

E X C H A N G E

Evidence-Based Management: Concept Cleanup Time?

by Rob B. Briner, David Denyer, and Denise M. Rousseau

Executive Overview

The term *evidence-based management* (EBMgt) is relatively new, though the idea of using research evidence to help make managerial decisions is not. In this paper we identify and clarify a number of common misconceptions about EBMgt. Rather than a single rigid method, EBMgt is a family of approaches that support decision making. It is something done by practitioners, not scholars, although scholars have a critical role to play in helping to provide the infrastructure required for EBMgt. Properly conducted systematic reviews that summarize in an explicit way what is known and not known about a specific practice-related question are a cornerstone of EBMgt.

The virtues of using research evidence to inform management practice have permeated managerial writings and organizational research over the past 50 or more years, as the lead article by Reay, Berta, and Kohn (RBK, this issue) points out. Evidence-based management (EBMgt) as a concept in itself is new and can be defined as follows:

Evidence-based management is about making decisions through the conscientious, explicit, and judicious use of four sources of information: practitioner expertise and judgment, evidence from the local context, a critical evaluation of the best available research evidence, and the perspectives of those people who might be affected by the decision.

We acknowledge our debt to Denny Organ for appropriating the title from his seminal article on citizenship behavior for our own purposes. David Denyer's work was supported by the Advanced Institute of Management Research and the Economic and Social Research Council (grant number: RES033102700045). Denise Rousseau's work was supported by the H. J. Heinz II University Professorship.

Rob B. Briner (r.briner@bbk.ac.uk) is Professor of Organizational Psychology at Birkbeck College, University of London.

David Denyer (david.denyer@cranfield.ac.uk) is Senior Lecturer in Organizational Studies at Cranfield School of Management, Cranfield University.

* **Denise M. Rousseau** (denise@cmu.edu) is H. J. Heinz II University Professor of Organizational Behavior and Public Policy at Carnegie Mellon University.

Like most multifaceted new ideas, EBMgt is underdeveloped, misunderstood, misapplied, and implemented inconsistently. That's why new learning and developments in EBMgt must continue. In that spirit, our rejoinder to the RBK article makes four key points:

1. EBMgt is something done by practitioners, not scholars. We'll show the key ideas behind the concept of EBMgt and highlight and clarify sources of confusion and opportunities.
2. EBMgt is a family of practices, not a single rigid formulaic method of making organizational decisions. This notion is critical to understanding both how it might be implemented and what should be evaluated.
3. Scholars, educators, and consultants can all play a part in building the essential supports for the practice of EBMgt. To effectively target critical knowledge and related resources to practitioners, an EBMgt infrastructure is re-

quired; its development depends on the distinctive knowledge and skills found in each of these communities. Scholars, as the originators of research evidence, have a particularly important role in the process. Nonetheless, supporting EBMgt is only a part of their profession's activities.

4. Systematic reviews (SRs) are a cornerstone of EBMgt practice and its infrastructure, and they need to possess certain features if they are to be informative and useful.

Let's start with RBK's key ideas in order to place our four points in context.

Reay, Berta, and Kohn's Article

RBK assert that there is no research evidence for the effectiveness of EBMgt, and given the manner in which their question is framed and the review conducted, we would broadly agree. Their conclusions are based largely on an apparent absence in the literature they reviewed of evidence about the practice of EBMgt. An absence of evidence tells nothing about whether something is effective or otherwise. Indeed, we believe there is evidence about the practice of EBMgt, but they are looking in the wrong place.

EBMgt fundamentally is something performed by practitioners, not scholars. Searching for evidence of EBMgt in scholarly texts seems to us akin to searching for one's lost keys under the street light as it's the only place on the whole block where there's light. But if RBK are looking in the wrong place, where else should one look for evidence on EBMgt? This question has several answers.

There are three main reasons a large body of research on something called EBMgt does not exist. First, EBMgt is a family of approaches, and much of the work in the realm of EBMgt doesn't carry the label. Practitioners often practice something close to EBMgt, when, for example, they take a basic principle developed from employee selection research and incorporate it into their regular decision making, problem solving, and practice. But in doing so they are likely not to even know they have practiced EBMgt. Second, the term EBMgt is new. The idea that manage-

ment research could and should inform practice is old, as are many of the texts cited by RBK. However, the EBMgt concept was born in the 1990s, a spin-off of the evidence-based medicine that had emerged around that time (cf. Sackett et al., 1996, 2000). Third, it is difficult to practice EBMgt thoroughly without accessible systematic reviews of evidence. As few of these currently exist in management or organization studies, even practitioners who wanted to could not fully practice EBMgt. Given all this, it is highly unlikely that there would be much formal research into the efficacy of EBMgt, since practitioners may not even be aware they are doing it, the idea is too recent, and the basic tools it requires are not yet available.

