and executive summaries. Such literature should translate research into ready-to-apply operational instructions. Scholars can focus more research on finding solutions to problems that practitioners are interested in solving. Scholars can do this by getting involved in action research, implementation science, and evidence-based practice.

Practitioners often found research literature difficult to access, understand, and apply. Besides publishing research findings in traditional academic journals, scholars can more effectively reach practitioners by publishing research findings in practitioner and trade journals, open access journals, books, magazines, blogs, and social media. Scholars may also reach practitioners through trade conferences and professional associations. Disseminating research through business-oriented platforms does not mean that scholars should dilute their research endeavors; rather, scholars can use these platforms to explain the business value proposition of their research, and point practitioners to more scholarly sources for additional details. As an accounting executive explained, “it’s like any market situation; scholars need to show how their research will benefit companies – the world will not beat a path

to your door, no matter how good the mousetrap is" (Tucker & Lowe, 2014, p. 411). Thus, scholars actively promoting their research among practitioners may help practitioners be more informed about academic research findings.

Finally, it is important for academics to teach management students how to apply research to practice. Students introduced to EBMgt earlier during undergraduate years may be more likely to apply it to practice than those who first learn about EBMgt during an MBA program (Wright et al., 2018). Many management practitioners also wished they had opportunities to experiment with EBMgt during student internships to facilitate learning how to apply research to practice (Bezzina et al., 2017). Thus, introducing students to evidence utilization and encouraging them to practice it in practical settings is likely to lead to more practitioners using research evidence in management decision-making.

Areas for Future Research

There are several areas for future research that emerge from this study. As mentioned in the limitations section, the relationship between determinants of EIDM and actual EIDM practice needs to be assessed through effect size studies. Such studies are also recommended for the constructs in the EIDM implementation theory of change proposed in Chapter 4 (see Figure 7). The EIDM maturity model needs to be further developed, including through devising an instrument to test its reliability and validity. Further development of theoretical models to explain EIDM uptake may aid in more effective operationalization.

This study focused on the utilization of academic research evidence. However, this is one of four evidence types considered in EBMgt. Additional studies could address the use of organizational data, practitioner expertise, or stakeholder perspectives in management decision-making. More research is needed on how practitioners can use all four sources of evidence in management practice. Practical tools for management practitioners to apply EBMgt could also be developed.

The limitations discussion addressed the need for greater diversity of industry sector and nationality within the populations involved in EBMgt studies. Indeed, one study from this review touched on the influence of national culture on beliefs about research evidence (Tenhiälä et al., 2016).

Additionally, cultural influences of different industry sectors on EIDM need to be addressed more thoroughly. The cultural influence of industry sector and nationality may reveal additional factors relevant to EIDM.

Final Summary and Conclusion

Academic research evidence is an underexploited frontier of business intelligence with a high potential to help organizations make more effective management decisions. This systematic review explored the factors that influence practitioner use of academic research evidence in management decision-making. Furthermore, it provided recommendations for practitioners and organizations to facilitate EIDM. Management practitioners can help their organizations become more evidence-based by aligning research with practice and promoting practical purposes behind research utilization. Practitioners can engage more with research and researchers, including leveraging knowledge brokers. Support for EIDM is necessary from both leaders and peers. It is essential that organizations develop a learning culture that supports EIDM. Time must be set aside for evidence use. The organization must also develop the structures, invest in the resources, and provide the research skills training necessary to facilitate evidence use. The investment organizations make in EIDM is very likely to add value to decision-making and lead to better organizational outcomes, paving the way for greater success in today's competitive business environment.

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Appendix A

List of Databases Searched

Table A1

Databases Included in the OneSearch Database Aggregator

Academic OneFile	LegalTrac OneFile
Academic Search Ultimate	Library, Information Science & Technology Abstracts
America: History & Life	Literature Resource Center
Biography in Context	Litfinder
Books24x7	MasterFILE Premier
Business Insights: Essentials	MEDLINE
Business Source Complete	Mergent Online
CINAHL Complete	Military & Government Collection
Computer Science OneFile	Nursing Reference Center Plus
Computers & Applied Sciences Complete	OAIster
Criminal Justice Abstracts with Full Text	Opposing Viewpoints in Context
eBook Collection (EBSCOhost)	Oxford Reference
Education Research Complete	Oxford Scholarship Online
Emerald Insight	Political Science Complete
Environment Complete	Primary Search
ERIC	Professional Development Collection
European Views of the Americas: 1493 to 1750	Project Muse
Funk & Wagnalls New World Encyclopedia	PsycARTICLES
Gale eBooks	Psychology and Behavioral Sciences Collection
GPO Monthly Catalog	PsycINFO
GreenFILE	Regional Business News
Health and Medicine OneFile	SAGE Knowledge: SAGE Reference eBook Collection
Health and Wellness (Gale)	Science in Context
Health Business Elite	ScienceDirect
Health Source - Consumer Edition	SocINDEX with Full Text
Health Source: Nursing/Academic Edition	Teacher Reference Center
Historical Abstracts	U.S. History in Context
Hoover's (Company Profiles only)	World History in Context
JSTOR	

Table A2

Databases Not Included in OneSearch

ProQuest database aggregator	Other
ABI/INFORM Collection	Scopus
Healthcare Administration Database	
ProQuest Dissertations & Theses Global	

Appendix B

Data Extraction Tables

Table B1

Research Design, Discipline, Sample Composition, Sample Size, Outcome Measures, Theory or Framework, and Sources of Evidence Addressed

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Theory or framework	Sources of evidence addressed
Atkins et al., 2017	Qualitative	Healthcare	Public health managers in England	31	Semi-structured interviews	Capability-opportunity-motivation behavioral model (Michie et al., 2011)	Focus on research evidence implied, but unclear
Barends et al., 2017	Cross-sectional	Cross-disciplinary	Managers from various types of organizations in Belgium, the Netherlands, the United States, the United Kingdom, and Australia	2789	Closed and opened-ended survey	Theory of planned behavior (Ajzen, 1991)	Focus on research; acknowledges and distinguishes between other evidence sources
Bezzina et al., 2017	Mixed methods	Human resources	Generalist managers supervising people in major firms in Poland, Croatia, and Malta	274 surveys, 20 interviews	Closed-ended survey and semi-structured interviews	Sense-making (Weick, 1995)	Research
Booker et al., 2012	Qualitative	Business valuation	Chartered business valuators from three Canadian provinces found through a professional association	15	Semi-structured interviews	Knowledge market theory (Davenport & Prusak, 1998)	Research

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Theory or framework	Sources of evidence addressed
Bowen et al., 2009	Qualitative	Healthcare	Public healthcare administrators in Manitoba, Canada	17 from focus groups, 53 interviews	Focus groups and semi-structured individual interviews	Inductive approach	Focus on research; acknowledges various evidence types
Caprar et al., 2016	RCT	Education	Undergraduate management students in a Midwestern U.S. public university	370	Student academic records review and closed-ended surveys	Self-enhancement and self-protection theory (Alicke & Sedikides, 2011)	Research
Champagne et al., 2014	Qualitative	Healthcare	Mid- and senior-level healthcare managers in national and provincial healthcare systems in Canada	84	Multiple case study involving semi-structured interviews	Dynamic Theory of Organizational Knowledge Creation (Nonaka, 1994)	Distinguishes between research and organizational
Cherney et al., 2015	Cross-sectional	Public policy	Executives, managers, officers, and analysts in various Australian national and state government organizations	2084	closed and open-ended survey	Inductive approach	Research
Criado-Perez et al., 2020	Mixed methods	Built environment	Senior managers involved in the inception, design, or development of office buildings in Australia	187 surveys, 18 interviews	Closed-ended survey and semi-structured interviews	Learning goal orientation (Van Hooft & Noordzij, 2009) and the theory of planned behavior (Ajzen, 1991)	Distinguishes between research, practitioner, organizational, and stakeholder

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Theory or framework	Sources of evidence addressed
Ellen et al., 2013	Qualitative	Healthcare	Senior managers, library managers, and knowledge brokers from Canadian regional health authorities, hospitals, and primary care practices	57	Semi-structured interviews	Organizational framework of research knowledge infrastructure (Ellen et al., 2011)	Research
Ellen et al., 2014	Qualitative	Healthcare	Senior managers, library managers, and knowledge brokers from Canadian regional health authorities, hospitals, and primary care practices	57	Semi-structured interviews	Organizational framework of research knowledge infrastructure (Ellen et al., 2011)	Research
Gray et al., 2013	Systematic review	Social services	Empirical studies including executives, managers, and front-line workers in various organizational, service, and country settings	11	Quality appraisal and thematic synthesis	Knowledge to action process (Graham et al., 2006)	Distinguishes between research and practitioner
Guo, 2015	Cross-sectional	Healthcare	Hospital managers in Idaho	48	Closed-ended survey	Theory of planned behavior (Ajzen, 1991)	Distinguishes between research, organizational, practitioner, and stakeholders

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Theory or framework	Sources of evidence addressed
Guo et al., 2016	Cross-sectional	Healthcare	Senior hospital administrators in the U.S.	154	Closed-ended survey	Inductive approach	Acknowledges research, organizational, practitioner, and stakeholder, but doesn't clearly distinguish between them
Humphries et al., 2014	Systematic review	Healthcare	Studies on the use of evidence in program management in various healthcare settings in Canada, the United Kingdom, and Poland	14	Quality appraisal and narrative synthesis	Inductive approach	Focus on research is implied, but doesn't clearly distinguish between evidence sources
Jack et al., 2010	Qualitative	Social services	Canadian child welfare administrators from 9 agencies	27	Multiple case study including observation and semi-structured interviews	Inductive approach	Focus on research; acknowledges other evidence sources
Jepsen & Rousseau, 2019	Cross-sectional	Cross-disciplinary	Eldercare employees in a residential care facility and employed part-time students in an MBA program in Australia	796	Closed-ended survey administered at two times for both groups	Manager-firm relationships agency theory (Jensen & Meckling, 1979)	Focus on research and organizational; acknowledges other evidence sources and distinguishes between them
Kovner & Rundall, 2006	Qualitative	Healthcare	Healthcare managers in U.S. non-profit health systems organizations	68	Semi-structured interviews	Dimensions for organizational change (Shortell et al., 2000)	Focus on research evidence; acknowledges other sources of evidence

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Theory or framework	Sources of evidence addressed
Langer et al., 2016	Review of reviews	Cross-disciplinary	Systematic reviews of effects in practice and policy contexts in different disciplines (largely healthcare) and countries	36	Quality appraisal and framework synthesis	Develop their own framework, which includes the capability-opportunity-motivation behavioral model (Michie et al., 2011)	Research
Liang et al., 2011a	Mixed methods	Healthcare	Middle and senior health service managers in Victoria, Australia	116	Closed and open-ended survey with focus groups before and after the survey	Inductive approach	Focus on research evidence; distinguishes between different evidence types
Liang et al., 2011b	Mixed methods	Healthcare	Middle and senior health service managers in Victoria, Australia	116	Closed and open-ended survey with focus groups before and after the survey	Inductive approach	Focus on research evidence; distinguishes between different evidence types
McBeath et al., 2015	Cross-sectional	Social services	Administrators, middle managers, and supervisors in 11 county public human service agencies located in the San Francisco Bay Area	497	Closed-ended survey	Inductive approach	Research, practitioner, organizational, and stakeholders

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Theory or framework	Sources of evidence addressed
Oliver et al., 2014	Systematic review	Public policy	Primary research and systematic reviews of national, regional, or local policymakers in various countries	145	Relevance appraisal and thematic synthesis	Inductive approach	Focus on research; acknowledges other evidence sources
Orton et al., 2011	Systematic review	Healthcare	Empirical studies of public health decision-makers at various organizational levels and from different countries	18	Quality appraisal and narrative synthesis	Inductive approach	Research
Rynes et al., 2002	Cross-sectional	Human resources	Managers who are members of the Society for Human Resource Management (SHRM) in the United States	959	Closed-ended dichotomous survey	Inductive approach	Research
Sarkies et al., 2017	Systematic review	Healthcare	Studies on evidence use in policy and management decisions in various healthcare organizations internationally	19	Quality appraisal, narrative synthesis, thematic synthesis	Inductive approach	Focus on research; acknowledges other sources of evidence

Article	Research design	Discipline	Sample composition	Sample size	Outcome measures	Theory or framework	Sources of evidence addressed
Tenhiälä et al., 2016	Cross-sectional	Human resources	Managers who are members of HR professional associations in Finland, South Korea, and Spain	429	Closed-ended dichotomous survey	Cultural dimensions theory (Hofstede, 1993)	Research
Tucker & Lowe, 2014	Mixed methods	Accounting	Senior and mid-level managers from the top four accounting professional associations in Australia	19	Closed and open-ended survey and semi-structured interviews	Diffusion of innovations (Rogers, 1995)	Research
Wright et al., 2018	Qualitative	Education	Undergraduate management students in a large Australian university	222	Written reflections	Develop their own framework for categorizing student understandings of EBMgt	Focus on research; acknowledges other sources of evidence

Table B2

Research Question(s) or Purpose, and Main Findings

Article	Research question(s) or purpose	Main findings
Atkins et al., 2017	"What are the influences on implementation of [knowledge translation] guidelines? How useful are guidelines perceived to be? To what extent is the linear evidence-guidelines-practice model fit for purpose?" (p. 2).	Local government health officials see a conflict between national evidence-based guidelines and local evidence. In cases where such conflict is present, they give preference to the local evidence.
Barends et al., 2017	[1] What evidence sources do managers report consulting in their daily practice? [2] What are managers' attitudes towards the relevance and applicability of scientific research findings? [3] What are managers' attitudes towards EBP? [4] What personal and contextual barriers do managers perceive to the use of scientific research findings? [5] Are managers' attitudes towards EBP related to [specific personal factors]? (p. 3)	Most managers have positive attitudes towards EBP. However, lack of time and a limited understanding of scientific research are perceived as major barriers to the uptake and implementation of EBP in management.
Bezzina et al., 2017	1. To what extent do managers adhere to critical people management principles that are likely to be supported by evidence? 2. (a) Do (i) managers' level of education, (ii) experience in managing people and (iii) past academic or training experience in HRM explain differences in managers' prevalence of irregular beliefs? (b) Does country (Poland, Croatia and Malta) explain differences in managers' prevalence of irregular beliefs over and above managers' level of education, experience in managing people and past academic or training experience in HRM? (p. 691)	Managers largely believe in HR practices that are not evidence-based. This belief in non-evidence-based HR practices increases with experience managing people. Managers have little awareness of and time to consult academic HR literature. Managers prefer to get knowledge about HR from popular sources.

Article	Research question(s) or purpose	Main findings
Booker et al., 2012	The key objective is to understand the role that the indirect knowledge transfer approach plays in influencing practice by identifying the channels through which academic knowledge reaches [Canadian Chartered Business Valuators]. Also, this investigation seeks to evaluate the efficacy of the [evidence-based management] solution to the academic divide, and whether the evidence-based nature of the business valuation profession promotes academic knowledge use. It aims to evaluate the utility of the knowledge market perspective in examining the academic research relevance problem. (p. 124)	The business valuation discipline promotes the use of academic research evidence for decision-making. The use of non-academic intermediaries can serve as a means for academic knowledge transfer. Such intermediaries include conferences, workshops, webinars, professional services, e-mail-based newsgroups, books, and internal training.
Bowen et al., 2009	"Objectives were to explore perspectives on the nature and use of 'evidence,' and barriers to evidence-informed decision-making (EIDM)." (p. 88)	Barriers to evidence-based decision-making include the perception that EIDM deals only with using research evidence; perceived conflict between politics and evidence; lack of time and resources; perception that barriers are mainly external in nature; leadership, communication, and organizational structure issues; a "crisis management" culture; workload management; support of technology.
Caprar et al., 2016	To "empirically [explore] how students react to a particular research argument that may affect a certain aspect of their self-concept, in comparison to research arguments that are less likely to do so" (p. 209).	Acceptance of evidence is influenced by self-motivated processes of self-enhancement and self-protection.
Champagne et al., 2014	1. What was the nature and extent of the impact on the organizations of having a number of mid- and senior-level managers trained through EXTRA or SEARCH Classic? 2. What were the organizational processes through which the programs' impact occurred? 3. What were the contextual conditions that facilitated or impeded the programs' impact? (p. 3)	The primary impact of research skills training was in the trainees' immediate work environment. However, it was easier for the trainees to transfer to their colleagues their attitudes resulting from the training than to transfer trained skills. Several factors that influence skill and knowledge transfer were identified.
Cherney et al., 2015	To "explore how... organisational factors influence the degree to which public officials, who occupy policy-related positions, seek out and use academic social research" (p. 171).	Practitioners in disciplines that value research are more willing to look for research evidence. The value that practitioners place on research evidence depends on the access they have to it and the association (relevance) they make with it. The available infrastructure affects the extent to which practitioners consult evidence.

Article	Research question(s) or purpose	Main findings
Criado-Perez et al., 2020	"(1) What sources of evidence are used and trusted in the built environment industry in Australia? (2) How is EBP understood and practiced in the built environment industry? (3) What drives the adoption of EBP in the built environment industry?" (p. 25)	Managers trust personal experience, organizational knowledge, and consultant advice in decision-making, but scientific research is largely neglected. Managers focus more on practice-based knowledge and interpret EBP more flexibly, often for the purpose of justifying decisions, rather than guiding decisions. Learning goal orientation and cultural norms may foster EBP, but EBP adoption is also hindered by established routines that reinforce experiential evidence.
Ellen et al., 2013	"The purpose of this study was to profile the supports and instruments (i.e., programs, interventions, instruments or tools) that healthcare organizations currently have in place and which ones were perceived to facilitate evidence-informed decision-making" (p. 1).	Supports that facilitate EIDM are facilitating internal research-promoting roles, ties to external researchers and opinion leaders, research access infrastructure, and EIDM training programs.
Ellen et al., 2014	The purpose of this study was to identify (a) barriers and facilitators to implementing supports for EIDM in Canadian health-care organizations, (b) views about emerging development of supports for EIDM, and (c) views about the priorities to bridge the gaps in the current mix of supports that these organizations have in place. (p. 1)	Common barriers to EIDM were limited resources, time constraints, and negative attitudes. Facilitators were interest from decision-makers, and particularly their investing of money and resources, as well as developing of an EIDM culture. Participants believe that priorities to enabling supports for EIDM are implementing technical infrastructure for research access and support, as well as the development of ties to external researchers and knowledge brokers.
Gray et al., 2013	"What are the barriers and facilitators to EBP implementation in the human services?" (p. 158).	Barriers to EBP uptake include inadequate resources (time, research access, funding), insufficient skills & knowledge of practitioners, organizational culture, research relevance to practice, negative or indifferent attitudes to EBP, and inadequate supervision in EBP process. Facilitators (tentative evidence) include: a designated research implementation officer, audio recordings of research summaries, research supervision training, a strategic management approach to training, and partnerships with universities.

Article	Research question(s) or purpose	Main findings
Guo, 2015	[1] What is the strongest predictor... that determines U.S. healthcare administrators' intention to use EBMgt when controlling for [individual factors]? [2] Does past EBMgt use experience act as a moderator of the relationships among the three influencing variables... and intention to use EBMgt? If so, how and in what ways does past EBMgt use experience moderate the relationships among the three influencing variables and intention to use EBMgt? [3] Does any demographic characteristic... act as a moderator of the relationships among the three influencing variables... and intention to use EBMgt? If so, how and in what ways does a demographic characteristic moderate the relationships among the three influencing latent constructs and intention to use EBMgt? (pp. 5-6)	Most management decisions are not evidence-based. Practitioner attitude toward EBMgt correlated positively with a higher number of decisions being evidence-based. Practitioners have generally favorable attitudes toward EBMgt. Most have not received any type of EBMgt training and would favor receiving such training.
Guo et al., 2016	The purpose of this study was to explore hospital administrators' beliefs and attitudes toward the practice of EBMgt as well as their decision-making styles, and to identify the need for future development of a training program on evidence-based management for hospital administrators. (p. 62)	Attitude and perceived behavioral control, but not subjective norms, significantly correlated with intention to use EBMgt. Education positively moderated between attitude and intention to use EBMgt. Unfamiliarity, access to EBMgt resources, and organizational culture also related to intention to use EBMgt.
Humphries et al., 2014	"The purpose of this review of existing empirical studies was to identify potential barriers and facilitators to evidence-informed decision-making experienced by program management decision-makers within health care organizations" (p. 2).	Barriers and facilitators were identified relative to information, organizational structure/process, organizational culture, individual skills, and interaction.
Jack et al., 2010	The objectives of this qualitative case study... were to (1) explore decisionmakers' definitions of evidence-based policy; (2) understand the evolution of EBP in child welfare in Canada; and (3) identify the environmental, organizational, and individual factors influencing the use of research evidence in child welfare policy development. (p. 84)	The organizational culture of Canadian child welfare organizations appears to be shifting toward EBP. Individual, organizational, and environmental barriers were identified. Developing internal evidence champions and a culture that values EBP were identified as facilitators.

Article	Research question(s) or purpose	Main findings
Jepsen & Rousseau, 2019	First, are subordinates aware of their manager's use of evidence? Second, what impact does managerial evidence use have on an organization and its members? In particular, we examine the effects of evidence use on organizational and subordinate outcomes as well as its intervening effects on workplace learning and the subordinate's relationship with the manager. Third, how do the effects of evidence use by managers compare with effects of such established leadership constructs as leader-member exchange (LMX), subordinate trust in leadership or transformational or transactional leadership? (p. 4)	A measure of perceived evidence use was developed. Employees' perceptions of evidence use by their managers positively correlates with leader-member exchange, trust in manager, and work-based learning. It also has a positive effect on perceived organizational performance.
Kovner & Rundall, 2006	[To] understand better the use of evidence in decision making by health services managers… and to suggest a number of practical strategies that U.S. health services organizations can use to implement or strengthen an evidence-based approach to decision making in their organization. (p. 6)	Manager use of academic research was uncommon and they did not refer to using any management academic journals. Manager use of research evidence may be influenced by accountability demands and structure, organizational culture, and participation in research.
Langer et al., 2016	[1] What is the quantity and type of studies that have been undertaken on the efficacy of interventions used to increase the use of research evidence by decision makers? [2] What evidence is there for the efficacy of interventions used to increase the use of research evidence by decision makers? (p. 12)	Interventions involving research evidence communication and access were only effective if they increased practitioner motivation and opportunity. Research skill development interventions were only effective if they increased practitioner capability and motivation. Interventions involving changes to decision-making structure and process may be effective but lack sufficient evidence. Unstructured interventions between decision-makers and researchers appear to be ineffective. Simpler interventions appear to be more effective than multi-faceted interventions.
Liang et al., 2011a	"This article focuses on clarifying what constituted evidence from managers' perspectives, how managers perceived the importance of a range of evidence types and how often and for what types of decisions they used evidence" (p. 24).	Managers generally believe evidence use is important, but they define evidence broadly. Managers rarely use research evidence, preferring organizational data, followed by external best practices and personal experience.