We share RBK's concerns about EBMgt and indeed have many more of our own. One of the dangers is the privileging of research evidence over other forms of evidence, the local context (e.g., Johns, 2006), and insight from other sources, especially professional experience. A second danger is blind adoption of a "Big Science" perspective on EBMgt that prizes randomized control trials and meta-analyses above all other kinds of research evidence. A third danger is the top-down approach where scholars tell practitioners what they should do, thus imposing "our" evidence on "them." Instead, as we will discuss, EBMgt is practice-focused and starts with the questions, problems, and issues faced by managers and other organizational practitioners. It is not the hypotheses, research problems, or theoretical puzzles that are the primary focus of scholarship. A fourth concern is that research evidence replaces rather than complements other forms of data and knowledge that go into making quality decisions. We do, however, believe that a fit-for-purpose approach to evidence-based management would benefit both the scholarly and practitioner communities.

Given that there are now several publications and conference events regarding EBMgt, some scholars appear to be at least somewhat aware of it. However, with partial awareness comes confusion, as demonstrated by the RBK review. Clarification is needed regarding the nature and meanings of EBMgt; we attempt to provide such clarification in Table 1.

Table 1
What Is Evidence-Based Management?

Evidence-Based Management Is . . .	Evidence-Based Management Is Not . . .
● Something managers and practitioners do	● Something management scholars do
● Something practitioners already do to some extent	● A brand-new way of making decisions
● About the practice of management	● About conducting particular types of academic research
● A family of related approaches to decision making	● A single decision-making method
● A way of thinking about how to make decisions	● A rigid, one-size-fits-all decision-making formula
● About using different types of information	● About privileging evidence from academic research
● About using a wide range of different kinds of research evidence depending on the problem	● About using only certain types of research evidence irrespective of the problem
● Practitioners using research evidence as just one of several sources of information	● Scholars or research evidence telling practitioners what they should do
● A means of getting existing management research out to practitioners	● About conducting research only about management practices
● Likely to help both the process and outcome of practitioner decision making	● The solution to all management problems
● About questioning ideas such as “best practice”	● About identifying and promoting “best practice”

We believe that the concerns RBK raise and the findings of their review largely reflect a set of misconceptions about EBMgt.

Point #1: Evidence-Based Practice Is Something Practitioners Do (or Not)

Each time a practitioner attempts to make a decision, solve a problem, or institute a set of practices is distinct and unique. Nonetheless, a general approach or way of thinking can apply across decisions; this is what we refer to when we speak of EBMgt. Within this general approach, EBMgt incorporates, among other things, the best available scientific evidence in making managerial decisions. Like its counterparts in medicine (e.g., Sackett et al., 2000) and education (Thomas & Pring, 2004), EBMgt is informed by practitioner judgment regarding experience, contextual circumstances, and ethical concerns. Peter Drucker, a seminal management thinker, was perhaps the first to assert that most business issues—from morale problems to strategic implementation—are generic, “repetitions of familiar problems cloaked in the guise of uniqueness” (quote from Lowenstein, 2006; Drucker, 1966). If a problem is generic, effective managers can benefit from understanding the principles underlying it as a guide to action. If the problem is novel, awareness of effective decision-making and problem-solving pro-

cesses can aid in achieving a quality decision even under considerable uncertainty.

In doing or thinking about EBMgt, it is essential to consider all four of its elements (see Figure 1). EBMgt takes place at the intersection of all four, but crucially the size of each circle—and hence the strength of its influence—varies with each decision. In some circumstances, the opinions of stakeholders or ethical considerations may be judged by the decision makers to be much more important than the external research evidence and thus be given much greater emphasis in the decision. In other circumstances, there may be little internal evidence available and thus its influence on the decision would be relatively minor. In all cases, though, the choice to place more or less emphasis on various elements should be made in a mindful, conscious fashion.

Another consequence of the newness of the EBMgt concept is that various writers place different emphases on each of the four elements. In some accounts, notably that of the EBMgt Collaborative (2009), the primary though not exclusive concern is to find ways of facilitating practitioners’ use of research evidence. They draw inspiration from global organizations such as the Cochrane (2009) and Campbell (2009) Collaborations, which produce and disseminate systematic research reviews in medical, educational, and so-

Figure 1
The Four Elements of EBMgt



cial policy research. Evidence-based education (Rousseau, 2005, 2006; Rousseau & McCarthy, 2007) can also facilitate this, and the training of managers has, in some institutions such as Cranfield, Carnegie Mellon, and Case Western Reserve universities, come to place more emphasis than previously on the skills involved in accessing and making use of research findings.