Article	Research question(s) or purpose	Main findings
Liang et al., 2011b	What were participants' preferred methods for receiving research information? What were participants' preferred formats for the presentation of research information? What was the relative importance of identified barriers and facilitators on the practice of EIDM among senior health service managers? What could be done to improve the practice of EIDM amongst health service managers? (p. 14)	Top barriers to research evidence use are lack of time, insufficient financial resources, and perceived irrelevance. Enablers include presenting research findings appropriately, the existence of high-quality research, and the relevance of it to local context. Professional associations can be especially helpful in promoting evidence-based management at the researcher, organizational, and practitioner levels.
McBeath et al., 2015	First, what levels of managerial evidence use exist in public human service organizations, and for what ends is this evidence used?... The second question seeks to identify those human service managers who use evidence more than others, and the organizational factors and individual characteristics that are associated with their efforts. (p. 268)	Managers use evidence moderately, including research literature. Evidence use positively correlated with access to performance measurement systems, being an administrator, being innovation-minded, and being responsive to organizational change.
Oliver et al., 2014	"Identify factors which act as barriers to and facilitators of the use of evidence in public policy, including factors perceived by different stakeholder groups. Describe the focus, methods, populations, and findings of the new evidence in this area" (p. 2).	Common barriers to research use are lack of access and time. Common facilitators are collaborations with researchers and improved relationships and skills.
Orton et al., 2011	To synthesise the evidence on how research evidence is used by public health decision makers, including: 1. the extent to which research evidence is used; 2. what types of research evidence are used; 3. the process of using research evidence; 4. factors, other than research evidence, influencing the decision making process; and 5. barriers to and facilitators of the use of research evidence. (p. 2)	Various types of research evidence are used in policymaking, but their influence in decision-making is indirect, and there is insufficient evidence regarding the extent to which research evidence is used. Barriers include decision-maker perceptions of research evidence, the academic-practitioner divide, organizational culture, competing influences, and practical constraints. Facilitators include research relevance and clarity and building the capacity of decision-makers to use research.

Article	Research question(s) or purpose	Main findings
Rynes et al., 2002	"[To] identify those practices for which there is the greatest (and least) consistency between research findings and practitioner beliefs. In addition, we examined the various ways in which HR professionals obtain information about HR practices" (p. 150).	There are large discrepancies between HR practitioner beliefs and research evidence. HR managers are generally not aware of research. HR managers prefer to turn to industry journals and popular sources for information, which often contradict research evidence. Research often lacks relevance for practitioners. Managers with higher job levels, professional certifications, and who read academic literature have beliefs more aligned with research evidence.
Sarkies et al., 2017	The primary aim of this systematic review was to evaluate the effectiveness of research implementation strategies for promoting evidence-informed policy and management decisions in healthcare. A secondary aim of the review was to describe factors perceived to be associated with effective strategies and the inter-relationship between these factors. (p. 2)	Factors that may facilitate research implementation include management mandate, trust among stakeholders, a shared vision, enabling change, effective communication, and providing the necessary resources. Helpful interventions in specific cases included using policy briefs citing expert opinion, training, technical support, and awareness messages.
Tenhiälä et al., 2016	[We] examine beliefs about the effectiveness of HR practices by surveying HR professionals in Finland, Spain, and South Korea, and compare the gaps between practitioner beliefs and research knowledge to earlier studies…. We contribute to this discourse by assessing cross-cultural differences in HR practitioner beliefs. Finally, based on practitioner information sources and attitudes towards HR research, we offer directions for the advancement of EBMgt. (p. 182)	There are large discrepancies between HR practitioner beliefs and research evidence. Interpersonal aspects of managers are more dependent on culture than technical aspects. While practitioner attitudes of academics are generally positive, practitioners are not likely to turn to academics or academic literature to resolve HR problems.
Tucker & Lowe, 2014	"[To] identify and gain insights into the significance of barriers contributing to the purported 'gap' between academic management accounting research and practice" (p. 394).	The two biggest barriers for practitioner use of research evidence are accessing and understanding research findings.
Wright et al., 2018	"How do undergraduate students understand EBMgt?" (p. 454).	Using EBMgt as a way of doing business is understood in four ways: unrealistic, contextually applicable, generally useful, and ideal. An individual's understanding was based on their perceptions of the utility of evidence, their stance toward scientific evidence, and their focus of reflection about EBMgt.

Table B3

Independent Variables, Dependent Variables, Mediators or Moderators, Effect Size, and Confidence Interval

Article	Independent variables	Dependent variables	Mediators or moderators	Effect size (quantitative studies)	Confidence interval (quantitative studies)
Atkins et al., 2017	Context, research evidence limitations, use of local evidence	Implementation of knowledge translation guidelines	Not addressed	Not applicable	Not applicable
Barends et al., 2017	Individual attitude, social norms, and personal/contextual factors	Attitudes and perceived barriers to using EBP	Mediator: Intention to use EBP	Medium	Narrow
Bezzina et al., 2017	Factors related to leadership; motivation; organizational processes; team dynamics; selection; work, family, technology, and culture; training and performance appraisal; turnover and satisfaction; forms and sources of knowledge translation	Use of evidence-based HRM practices	Availability of time and complete information moderate the accuracy of decisions.	small-medium	Not addressed
Booker et al., 2012	Indirect knowledge transfer approaches, evidence-based nature of work	Use of research in decision making	Moderator: non-academic knowledge intermediaries	Not applicable	Not applicable
Bowen et al., 2009	Individual and organizational barriers	Use of evidence-based decision-making	Not addressed	Not applicable	Not applicable
Caprar et al., 2016	Self-concept and emotional stability	Response to evidence (acceptance/rejection)	Moderators: potential for self-threat, emotional stability	Small-medium	Narrow
Champagne et al., 2014	Organizational structures and learning characteristics	Use of EIDM at the individual and organizational levels	Not addressed	Not applicable	Not applicable
Cherney et al., 2015	Preferences, constraints and organizational factors	Use of academic research evidence	Not addressed	Various	Various

Article	Independent variables	Dependent variables	Mediators or moderators	Effect size (quantitative studies)	Confidence interval (quantitative studies)
Criado-Perez et al., 2020	Reliance on different sources of evidence, perceived level of trustworthiness of evidence sources, attitude, social norms, perceived barriers, learning goal orientation, and innovative behavior	EBP adoption	Not addressed	Small-medium	Not addressed
Ellen et al., 2013	Push, pull, and linkage/exchange factors	Implementing supports for evidence-informed decision-making	Not addressed	Not applicable	Not applicable
Ellen et al., 2014	Barriers, facilitators, and perceptions	Implementing supports for evidence-informed decision-making	Not addressed	Not applicable	Not applicable
Gray et al., 2013	Barriers and facilitators	EBP implementation	Not addressed	Not applicable	Not applicable
Guo, 2015	Attitude, subjective norm, perceived behavioral control	Intention to use EBMgt	Past EBMgt use, demographics, education level, access to EBMgt resources, organizational culture	Various	Not addressed
Guo et al., 2016	Beliefs and attitudes	Evidence-based decision making	Not addressed	Medium	Not addressed
Humphries et al., 2014	Barriers and facilitators	Evidence-informed decision-making	Not addressed	Not applicable	Not applicable
Jack et al., 2010	Environmental, organizational, and individual factors	Research evidence use	Not addressed	Not applicable	Not applicable
Jepsen & Rousseau, 2019	Perceived evidence use by manager	Organizational performance	Mediators: workplace learning and leader-member exchange	Medium-large	Not addressed

Article	Independent variables	Dependent variables	Mediators or moderators	Effect size (quantitative studies)	Confidence interval (quantitative studies)
Kovner & Rundall, 2006	Type of decision, influencing factors	Knowledge transfer between researchers and healthcare managers	Not addressed	Not applicable	Not applicable
Langer et al., 2016	Various interventions	Use of evidence-informed decision-making	Not addressed	Not applicable	Not applicable
Liang et al., 2011a	Frequency of evidence use; usefulness, importance, ranking, and actual use of evidence types	Perceptions of evidence, current practice of evidence use	Not addressed	Not addressed	Not addressed
Liang et al., 2011b	Barriers and facilitators	Evidence-informed decision making	Not addressed	Not addressed	Not addressed
McBeath et al., 2015	Organizational factors and individual attitudinal characteristics	Degree and type of evidence use	Not addressed	Various	Various
Oliver et al., 2014	Barriers and facilitators	Use of research evidence in policy-making	Not addressed	Not applicable	Not applicable
Orton et al., 2011	Extent of use, research type, research use process, factors that influence decisions, barriers, and facilitators	Use of research evidence in public health policy-making	Not addressed	Not applicable	Not applicable
Rynes et al., 2002	Job level, professional certifications, and types of HR reading that practitioners do	Belief in HR practices that align with research evidence	Not addressed	Various	Not addressed
Sarkies et al., 2017	Research implementation strategies	Evidence implementation in policy and management decisions	Not addressed	Not applicable	Not applicable

Article	Independent variables	Dependent variables	Mediators or moderators	Effect size (quantitative studies)	Confidence interval (quantitative studies)
Tenhiälä et al., 2016	Job level, professional certifications, and types of HR reading that practitioners do, national culture	Belief in HR practices that align with research evidence	Not addressed	Not addressed	Not addressed
Tucker & Lowe, 2014	Barriers	Practitioner use of research evidence	Not addressed	Not applicable	Not applicable
Wright et al., 2018	Individual perceptions	Understanding of EBMgt	Not addressed	Not applicable	Not applicable

Appendix C

Quality Appraisal Rubric

Article	Preliminary assessment				WoE assessment				Assessment limitations
	PR	Prec	MT	GMA	WoE A	WoE B	WoE C	WoE D	
Atkins et al., 2017	3	3	3	A	A	A	C	B	Small purposive sample of public health managers. Recommendations are not specific enough to be actionable beyond simple prescriptions. An emphasis on academic research evidence is implied, but it is difficult to distinguish between different evidence sources.
Barends et al., 2017	3	3	3	A	A	A	A	A	Convenience sample and uneven response rate between countries
Bezzina et al., 2017	3	2	3	A	B	A	A	A	Purposive sample. Confidence interval for effect not reported.
Booker et al., 2012	3	2	2	B	D	B	B	C	Small purposive sample of a very specialized career field. The methodology explanation is very brief and could have more details about quality control. Some of the data could have been collected more objectively through a survey.
Bowen et al., 2009	3	3	3	A	A	A	B	B	Limited generalizability due to socialized healthcare context. Different interpretations of what constitutes evidence from participants.
Caprar et al., 2016	3	3	2	A	B	B	C	B	Management student convenience sample in a classroom environment may not be generalizable to the real management environment. The research evidence presented involved only one very specific area--belief in evidence on hiring based on intelligence. It did not address the extent to which other research evidence generally challenges self-concepts.
Champagne et al., 2014	3	3	3	A	B	A	A	A	Focus on two very specific training models limits generalizability. Rigid theoretical framework susceptible to introduction of bias.
Cherney et al., 2015	3	3	3	A	B	A	A	A	Self-reported data by self-selected participants in 21 different agencies could produce response bias. Surveys administered over a 3-year period. Measure of research use was wide (having consulted research over a 12-month period).

Article	Preliminary assessment				WoE assessment				Assessment limitations
	PR	Prec	MT	GMA	WoE A	WoE B	WoE C	WoE D	
Criado-Perez et al., 2020	3	2	2	A	B	B	B	B	Does not explain the sampling methods. Australian built environment may not be generalizable to broader management context. Confidence interval for effect not reported.
Ellen et al., 2013	3	2	3	A	B	A	B	B	Purposive sample with a lower number of participants than ideal. Sample limited to organizations that have been successful in implementing EBP policies. Generalizability may be limited to health professionals.
Ellen et al., 2014	3	2	3	A	B	A	B	B	Purposive sample with a lower number of participants than ideal. Sample limited to organizations that have been successful in implementing EBP policies. Generalizability may be limited to health professionals. Note: this was a continuation of the Ellen et al. (2013) study.
Gray et al., 2013	3	2	2	A	B	B	C	B	Very restrictive selection criteria and few studies included. No studies excluded on methodological grounds. Although it is focused on human services and has a partial management sample, the focus is not on the clinical evidence itself, but on the ability to implement processes for EBP.
Guo, 2015	3	2	3	A	B	B	B	B	Small, purposive, self-selected sample from healthcare administrators. Little details were discussed on the nature of the survey instrument. Although it was pre-tested, this makes it difficult to understand how the variables were measured or replicate the study. Confidence interval not discussed. Findings discuss evidence generally, making it difficult to distinguish between academic research and other sources of evidence.
Guo et al., 2016	3	2	1	A	D	B	B	C	Confidence intervals not addressed. Does not provide details about how the survey questions were developed, other than stating they are research-based and that the survey was pilot-tested. Findings may not be generalizable beyond healthcare management. Other barriers and facilitators may have been identified through qualitative data sources.

Article	Preliminary assessment				WoE assessment				Assessment limitations
	PR	Prec	MT	GMA	WoE A	WoE B	WoE C	WoE D	
Humphries et al., 2014	3	3	2	A	A	A	B	A	Only 14 studies were included, yet the authors claim to have attained saturation. Could have included more studies by broadening the inclusion criteria. Analysis was superficial in nature. An emphasis on academic research evidence is implied, but it is sometimes difficult to distinguish between different evidence sources.
Jack et al., 2010	3	2	3	A	A	B	B	B	Small purposive sample. Limited generalizability for management outside of social services. Evidence use about social science, not management science.
Jepsen & Rousseau, 2019	3	2	3	A	B	B	C	B	Confidence interval for effect not reported. Self-reported measures. Purposive healthcare and MBA student samples.
Kovner & Rundall, 2006	3	2	2	A	B	A	B	B	Methodological details are not clear; however, this article references an unpublished study which is expected to have these details. Also, the study is from a seminal author. All managers were from the healthcare field, making generalizability limited.
Langer et al., 2016	3	3	3	A	A	B	C	B	Very stringent inclusion criteria only included systematic reviews of effects. Scoping review portion of the study not considered in this review because it was not focused on EIDM and included non-empirical research. Secondary research nature of review of reviews. Vast majority of reviews included in systematic review were from healthcare. Many of the decision-makers were at the practice level, however clinical studies were excluded, and the results focus on management aspects.
Liang et al., 2011a	2	2	3	A	C	A	B	B	Small, self-selected sample of healthcare managers may have limited generalizability. Did not present statistical data or correlations (although stated they were performed). Did not address effect or confidence intervals.

Article	Preliminary assessment				WoE assessment				Assessment limitations
	PR	Prec	MT	GMA	WoE A	WoE B	WoE C	WoE D	
Liang et al., 2011b	2	2	3	A	C	A	B	B	Small, self-selected sample of healthcare managers may have limited generalizability. Did not present statistical data or correlations (although stated they were performed). Did not address effect or confidence intervals.
McBeath et al., 2015	3	2	3	A	B	A	B	B	Data is self-reported. Findings may not be generalizable beyond human services managers. Large confidence intervals spanning weak to strong effects were not explained.
Oliver et al., 2014	3	2	2	A	B	B	C	C	Methodological quality of studies was not assessed. Synthesis process not clearly explained. A few of the included studies did not define "evidence," and some variables lack clarity. Majority of reviews included were from healthcare. Much of the research use revolves around non-management areas, however clinical studies were excluded, and the results focus on management aspects.
Orton et al., 2011	3	3	3	A	A	A	C	B	Limited generalizability due to public health focus. Some of the research used in decision-making is focused on health outcomes. Data extraction table not presented in article (although submitted to journal).
Rynes et al., 2002	2	2	2	A	C	C	C	C	Self-selected sample. Methodological limitations not addressed in article. Confidence interval for effect not reported. Study did not focus on the managers' use of research evidence, but rather the extent to which their beliefs align with evidence. Practitioner recommendations not explicit but inferred.
Sarkies et al., 2017	3	2	3	A	A	A	B	A	Small number of studies included. Generalizability may be limited to healthcare management.
Tenhiälä et al., 2016	2	2	2	A	C	C	B	C	Self-selected sample. Effect sizes and confidence intervals not addressed. Study did not focus on the managers' use of research evidence, but rather the extent to which their beliefs align with evidence.

Article	Preliminary assessment				WoE assessment				Assessment limitations
	PR	Prec	MT	GMA	WoE A	WoE B	WoE C	WoE D	
Tucker & Lowe, 2014	2	3	3	A	A	B	B	B	Limited generalizability due to small sample of managers from authorities interested in evidence use. Provides little detail on recommendations for practice.
Wright et al., 2018	2	3	2	A	B	A	C	C	Self-selected sample of management students has limited generalizability. Self-reported data subject to social desirability bias. Data collected at one point in time. Not just about research use, but about the four sources of EBMgt evidence.

Note. PR = practical relevance; Prec = precision; MT = methodological trustworthiness; GMA = general methodological appropriateness; WoE = weight of evidence. WoE A assesses methodological quality. WoE B assesses methodological appropriateness for this systematic review. WoE C assesses relevance and appropriateness for this systematic review. WoE D is the overall assessment.

Appendix D

Excluded Studies with Reasons

Article	Exclusion reason
Aarons & Sawitzky, 2006	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Aarons et al., 2009	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Aarons et al., 2014	Not an empirical study.
Aarons et al., 2015	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Aarons, 2006	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Aarons, 2012	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Ahmad & Huvila, 2019	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Allen, 2017	Low overall assessment (WoE D). Analysis methods not clearly described. Did not clearly distinguish between academic research and other evidence sources.
Alshehri et al., 2019	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Archer-Kuhn et al., 2014	Not an empirical study.
Armstrong, 2011	Not an empirical study.
Aryeetey et al., 2017	Not an empirical study.
Babalola & Wosunmi, 2016	Low methodological quality (WoE A). Sample too small and selection appears arbitrary. Survey instrument was not previously tested. Statistics are only descriptive, no effect or confidence addressed. Evidence of high degree of response bias and study limitations are not addressed.
Bansal et al., 2012	Not an empirical study.
Barac et al., 2014	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Bartelt et al., 2011	Lack of relevance or appropriateness (WoE C). Not about management practice.
Bartlett & Allen, 2013	Not an empirical study.
Bartlett & Francis-Smythe, 2016	Lack of relevance or appropriateness (WoE C). Not about management practice.

Article	Exclusion reason
Barwick et al., 2012	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Bayliss et al., 2012	Low methodological quality (WoE A). Sample composition not clearly addressed. Data was only frequency counts. Reliability and validity not addressed. Authors do not discuss limitations of their study. Recommendations were not based on the findings.
Bennett et al., 2016	Lack of relevance or appropriateness (WoE C). Not about management decision-making.
Bennett, 2017	Not an empirical study.
Birken et al., 2012	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Booth et al., 2003	Lack of relevance or appropriateness (WoE C). Not about management practice.
Booysen et al., 2019	Lack of relevance or appropriateness (WoE C). Not about management practice.
Briand-Lamarche et al., 2016	Lack of relevance or appropriateness (WoE C). Not about management decision-making.
Briggs & McBeath, 2009	Not an empirical study.
Brimhall et al., 2016	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Briscoe et al., 2016	Low methodological quality (WoE A). Sample collection and composition not clearly described. Data not uniformly collected. Does not address limitations of study.
Brown & Greany, 2018	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners. Also duplicate of an older study already considered in the systematic review data set.
Brown & Rogers, 2014	Lack of relevance or appropriateness (WoE C). Not about management practice.
Brown & Zhang, 2016	Lack of relevance or appropriateness (WoE C). Not about management decision-making.
Brownson et al., 2017	Lack of relevance or appropriateness (WoE C). Not about management decision-making.
Bruce & O'Callaghan, 2016	Low overall assessment (WoE D). Sample composition lacks clarity, and more than half of the sample were scholars rather than management practitioners.
Buckingham et al., 2019	Lack of relevance or appropriateness (WoE C). Not about management practice.
Bullock et al., 2013	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Cahill et al., 2015	Lack of relevance or appropriateness (WoE C). Not about management practice.
Campbell et al., 2011	Low methodological quality (WoE A). Does not address analytical process or quality control measures. Apparent researcher bias, but authors do not address limitations of study.

Article	Exclusion reason
Chan et al., 2017	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Chapman et al., 2020	Lack of relevance or appropriateness (WoE C). Not about management practice.
Cheng et al., 2018	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Cherney & McGee, 2011	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Chuang et al., 2017	Not an empirical study.
Clodfelter et al., 2014	Not an empirical study.
Collins-Camargo & Royse, 2010	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Cook et al., 2012	Low overall assessment (WoE D). The degree to which academic research evidence is used is not clear. Evidence not about management context.
Cooper & Levin, 2013	Low overall assessment (WoE D). Focus more on pedagogical than management decision-making. Analysis lacks rigor, as it was superficial in nature. Neither scale validity and reliability nor effect sizes and confidence intervals were addressed.
Cooper et al., 2017	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Cooper et al., 2018	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Cooper, 2015	Lack of relevance or appropriateness (WoE C). Sample was largely not management practitioners.
Courtright et al., 2012	Low methodological quality (WoE A). Sampling and analysis methods lack transparency.
Cramm et al., 2013	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Currie et al., 2013	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Cutforth & Belansky, 2015	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Cvitanovic et al., 2016	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Dagenais et al., 2016	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Dalheim et al., 2012	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Dannapfel, 2015	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.

Article	Exclusion reason
Dari et al., 2019	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Davies et al., 2017	Not an empirical study.
Dill & Shera, 2009	Not an empirical study.
Dill & Shera, 2015	Low methodological quality (WoE A). Sample composition and analysis methods not clear. Limitations not addressed.
Dobbins et al., 2007	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Dobbins et al., 2018	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Dobbins et al., 2019	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Duggan et al., 2015	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Dunne, 2011	Lack of relevance or appropriateness (WoE C). Not about management practice.
DuPee, 2016	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Dziubaniuk et al., 2020	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Eccleston et al., 2019	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Edelstein, 2016	Low methodological quality (WoE A). Sample selection and composition were not addressed. Document review methodology not clearly explained. Survey results were only analyzed descriptively; effect size and confidence interval not addressed. Limitations discussion lacks detail, including the author's assumptions and potential biases.
Elueze, 2015	Low methodological quality (WoE A). Systematic review without quality appraisal. Evidence search is not replicable.
Farley-Ripple & Jones, 2015	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Farley-Ripple, 2012	Lack of relevance or appropriateness (WoE C). Not about management decision-making.
Fearing et al., 2014	Low overall assessment (WoE D). Unable to answer intended objective of EBP implementation efforts due to time limitations. Instead focused more on clinical application of evidence-based practices. Analysis methods lack rigor, as a very limited amount of the data collected was analyzed.
Fields et al., 2015	Low overall assessment (WoE D). Research context is largely not about management practice. Descriptive findings add little to no value to this systematic review.
Flodgren et al., 2007	Lack of relevance or appropriateness (WoE C). Not about management decision-making.

Article	Exclusion reason
Fooks et al., 2019	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Francis-Smythe et al., 2013	Low overall assessment (WoE D). Sampling and analysis methods lack clarity. Link between findings and recommendations is not clear. Does not address limitations.
Frese et al., 2012	Not an empirical study.
Fullagar et al., 2019	Lack of relevance or appropriateness (WoE C). Not about management practice.
Glaub et al., 2014	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Graaf et al., 2017	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Grady et al., 2018	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Graves & Moore, 2018	Low methodological quality (WoE A). Very small sample that lacks generalizability.
Gray et al., 2014	Lack of relevance or appropriateness (WoE C). Not about management practice.
Greaves, 2017	Low overall assessment (WoE D). Sample selection and composition not clear. Did not present analysis or address limitations.
Gunasekaran et al., 2017	Not an empirical study.
HakemZadeh & Baba, 2016	Lack of relevance or appropriateness (WoE C). Sample was largely not management practitioners, but scholars.
Halm, 2010	Not an empirical study.
Hardwick et al., 2015	Not an empirical study.
Hasanpoor et al., 2018	Low overall assessment (WoE D). Methodology lacks transparency. Findings are shallow.
Haynes et al., 2018	Lack of relevance or appropriateness (WoE C). Academic research evidence use outcomes were not addressed.
Hemsley-Brown, 2005	Low methodological quality (WoE A). Outcome measures, data analysis, and quality controls lack clarity. Limitations not addressed.
Henriksson et al., 2017	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Higuchi & Yamanaka, 2019	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Honig et al., 2017	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Hopkins et al., 2018	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Hudson et al., 2016	Lack of relevance or appropriateness (WoE C). Not about management practice.

Article	Exclusion reason
Hunter et al., 2019	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Jaana et al., 2014	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Jack et al., 2011	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Jackson, 2015	Not an empirical study.
Jacobs et al., 2012	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Jamali, 2018	Lack of relevance or appropriateness (WoE C). Not about management practice.
James et al., 2019	Lack of relevance or appropriateness (WoE C). Not about management practice.
Janati et al., 2017	Low methodological quality (WoE A). Study appears to be influenced by researcher and response bias, but the authors did not address the study's limitations. Analysis methods are partly unclear. Some conclusions are not based on the research questions and findings.
Janati et al., 2018	Low methodological quality (WoE A). Lacks data transparency. Appears to be same data set from a previous study, although the researchers claim it is a different data set. Results not clearly explained. Study appears to be influenced by researcher and response bias, but the authors did not address the study's limitations.
Jessani et al., 2017	Low methodological quality (WoE A). Very small sample that is not generalizable. Half of the sample are not management practitioners, but academics.
Johansson, 2019	Low methodological quality (WoE A). Sample is not defined. Data collection methods not clearly described. Quality control measures not addressed. Quantitative sample selection process not explained. No data presented.
Jones et al., 2015	Lack of relevance or appropriateness (WoE C). Not about management practice.
Junco et al., 2010	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Kalyal, 2019	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Kislov et al., 2019	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Kneale et al., 2019	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Knight, 2013	Lack of relevance or appropriateness (WoE C). Not about management practice.
Konstam et al., 2015	Lack of relevance or appropriateness (WoE C). Not about management practice.
Kreitzer et al., 2014	Lack of relevance or appropriateness (WoE C). Not about management practice.

Article	Exclusion reason
Landry et al., 2003	Low methodological quality (WoE A). Did not cite confidence intervals for effect sizes. The variables have multiple dimensions which may confound each other. Some measures, results, and recommendations are ambiguous. Did not address the study's limitations.
LaPointe-McEwan et al., 2017	Lack of relevance or appropriateness (WoE C). Not about management practice.
Larocca et al., 2012	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Lavoie-Tremblay et al., 2012	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice. Not about academic research evidence utilization, but the application of specific evidence-based practices.
Lee, 2016	Lack of relevance or appropriateness (WoE C). Not about management practice.
Lee, 2016	Lack of relevance or appropriateness (WoE C). Not about management practice.
Levin et al., 2011	Low methodological quality (WoE A). Composition of pre and post samples is not clearly explained. No mention of the survey instrument being previously validated. Data analysis is only descriptive. Very little discussion on limitations.
Lysenko et al., 2014	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Lysenko et al., 2016	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Malin et al., 2019	Lack of relevance or appropriateness (WoE C). Not about management practice.
Mallidou et al., 2018	Not an empirical study.
Marquez et al., 2018	Low methodological quality (WoE A). Sample selection not clearly explained. Data not clearly presented. Part of the study had very few participants and mixed conclusions. Did not address effect sizes or confidence intervals of the quantitative data.
Masso & McCarthy, 2009	Not an empirical study.
McCaughan et al., 2002	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Mccleery et al., 2007	Low methodological quality (WoE A). Lacks methodological rigor for case study. Simply a narrative based on the researcher's experience. Does not explain the data collection or quality control methods.
McCormack et al., 2013	Lack of relevance or appropriateness (WoE C). Not about management practice.
McLean et al., 2018	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Meijers et al., 2006	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Melnyk et al., 2010	Lack of relevance or appropriateness (WoE C). Not about management practice.

Article	Exclusion reason
Michie et al., 2005	Not an empirical study.
Michie et al., 2011	Not an empirical study.
Miller, 2015	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Moats, 2017	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Mosson et al., 2018	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Motani et al., 2019	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Mueller, 2012	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Murphy et al., 2014	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Murphy et al., 2018	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Newman et al., 2000	Not an empirical study.
Newman et al., 2017	Low methodological quality (WoE A). Data analysis is only descriptive; effect size and confidence interval are not addressed. No mention of the survey instrument being previously validated.
Niedzwiedzka, 2003	Low methodological quality (WoE A). No details were provided on the methodology or quality control methods for the qualitative data. Few details were provided on the survey methodology, and the quantitative survey analysis was not explained. Did not address effects or confidence intervals for quantitative data. Limitations of study not clearly addressed, including potential researcher bias.
Notarianni et al., 2016	Not an empirical study.
Osterling & Austin, 2008	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Panzano & Roth, 2006	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Peirson et al., 2012	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Penuel et al., 2017	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Pepler et al., 2005	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Petch et al., 2014	Not an empirical study.
Pittman et al., 2019	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.

Article	Exclusion reason
Plath, 2013	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Plath, 2013	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice. Majority of sample is not management practitioners.
Powers et al., 2015	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Purcell et al., 2013	Not an empirical study.
Quinn et al., 2014	Lack of relevance or appropriateness (WoE C). Not about management practice.
Ranchod, 2017	Low methodological quality (WoE A). Sample selection and composition, data collection, and analysis methods were not clearly described. Limitations not addressed.
Rawluk et al., 2020	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Reding et al., 2014	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.
Reichenpfader et al., 2015	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Reid et al., 2017	Low methodological quality (WoE A). Sample composition, data collection, and analysis methods were not clearly described.
Rickinson et al., 2017	Not an empirical study.
Rodway, 2019	Lack of relevance or appropriateness (WoE C). Not about management practice.
Rosendal et al., 2019	Not an empirical study.
Roshanghalb et al., 2018	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Rybnicek & Königsgruber, 2019	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of academic research evidence.
Safari & Mostfaie, 2016	Low methodological quality (WoE A). Did not address effect or confidence. Did not discuss how the instrument measured the outcomes. Several variables are not clearly conceptualized or operationalized.
Sapp et al., 2014	Lack of relevance or appropriateness (WoE C). Not about use of academic research evidence.
Schaffer et al., 2013	Not an empirical study.
Schönthaler et al., 2017	Lack of relevance or appropriateness (WoE C). Not about management practice.
Shollo et al., 2015	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Shuman et al., 2019	Lack of relevance or appropriateness (WoE C). Not about academic research evidence utilization, but the application of specific evidence-based practices.

Article	Exclusion reason
Smith & Nestor, 2017	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Smith, 2013	Lack of relevance or appropriateness (WoE C). Not about management practice.
Sosnowy et al., 2013	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice. Does not clearly focus on academic research evidence, but numerous types of evidence.
Spector & Pinto, 2017	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice. Not about academic research evidence utilization, but the application of specific evidence-based practices.
Stern, 2008	Lack of relevance or appropriateness (WoE C). Not about management practice.
Stetler et al., 2009	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Stetler et al., 2014	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Strelitz, 2013	Low methodological quality (WoE A). Very small purposive sample that is difficult to generalize. Sample selection was not described. Analysis process and quality control methods were not clearly explained. Did not address potential researcher bias.
Tanskanen et al., 2017	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Teater & Chonody, 2018	Lack of relevance or appropriateness (WoE C). Not about management practice.
Traynor et al., 2014	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management decision-making.
Twalo, 2019	Low methodological quality (WoE A). Very small sample that is not generalizable. Data collection, quality control, and analysis methods not clearly explained.
Uneke et al., 2011	Low methodological quality (WoE A). Data analysis is only descriptive; effect size and confidence interval are not addressed. Convenience sample that is very difficult to generalize.
Urquhart et al., 2013	Not an empirical study.
van der Zwet et al., 2019	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Wang et al., 2017	Not an empirical study.
Ward & Mowat, 2012	Not an empirical study.
Welch et al., 2014	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management practice.
Wenke et al., 2019	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management decision-making.
Wike et al., 2019	Lack of relevance or appropriateness (WoE C). Not about management practice.

Article	Exclusion reason
Williams et al., 2015	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Wilson & Douglas, 2007	Lack of relevance or appropriateness (WoE C). Not about management practice.
Wilson, 2015	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Wright et al., 2013	Lack of relevance or appropriateness (WoE C). Not about management practitioner use of research evidence in decision-making.
Wright et al., 2016	Lack of relevance or appropriateness (WoE C). Sample has very few management practitioners. Data appears to be subject to a high degree of response bias, and the study's limitations are not addressed.
Wye et al., 2019	Not an empirical study.
Yackel et al., 2013	Lack of relevance or appropriateness (WoE C). Sample was not management practitioners.
Yates et al., 2015	Not an empirical study.
Yousefi-Nooraie et al., 2012	Lack of relevance or appropriateness (WoE C). Research utilization context is not about management decision-making.

Appendix E

CERQual Qualitative Evidence Profiles

Table E1

CERQual Qualitative Evidence Profile: Finding 1

Finding 1	Practitioner perceptions of misalignment between academic research evidence and management context impeded EIDM.
Contributing studies (14)	Atkins et al., 2017; Booker et al., 2012; Bowen et al., 2009; Cherney et al., 2015; Criado-Perez et al., 2019; Ellen et al., 2014; Gray et al., 2013; Humphries et al., 2014; Liang et al., 2011b; Orton et al., 2011; Rynes et al., 2002; Sarkies et al., 2017; Tenhiälä et al., 2016; Tucker & Lowe, 2014
Assessment of Methodological Limitations	Minor concerns 4 studies with minor concerns. 3 studies with moderate concerns (sampling issues and did not clearly address effect sizes and confidence intervals). 1 study with serious concerns (low methodological transparency).
Assessment of Relevance	Minor concerns Partial relevance - all studies but one were focused on a single discipline and half the studies had healthcare samples; only 3 studies included non-Western, non-English-speaking countries, 1 study of which included LMICs. Indirect relevance - 2 studies not about EIDM, 1 study included a part non-management sample, 1 study partly outside of management context.
Assessment of Coherence	Very minor concerns
Assessment of Adequacy	Very minor concerns
Overall Assessment of Confidence	High confidence Minor concerns regarding methodological limitations and relevance

Table E2

CERQual Qualitative Evidence Profile: Finding 2

Finding 2	Having a purpose for practitioner use of academic research evidence facilitated EIDM.
Contributing studies (18)	Barends et al., 2017; Bezzina et al., 2017; Booker et al., 2012; Bowen et al., 2009; Caprar et al., 2016; Criado-Perez et al., 2019; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Guo et al., 2016; Humphries et al., 2014; Kovner & Rundall, 2006; Liang et al., 2011a; Rynes et al., 2002; Sarkies et al., 2017; Tenhiälä et al., 2016; Tucker & Lowe, 2014; Wright et al., 2018
Assessment of Methodological Limitations	Minor concerns 8 studies with minor concerns. 3 studies with moderate concerns (sampling issues and did not clearly address effect sizes and confidence intervals). 2 studies with serious concerns (sampling issues, low methodological transparency, and did not address confidence intervals).
Assessment of Relevance	Minor concerns Partial relevance - all studies but 2 were focused on a single discipline, 8 had healthcare samples, and 1 included a part non-management sample; only 5 studies included non-English-speaking countries, 4 studies of which included non-Western countries and 2 of which included LMICs. Indirect relevance - 3 studies not directly about EIDM, 2 studies have student samples.
Assessment of Coherence	Minor concerns 1 study did not clearly distinguish between different evidence sources. A plausible alternative explanation for broad positive attitudes toward research evidence could be due to social desirability response bias.
Assessment of Adequacy	Very minor concerns
Overall Assessment of Confidence	Moderate confidence Minor concerns regarding methodological limitations, relevance, and coherence

Table E3

CERQual Qualitative Evidence Profile: Finding 3

Finding 3	Practitioner engagement with research and researchers facilitated EIDM.
Contributing studies (11)	Booker et al., 2012; Champagne et al., 2014; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Humphries et al., 2014; Kovner & Rundall, 2006; Langer et al., 2016; Liang et al., 2011b; Oliver et al., 2014; Sarkies et al., 2017
Assessment of Methodological Limitations	Minor concerns 5 studies with minor concerns. 1 study with moderate concerns (sampling issues and did not address effect sizes and confidence intervals). 1 study with serious concerns (low methodological transparency).
Assessment of Relevance	Minor concerns Partial relevance - all studies focused on a single discipline and 6 had healthcare samples; only 4 studies included non-English-speaking countries, 3 studies of which included LMICs. Indirect relevance - 1 systematic review included samples with part non-management workers.
Assessment of Coherence	Very minor concerns
Assessment of Adequacy	Minor concerns 2 studies with moderately rich data, 2 studies with thin data.
Overall Assessment of Confidence	Moderate confidence Minor concerns regarding methodological limitations, relevance, and adequacy

Table E4

CERQual Qualitative Evidence Profile: Finding 4

Finding 4	Practitioner use of knowledge brokers facilitated EIDM.
Contributing studies (10)	Booker et al., 2012; Champagne et al., 2014; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Jack et al., 2010; Jepsen & Rousseau, 2019; Liang et al., 2011b; Oliver et al., 2014; Sarkies et al., 2017
Assessment of Methodological Limitations	Minor concerns 6 studies with minor concerns. 1 study with moderate concerns (sampling issues and did not address effect sizes and confidence intervals). 1 study with serious concerns (low methodological transparency).
Assessment of Relevance	Minor concerns Partial relevance - all studies focused on a single discipline, 5 had exclusively healthcare samples, 4 studies only had Canadian samples; only 1 study included non-Western, non-English-speaking countries, including LMICs. Indirect relevance - 1 systematic review included samples with part non-management workers.
Assessment of Coherence	Very minor concerns
Assessment of Adequacy	Very minor concerns
Overall Assessment of Confidence	High confidence Minor concerns regarding methodological limitations and relevance

Table E5

CERQual Qualitative Evidence Profile: Finding 5

Finding 5	Practitioner adoption of EIDM depended on leader support.
Contributing studies (12)	Bowen et al., 2009; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Humphries et al., 2014; Jack et al., 2010; Jepsen & Rousseau, 2019; Kovner & Rundall, 2006; Liang et al., 2011b; McBeath et al., 2015; Sarkies et al., 2017
Assessment of Methodological Limitations	Minor concerns 7 studies with minor concerns. 1 study with moderate concerns (sampling issues and did not address effect sizes and confidence intervals).
Assessment of Relevance	Minor concerns Partial relevance - all studies focused on a single discipline, 6 had exclusively healthcare samples; only 2 studies included non-Western, non-English-speaking countries, one study of which included LMICs. Indirect relevance - 1 systematic review included samples with part non-management workers.
Assessment of Coherence	Very minor concerns
Assessment of Adequacy	Minor concerns 1 study with moderately rich data, 3 studies with thin data.
Overall Assessment of Confidence	Moderate confidence Minor concerns regarding methodological limitations, relevance, and adequacy

Table E6

CERQual Qualitative Evidence Profile: Finding 6

Finding 6	Practitioner adoption of EIDM depended on social support and norms.
Contributing studies (11)	Barends et al., 2017; Champagne et al., 2014; Cherney et al., 2015; Criado-Perez et al., 2019; Guo, 2015; Jepsen & Rousseau, 2019; Langer et al., 2016; Liang et al., 2011b; Orton et al., 2011; Sarkies et al., 2017; Tenhiälä et al., 2016
Assessment of Methodological Limitations	Minor concerns 5 studies with minor concerns. 2 studies with moderate concerns (sampling issues, did not address effect sizes and confidence intervals).
Assessment of Relevance	Minor concerns Partial relevance - 7 studies focused on a single discipline, 5 had exclusively healthcare samples; only 4 studies included non-Western, non-English-speaking countries, 3 studies of which included LMICs. Indirect relevance - 1 systematic review included samples with part non-management workers, 1 systematic review included research based on non-management outcomes, 1 study not directly about EIDM.
Assessment of Coherence	Minor concerns 1 study with disconfirming evidence and 1 study with a plausible alternative explanation for the effect of social norms on evidence use.
Assessment of Adequacy	Very minor concerns
Overall Assessment of Confidence	Moderate confidence Minor concerns regarding methodological limitations, relevance, and coherence

Table E7

CERQual Qualitative Evidence Profile: Finding 7

Finding 7	A strong performance culture impeded EIDM, while a learning culture facilitated EIDM.
Contributing studies (15)	Booker et al., 2012; Bowen et al., 2009; Champagne et al., 2014; Criado-Perez et al., 2019; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Humphries et al., 2014; Jack et al., 2010; Kovner & Rundall, 2006; Langer et al., 2016; McBeath et al., 2015; Orton et al., 2011; Sarkies et al., 2017; Tucker & Lowe, 2014
Assessment of Methodological Limitations	Minor concerns 7 studies with minor concerns. 1 study with serious concerns (low methodological transparency).
Assessment of Relevance	Minor concerns Partial relevance - all studies focused on a single discipline, 8 had exclusively healthcare samples; only 4 studies included non-Western, non-English-speaking countries, 3 studies of which included LMICs. Indirect relevance - 1 systematic review included samples with part non-management workers, 1 systematic review included research based on non-management outcomes.
Assessment of Coherence	Very minor concerns
Assessment of Adequacy	Minor concerns 3 studies with moderately rich data, 1 study with thin data.
Overall Assessment of Confidence	Moderate confidence Minor concerns regarding methodological limitations, relevance, and adequacy

Table E8

CERQual Qualitative Evidence Profile: Finding 8

Finding 8	Time pressures on practitioners impeded EIDM.
Contributing studies (20)	Atkins et al., 2017; Barends et al., 2017; Bezzina et al., 2017; Bowen et al., 2009; Cherney et al., 2015; Criado-Perez et al., 2019; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Humphries et al., 2014; Jack et al., 2010; Liang et al., 2011b; Oliver et al., 2014; Orton et al., 2011; Rynes et al., 2002; Sarkies et al., 2017; Tenhiälä et al., 2016; Tucker & Lowe, 2014; Wright et al., 2018
Assessment of Methodological Limitations	Minor concerns 9 studies with minor concerns. 3 studies with moderate concerns (sampling issues, did not address effect sizes and confidence intervals).
Assessment of Relevance	Minor concerns Partial relevance - 16 studies focused on a single discipline, 8 had exclusively healthcare samples; only 6 studies included non-Western, non-English-speaking countries, 4 studies of which included LMICs. Indirect relevance - 1 systematic review included samples with part non-management workers, 1 systematic review included research based on non-management outcomes, 2 studies not directly about EIDM.
Assessment of Coherence	Very minor concerns
Assessment of Adequacy	Very minor concerns
Overall Assessment of Confidence	High confidence Minor concerns regarding methodological limitations and relevance

Table E9

CERQual Qualitative Evidence Profile: Finding 9

Finding 9	Having the resources and organizational structure for academic research utilization facilitated EIDM
Contributing studies (18)	Bezzina et al., 2017; Booker et al., 2012; Bowen et al., 2009; Champagne et al., 2014; Cherney et al., 2015; Ellen et al., 2013; Ellen et al., 2014; Gray et al., 2013; Guo, 2015; Humphries et al., 2014; Jack et al., 2010; Kovner & Rundall, 2006; Langer et al., 2016; Liang et al., 2011b; McBeath et al., 2015; Oliver et al., 2014; Orton et al., 2011; Sarkies et al., 2017
Assessment of Methodological Limitations	Minor concerns 7 studies with minor concerns. 1 study with moderate concerns (sampling issues, did not address effect sizes and confidence intervals). 1 study with serious concerns (low methodological transparency).
Assessment of Relevance	Minor concerns Partial relevance - 12 studies focused on a single discipline, 9 had exclusively healthcare samples; only 5 studies included non-Western, non-English-speaking countries, 4 studies of which included LMICs. Indirect relevance - 1 systematic review included samples with part non-management workers, 1 systematic review included research based on non-management outcomes.
Assessment of Coherence	Very minor concerns
Assessment of Adequacy	Very minor concerns
Overall Assessment of Confidence	High confidence Minor concerns regarding methodological limitations and relevance

Table E10

CERQual Qualitative Evidence Profile: Finding 10

Finding 10	Practitioner skills, knowledge, and experience associated with research facilitated EIDM capability.
Contributing studies (17)	Barends et al., 2017; Bezzina et al., 2017; Champagne et al., 2014; Cherney et al., 2015; Ellen et al., 2013; Gray et al., 2013; Guo, 2015; Guo et al., 2016; Humphries et al., 2014; Kovner & Rundall, 2006; Langer et al., 2016; Liang et al., 2011b; McBeath et al., 2015; Orton et al., 2011; Rynes et al., 2002; Sarkies et al., 2017; Tucker & Lowe, 2014
Assessment of Methodological Limitations	Minor concerns 7 studies with minor concerns. 2 studies with moderate concerns (sampling issues, did not address effect sizes or confidence intervals). 1 study with serious concerns (low methodological transparency).
Assessment of Relevance	Minor concerns Partial relevance - 14 studies focused on a single discipline, 8 had exclusively healthcare samples; only 6 studies included non-English-speaking countries, 5 studies of which included non-Western countries, and 4 of which included LMICs. Indirect relevance - 1 systematic review included samples with part non-management workers, 1 systematic review included research based on non-management outcomes, 1 study not directly about EIDM.
Assessment of Coherence	Minor concerns Conflicting evidence regarding the effect of experience and education on attitudes toward EBMgt.
Assessment of Adequacy	Very minor concerns
Overall Assessment of Confidence	Moderate confidence Minor concerns regarding methodological limitations, relevance, and coherence

Appendix F

EIDM Capability Maturity Model Summary

Factor	Tier 1: Ad hoc/sporadic	Tier 2: Justifying	Tier 3: Emerging	Tier 4: Experimenting	Tier 5: Transforming
Alignment with management context	Academic research is of little to no relevance to the management context.	Academic sources are relevant to justify critical management decisions.	Some view academic research as compatible with management context.	Many view academic research as compatible with management practice.	Academic evidence is aligned with the organization's strategic goals.
Purpose	Positive attitudes toward academic research are mostly superficial.	Attitudes towards academic evidence focus on political or instrumental use.	Academic evidence is viewed as useful for some, but not all activities.	EIDM is seen as useful, desirable, and attainable.	Academic evidence generates practical and strategic insights that influence decision-making.
Engagement	There is little to no engagement with academic evidence and researchers.	Academic evidence and researchers are not engaged unless they can help justify a decision.	Academic research and/or scholars are engaged for specific activities and projects.	Practitioners often engage academic evidence and researchers.	Practitioners regularly engage with research and researchers to inform decision-making.
Knowledge brokers	There is little awareness of knowledge brokers beyond consultants or think tanks.	Practitioners use external knowledge brokers to support certain high-level decisions.	Some practitioners have regular contact with external knowledge brokers.	The organization has internal and external knowledge brokering capabilities.	Knowledge brokering is effectively contributing to organizational goals.
Leader support	Leaders do not consider academic evidence in decision-making.	Leaders find academic evidence useful for justifying important decisions to stakeholders.	Leaders support research evidence use by certain individuals and in some projects.	Leaders openly talk about evidence, visibly use it, and promote an EIDM climate.	Senior leaders are EIDM role models and champions.

Factor	Tier 1: Ad hoc/sporadic	Tier 2: Justifying	Tier 3: Emerging	Tier 4: Experimenting	Tier 5: Transforming
Social support	There are no social norms supportive of academic research.	Practitioners express interest in academic findings that support important objectives.	Small groups support interest in academic research.	Most managers are curious and open about using academic research.	EIDM is an expected organizational norm.
Organizational Learning culture	All organizational and individual goals are performance driven. Learning culture is non-existent.	Organizational learning is valued to the extent that it contributes to key performance objectives.	Some individuals and teams value and take up learning goals.	Equal value in both performance and learning goals is expressed.	The organization has a learning culture.
Time management	Time pressures keep practitioners too busy to consider academic research.	There is only time for quick, non-systematic use of academic evidence to support specific decisions.	Some individuals and teams regularly set aside time for research activities.	Most practitioners periodically set aside time for reading and discussing research.	Time is regularly scheduled for research and learning activities.
Structure and resources	There are no organizational structures or resources for academic evidence use.	Limited access to academic databases is provided to supports certain decisions.	Specific positions are given access to academic databases as needed.	Organizational structures and resources are provided which facilitate academic evidence use.	Organizational structure and resources are efficiently and effectively supporting EIDM.
Research skills	The organization does not explicitly promote research skills training.	Limited research skills training may be provided if it can be justified as contributing to high-level objectives.	Some individuals receive research skills training.	Research skills training is available for most practitioners.	Research skills are considered critical to the organization's success. Practitioners have broad access to EBMgt training.

Note. The items under the Factor column are based on the 10 findings from this systematic review. The maturity model tiers were adapted from "Understanding EBLIP at an Organizational Level: An Initial Maturity Model," by C. Thorpe and A. Howlett, 2020, Evidence Based Library and Information Practice, 15(1), pp. 97-99 (https://doi.org/10.18438/EBLIP29639). Copyright 2020 by Thorpe and Howlett.

Appendix G

Detailed Description and Recommendations for EIDM Capability Maturity Model

Table G1

EIDM Maturity Model Description and Recommendations: Finding 1

Finding 1	Practitioner perceptions of misalignment between academic research evidence and management context impeded EIDM.
Tier 1: Ad hoc/sporadic	Academic research is of little to no relevance in the management context. It is largely considered abstract, difficult to understand, impractical, and not reflective of the real world. Any use of academic research is limited to descriptive statistics and simple anecdotes.
Recommendations	Share and discuss examples of academic evidence that support key decisions and objectives. Consider providing a translated summary of the evidence or using evidence written for a practitioner audience.
Tier 2: Justifying	Some academic sources are considered relevant to justifying key management decisions. These sources are often limited to popular books, executive reports, and articles from highly esteemed universities.
Recommendations	Identify individuals who may find academic evidence compatible with the management context. Encourage them to translate academic evidence into actionable summaries that can inform decision-making. Consider individuals with academic backgrounds or those involved in data, research, and innovation aspects.
Tier 3: Emerging	Some individuals view academic research as compatible with management context. These individuals may be limited to those with academic backgrounds or roles involving technical aspects, such as data, research, and innovation.
Recommendations	Provide opportunities for individuals to experiment with research findings and recommendations relevant to their work. Consider providing opportunities to interact with evidence, such as lunch & learn sessions, journal clubs, and research projects. Disseminate evidence summaries more broadly throughout the organization and among decision-makers.
Tier 4: Experimenting	Many throughout the organization view academic research as compatible with management practice. They are experimenting with research evidence use. Many are engaged in activities that facilitate such experimentation, such as research projects, journal clubs, and other opportunities to interact with research evidence.
Recommendations	Continue to facilitate opportunities to engage with research evidence, especially opportunities for practitioners to translate and apply research findings. Introduce practitioners to EBMgt and discuss how academic evidence fits in with other sources of evidence.
Tier 5: Transforming	Academic evidence is aligned with the organization's strategic goals. It is regularly synthesized with evidence from other sources, such as the organization, stakeholders, and subject matter experts, to inform more effective decisions.
Recommendations	Continue to refine the organization's ability to translate and apply academic evidence within the management context and in consideration of other evidence sources.

Table G2

EIDM Maturity Model Description and Recommendations: Finding 2

Finding 2	Having a purpose for practitioner use of academic research evidence facilitated EIDM.
Tier 1: Ad hoc/sporadic	Positive attitudes toward academic research are mostly superficial. Attitudes are generally expressed in the context of agreeing with the notion of academic evidence supporting a management decision. Positive attitudes toward research are often expressed when research-based anecdotes or statistics are presented, which helps individuals feel knowledgeable and informed. Individuals who feel threatened by academic evidence or who have previous negative experience with it may have negative attitudes towards research.
Recommendations	Raise awareness of the utility of academic evidence by sharing examples of research that justifies organizational decisions. Summarize and share best practices, benchmarks, and case studies that demonstrate how evidence can be translated into practice. Curiously ask about the evidence behind decisions. Identify and discuss management problems and decisions that could benefit from research evidence. Assess the potential for evidence to threaten individuals, especially leaders, and consider more acceptable ways to present it.
Tier 2: Justifying	Attitudes towards academic evidence focus on political or instrumental use. Research may be invoked to legitimize a decision that has already been made or support a popularly held view. Evidence may be used without considering different or contradictory findings, which individuals may view negatively or dismiss.
Recommendations	Facilitate access to a scholar, consultant, or internal research expert who can translate research evidence into practical advice. Ask open-ended questions about how the evidence would apply with different groups of people and in different circumstances. Consider the best and worst-case scenarios. Challenge individuals to identify gaps in the evidence and decision-making process. Discuss what one would do differently based on disconfirming or contradictory evidence, and how that can empower the organization.
Tier 3: Emerging	Academic evidence is viewed as useful for informing decision-making in some, but not all activities. Individuals may view academic research as useful for specific projects, such as innovations and process improvements. However, they may view academic research as difficult to apply consistently and sometimes conflicting with established practices or beliefs.
Recommendations	Invite those who have applied academic evidence in projects to share their experience with others and discuss how different teams and individuals can benefit from academic evidence. Introduce individuals to the principles of EBMgt. Facilitate access to translated academic research summaries.

Finding 2	Having a purpose for practitioner use of academic research evidence facilitated EIDM.
Tier 4: Experimenting	The application of academic evidence in decision-making is seen as useful, desirable, and attainable for general management practice. There is a general agreement that good evidence leads to good decisions. Individuals are experimenting with using academic evidence and are interested in further developing those skills.
Recommendations	Continue encouraging experiences with practicing and learning EBMgt. Incentivize research evidence use. Enshrine the value of evidence into vision and mission statements, strategy documents, policies, and metrics.
Tier 5: Transforming	Academic evidence generates important practical and strategic insights that influence decision-making. Using evidence is seen as part of one's identity. Decision-makers and managers feel capable of acquiring, evaluating, synthesizing, and translating academic evidence. EIDM is leading to better organizational outcomes.
Recommendations	Continue emphasizing and incentivizing a culture of EIDM. Share EIDM successes. Be transparent about failures and re-assess the evidence to improve the decision outcome. Hold decision-makers accountable for evidence use.

Table G3

EIDM Maturity Model Description and Recommendations: Finding 3

Finding 3	Practitioner engagement with research and researchers facilitated EIDM.
Tier 1: Ad hoc/sporadic	There is little to no engagement with academic evidence and researchers. Practitioners may occasionally consider academic evidence in their work, primarily for conceptual purposes, but they do not regularly search for academic evidence. Interactions with scholars and other research experts may be limited to conferences, training sessions, and informal personal contacts.
Recommendations	Identify an organizational decision that could benefit from having research evidence to back it up. Search for relevant academic literature and research experts who can contribute to the decision. Reach out to at least one research expert or institution and share evidence findings with leaders.
Tier 2: Justifying	Academic evidence and researchers may be engaged if they can help justify a decision. This engagement sometimes occurs after the decision has already been made as a means of validating the decision for stakeholders. Little attention may be given to the quality of the evidence.
Recommendations	Identify upcoming projects where academic research may be of value and plan out the projects so that research literature or researchers are engaged throughout the project, rather than at the end. Consider having a research expert as a project team member.
Tier 3: Emerging	Practitioners engage academic research and/or scholars for specific activities and projects. For example, they may be engaged for innovation and process improvement projects. But they are not engaged in routine decision-making processes.
Recommendations	Have those who employed academic research as part of a project share their experience with others in the organization. Discuss how academic literature and research experts could help with more work aspects. Create opportunities for most management practitioners to engage with research and researchers, such as projects involving research, journal clubs, reading and discussing research, or networking with researchers.
Tier 4: Experimenting	Practitioners often engage academic evidence and researchers. The organization has a relationship with internal or external knowledge brokers who are consulted for advice on decisions. Many management practitioners engage in research activities as part of their work. Such activities may include projects involving research, journal clubs, reading and discussing research, or networking with researchers.
Recommendations	Provide the time and resources that can help practitioners more effectively engage with research. Create opportunities for most management practitioners to participate in research projects that contribute to decisions. Assign research experts to advisory roles and as part of decision-making committees.
Tier 5: Transforming	Practitioners' engagement with researchers and high-quality academic evidence is regular and positively impact decision-making. The organization conducts regular research projects that contribute to decision-making, such as critically appraised topics, rapid evidence assessments, and systematic reviews. Research experts are formal advisors to decision-makers and may sit on strategy development and decision-making committees.
Recommendations	Continue to strengthen the research culture within the organization. Promote the value of research with stakeholders and within professional associations.

Table G4

EIDM Maturity Model Description and Recommendations: Finding 4

Finding 4	Practitioner use of knowledge brokers facilitated EIDM.
Tier 1: Ad hoc/sporadic	There is little awareness of knowledge brokers beyond consultants or think tanks. Practitioners may not be familiar with the term knowledge broker. Consultation with research experts is rare and usually on a one-off basis.
Recommendations	Introduce the concept of a knowledge broker as a research expert or institution that facilitates the transfer of knowledge into real-world applications. Make a list of scholars, consultants, online services, and other experts or organizations that could be consulted as knowledge brokers on specific topics. Reach out to one for evidence on a specific decision.
Tier 2: Justifying	Practitioners may turn to external knowledge brokers to identify evidence to support specific decisions. However, this may happen after the decision has been made or without sufficient time to make necessary changes based on the evidence provided.
Recommendations	Identify specific projects that could benefit from regular or longer-term consultation with knowledge brokers to enhance decision-making results. Cultivate relationships of trust with knowledge brokers and leverage these relationships.
Tier 3: Emerging	Some practitioners have regular contact with external knowledge brokers. Research dissemination is focused on the project level. Online knowledge clearance houses may be used. Some practitioners champion evidence use but with limited influence.
Recommendations	Identify senior leaders who are most interested in EIDM, share knowledge brokering successes with them and encourage them to be EIDM champions. Identify potential value from using knowledge brokers for more purposes beyond specific projects. Ask leaders to develop internal positions with explicit knowledge responsibilities, such as librarians and researchers.
Tier 4: Experimenting	The organization has internal and external knowledge brokering capabilities. There are human resources with explicit knowledge responsibilities, such as librarians, researchers, or a research unit. There is regular collaboration with external knowledge brokers and online services. Evidence is often disseminated to relevant practitioners.
Recommendations	Establish a regular pattern of using both internal and external knowledge brokers. Disseminate academic literature and research summaries to relevant practitioners through internal knowledge brokers (i.e., librarians, researchers). Train relevant managers to supervise knowledge activities. Use opinion leaders, evidence champions, and senior leaders to promote EIDM.
Tier 5: Transforming	Knowledge brokering is effectively contributing to organizational goals. The organization has effective internal knowledge brokering resources, including managers who supervise knowledge activities and senior leaders who champion EIDM. There are established and productive relationships with external knowledge brokers. Actionable evidence is regularly disseminated to relevant practitioners.
Recommendations	Continue fine-tuning the use of knowledge brokers. Automate research dissemination processes.

Table G6

EIDM Maturity Model Description and Recommendations: Finding 6

Finding 6	Practitioner adoption of EIDM depended on social support and norms.
Tier 1: Ad hoc/sporadic	There are no social norms supportive of academic research. There is a sense that most in the organization are not aware of or interested in academic evidence. Discussion of academic research is limited and often considered only in hard science realms (such as engineering or medicine) or in training environments. Those interested in academic research may keep it to themselves and not believe others are interested.
Recommendations	Identify and discuss academic evidence relevant to key decisions with others in the organization, especially influencers and opinion leaders. Ask them to consider how that evidence could be valuable.
Tier 2: Justifying	Practitioners express interest in academic findings that support important objectives. Identifying such evidence may be viewed as going the extra mile, but not a norm that most expect or consider.
Recommendations	Identify those who are interested in or work with data, research, or innovation. Bring them together to discuss how they can support each other with evidence, including academic research. Propose and participate in high value projects that could benefit from academic evidence.
Tier 3: Emerging	Small groups discuss and support each other's interest in academic evidence. This support may be limited to those involved in projects dealing with data, research, and innovation.
Recommendations	Showcase to others how academic evidence has added value to projects. Encourage individuals to be inquisitive about the evidence behind decisions and claims. Host informal discussions, such as lunch & learn and journal club meetings, to present research evidence on topics of interest. Introduce the principles of EBMgt and EIDM throughout the organization.
Tier 4: Experimenting	Most in the organization are curious and open about academic research. Although many may feel academic evidence is above their heads, they want to learn more. They feel that evidence use adds value and is desirable. People are talking about evidence use and using terms such as evidence-based and evidence-informed.
Recommendations	Continue having formal and informal discussions of how evidence adds practical value. Discuss how individuals can benefit from sharing evidence and supporting each other's use of evidence.
Tier 5: Transforming	EIDM is an expected organizational norm. Most individuals in the organization are interested in and have a working knowledge of academic evidence use. They leverage each other's efforts to find, analyze, and translate research evidence.
Recommendations	Continue encouraging individuals to leverage and support one another in using academic evidence to support decision-making.

Table G7

EIDM Maturity Model Description and Recommendations: Finding 7

Finding 7	A strong performance culture impeded EIDM, while a learning culture facilitated EIDM.
Tier 1: Ad hoc/sporadic	Organizational and individual goals are purely performance driven, and learning culture is virtually non-existent. Learning beyond job duties is considered extracurricular, and often only occurs outside the workday. It is only valued when it is believed to increase performance outcomes. The environment may feel rigid, reactive, bureaucratic, punitive, or risk averse. Individuals have little decision-making autonomy and regularly feel pressed by urgent tasks and crises.
Recommendations	Ask curious questions about the organization's objectives and outcomes, and potential improvement opportunities. Take on an assignment to research an area the organization can improve in. Invite individuals to explore how reflection and questioning can contribute to organizational objectives.
Tier 2: Justifying	Organizational learning is valued to the extent that it contributes to key performance objectives. There is some flexibility for learning activities during the workday, such as critical thinking, questioning, reflection, and research. However, daily tasks and responsibilities take precedence and employees may feel guilty about spending time on learning activities.
Recommendations	Demonstrate to leaders and peers how learning activities have contributed to organizational objectives. Approach interested leaders and peers about using learning activities, including researching academic evidence, for other projects.
Tier 3: Emerging	Some individuals and teams value and take up learning goals. These often include practitioners responsible for or involved in a project dealing with data, research, or innovation.
Recommendations	Continue to demonstrate throughout the organization how learning activities and academic evidence have contributed to organizational objectives. Invite others to take a questioning attitude toward decisions. Discuss with leaders and peers the value of a learning culture and the norms and practices that would facilitate such a culture.
Tier 4: Experimenting	Equal value in both performance and learning goals is expressed. Learning activities are generally encouraged. Individuals are changing their norms and practices to accommodate these activities.
Recommendations	Use questioning, reflecting, learning, and acting as a systematic approach to help others achieve learning goals. Discuss the value of important activities that are not necessarily urgent. Discuss what can be learned from risk taking and failure. Provide safe spaces where such activities could be admissible.
Tier 5: Transforming	The organization has a learning culture. Questioning, reflecting, learning, and acting are operationalized into a continuous cycle. Individuals feel a sense of flexibility and autonomy for decision-making within their responsibilities. Risk taking and failure are not generally feared but considered part of learning and development.
Recommendations	Continue promoting a culture and climate where performance and learning are both valuable. Continue using learning activities to empower individuals within their roles.

Table G8

EIDM Maturity Model Description and Recommendations: Finding 8

Finding 8	Time pressures on practitioners impeded EIDM.
Tier 1: Ad hoc/sporadic	Time pressures keep practitioners too busy to consider academic research. Competing priorities limit individuals from performing activities considered to be outside their primary responsibilities. Any work-related academic literature is likely to come from other individuals, often from conferences and training sessions. If this literature is read, it is often done so after hours.
Recommendations	Identify an important decision that could benefit from additional evidence. Ask for time to search for this evidence.
Tier 2: Justifying	There is only time for quick, non-systematic consideration of academic evidence to support a specific decision. Evidence quality is not considered, and the first answer found that suits the practitioner's needs is often used.
Recommendations	Discuss with leaders the value that can be obtained from setting aside time within the workday for specific individuals and teams to dedicate to research activities. Explain that time is required not just for reading literature, but for searching, analyzing, translating, and discussing.
Tier 3: Emerging	Some individuals or teams set aside time for research activities. They plan work time to search for, read, appraise, analyze, translate, and discuss academic evidence. They schedule meetings to present research findings to leaders.
Recommendations	Discuss with individuals the value obtained so far from academic evidence. Encourage the setting aside of work time for broader experimentation with academic evidence across the organization. Propose more structured ways to set aside time, such as through a series of lunch & learn sessions, a journal club, or EBMgt training opportunities.
Tier 4: Experimenting	Most practitioners periodically set aside time for reading and discussing research evidence. Many take some time to learn how to search for, appraise, analyze, and translate evidence. Leaders host meetings to discuss research findings more broadly.
Recommendations	Continue to demonstrate the value that academic research adds to the organization. Propose that most individuals be allotted a regularly scheduled time to participate in research activities, such as reading or discussing literature, and developing research utilization skills.
Tier 5: Transforming	Time is regularly scheduled for research and learning activities. Many individuals throughout the organization are proficient in processing academic evidence and can plan for it in a timely manner. Executive meetings leverage academic evidence for decision-making.
Recommendations	Continue to plan time for research and learning activities. Continue discussing the value such activities add to the organization.

Table G9

EIDM Maturity Model Description and Recommendations: Finding 9

Finding 9	Having the resources and organizational structure for academic research utilization facilitated EIDM.
Tier 1: Ad hoc/sporadic	There are no organizational structures or resources explicitly intended for academic evidence use. Access to academic research is limited to what is publicly available, resources from conferences and training sessions, and resources individuals may have due to associations with universities. Organizational structures may not be very flexible, with siloed communication and autocratic decision-making.
Recommendations	Use available resources, such as free internet content, university libraries, and colleagues who may have access to academic databases to identify research that is relevant to key objectives and decisions. Discuss this research with leaders and ask for access to some academic databases to identify more valuable research.
Tier 2: Justifying	Low-cost access to some academic databases may be provided on a limited basis to one or a few individuals. This resource is provided to identify research that supports key decisions. No additional structures or resources are considered, and little time is given for researching academic databases.
Recommendations	Demonstrate to leaders examples of how evidence can support decision-making. Discuss how more access to academic research can benefit the organization. Identify specific positions in the organization that are interested in or can benefit from more access to academic research.
Tier 3: Emerging	Specific positions are given access to academic databases as needed. These practitioners may include those involved in data, research, innovation, and related projects. Their recommendations are considered in decision-making.
Recommendations	Share academic evidence with individuals throughout the organization and discuss how it can add value to objectives and decisions. Discuss with leaders how broader access to financial, human, and technical resources, as well as collaboration and accountability in evidence use can benefit the organization.
Tier 4: Experimenting	Organizational structures and resources are provided to facilitate academic evidence use. There is open communication and collaborative decision-making. The organization invests in financial, human, and technical resources that facilitate access to academic research. Most practitioners have access to academic databases. Positions accountable for research use, dissemination, and management are created, such as researchers and librarians. Efforts are made to retain individuals with research capabilities.
Recommendations	Identify ways to track accountability for evidence use and incentivize it. Establish a regular process for evidence dissemination. Train relevant managers on supervising evidence use.
Tier 5: Transforming	Organizational structure and resources efficiently and effectively support EIDM. The budget accounts for the effective allocation and expenditure of EIDM human and technical resources. The organization has highly proficient individuals in positions accountable for evidence use and support. All technical resources necessary for evidence use are provided and effectively used. Evidence targeting relevant individuals is regularly disseminated. Practitioners are held accountable and incentivized for evidence use. Relevant managers are capable of supervising evidence use.
Recommendations	

	Continue refining the organizational structure and resources to maximize their value to decision-making. Automate research dissemination processes.

Table G10

EIDM Maturity Model Description and Recommendations: Finding 10

Finding 10	Practitioner skills, knowledge, and experience associated with research facilitated EIDM capability.
Tier 1: Ad hoc/sporadic	The organization does not explicitly promote research skills training. Those with previous academic research experience may occasionally use this skill in a technical capacity.
Recommendations	Introduce leaders to the concept of EIDM and discuss how research skills training can lead to more effective decisions. Request for the organization to fund basic research skills training for one or a few individuals with the idea of using it to enhance decision-making.
Tier 2: Justifying	Research skills training may be provided if it can be justified as contributing to high-level objectives. This training is introductory and short-term in nature and is provided to one or a few individuals.
Recommendations	Demonstrate how the research skills contributed to key objectives and decisions. Recommend that more comprehensive training be provided to individuals involved in data, research, innovation, and related projects. Encourage these individuals to find opportunities to practice their research skills and engage with the research community.
Tier 3: Emerging	Some individuals receive more comprehensive research skills training. These individuals may include those involved in data, research, or innovation. They are developing expertise in research evidence use and they seek opportunities to practice their research skills and engage with the research community.
Recommendations	Continue to demonstrate throughout the organization how research skills add value to decision-making and provide opportunities for individuals to practice their research skills. Build support from additional individuals interested in such training and ask leaders about providing this training more broadly throughout the organization. Broadly encourage participation in the research community. Recommend that leaders offer tuition reimbursement for more extended training programs that support EBMgt, such as professional certifications and graduate programs.
Tier 4: Experimenting	Research skills training is available for most practitioners. The organization also encourages more extended programs that support EBMgt, such as professional certifications and graduate programs, and may provide tuition reimbursement for them. Some individuals have strong research skills and use them effectively to contribute to organizational objectives. Individuals participate actively in the research community, such as attending conferences and associating with research experts and institutions.
Recommendations	Continue to demonstrate how research skills have contributed to better outcomes. Recommend that sustained training be provided involving greater breadth and depth in research skills and other aspects of EBMgt. Discuss how this training can enhance management abilities and how it could be part of ongoing professional development. Encourage leaders to actively promote research skills development opportunities.

Finding 10	Practitioner skills, knowledge, and experience associated with research facilitated EIDM capability.
Tier 5: Transforming	Research skills are considered critical to the organization's success, and practitioners have broad access to ongoing EBMgt training. The organization broadly offers sustained training on research skills and other aspects of EBMgt as part of ongoing professional development. Many practitioners are highly skilled at searching for, critically assessing, analyzing, synthesizing, and applying evidence. Such skills are considered essential to a manager's development. Some individuals in the organization are considered research experts and actively participate in the research community, such as by presenting at conferences and publishing research findings.
Recommendations	Continue providing opportunities for individuals to develop research skills, participate in research activities, and engage the research community. Consider who else in the organization can benefit from this training and how it could be essential to a manager's development.