By contrast, other accounts of EBMgt, most notably Pfeffer and Sutton (2006), emphasize the importance of collecting and analyzing internal organizational evidence and pay less attention to the role of external research and systematic reviews. Still others call for tools and techniques promoting effective decision making and the exercising of judgment (Yates, 1990). In these accounts, judgment is an essential management skill, especially where time is short or the circumstances sensitive. Moreover, individual judgment and critical appraisal of evidence are essential when using research evidence to inform a specific decision in a particular setting. Is the evidence valid and reliable? The meanings and importance of validity and reliability will depend on the problem and decision. Is the evidence relevant here and to this context? It's unlikely that available evidence is gathered from exactly the same context or setting. Using research evidence, like using any other form of evidence, requires critical judg-

ment about the evidence itself and its applicability to the situation.

These are all aspects of EBMgt, and a significant amount of work has been conducted in each of these areas. There are pockets of activity around the world, most notably in health care management (Kovner, Elton, & Billings, 2005; Lemieux-Charles & Champagne, 2004). But, as yet, little coordination or integration exists, and thus EBMgt has not reached a tipping point into expanded consensus and adoption as it has in other fields (Sackett et al., 1996, 2000; Sherman, 2002). As has been argued elsewhere:

The absence of a critical mass of evidence-based managers today translates into pressures to conform to more ad hoc and experience-based approaches, especially in settings where critical organizational positions are held by managers without evidence-based training. Indeed an entire generation of evidence-based managers may be needed before behavioral science evidence is widely used (Rousseau & McCarthy, 2007, p. 99).

Point #2: EBMgt Represents a Family of Approaches

Any decision-making process is likely to be enhanced through the use of relevant and reliable evidence, whether it's buying someone a birthday present or wondering which new washing machine to buy. We use evidence quite automatically and unconsciously for even the smallest of decisions. To the extent that it is based on complex domain-relevant schemas, even intuition (Dane & Pratt, 2007) draws on the evidence of experience. But EBMgt, like evidence-based practice, generally is taking what can be a fairly automatic approach and making it more explicit, mindful, critical, and systematic.

Mundane everyday examples of evidence use abound. Jane is booking a holiday and wants to go somewhere that's not too hot. Fred wants to choose a route that isn't too hilly for his weekend hike. Costas is trying to book a restaurant for a visitor from out of town who is very keen on food. In each case, these decision makers may actively seek out evidence online or in print to obtain information such as the average temperature in a given month at a vacation spot, the topography of

a region's hiking trails, or the comments of a local newspaper's restaurant critic.

The logical rather than empirical analysis of a situation can also act as a form of evidence. For example, there are no randomized controlled trials of parachute use (Smith & Pell, 2003). However, would we wish to conclude in the absence of evidence that parachute use is ineffective in preventing death or injury? Similarly, the absence of certain kinds of evidence for the application of EBMgt does not mean that incorporating relevant and reliable evidence will not enhance decision making.

What might a general EBMgt process look like? Although no single or agreed-upon process exists, we suggest that the following steps might constitute one approach to EBMgt:

- The start of the process is the practitioner's or manager's problem, question, or issue. The accuracy of the problem statement would be discussed and challenged so that it could be articulated as clearly and explicitly as possible.
- Next, internal organizational evidence or data about the problem or issue would be gathered and examined to check its relevance and validity. At this stage the problem may be restated or reformulated or made more specific.
- External evidence from published research about the problem would also be identified and critically appraised in the form of something like a systematic review or a rapid evidence assessment (a quicker and more tightly constrained version of a systematic review, which similarly adopts an explicit and systematic method).
- The views of stakeholders and those likely to be affected by the decision would be considered, along with ethical implications of the decision.
- When all these sources of information had been gathered and critically appraised, a decision would be made that attempts to take account of and integrate these four sources of information.

Although this is adequate as a general description of what practicing EBMgt might entail, any approach to decision making that involves a more conscious use of these four sources of evidence can be considered to be a member of the family of

EBMgt approaches. Examples of some of these (some also described by Pfeffer & Sutton, 2006) are described below.

First is the use of logical analysis and disciplined imagination (Weick, 1989) to answer "what if?" questions. What is likely to happen if some practice or technique is introduced or some potential solution implemented? In cases where external evidence from research or internal evidence is not available or perceived as too difficult to interpret and utilize, it is still possible to apply logic and reasoning (itself based of course on evidence, experience, and theory). In these cases, explicit reasoning can be applied to consider the questions of how and if a particular managerial intervention is likely to have the desired benefits and what, if any, costs may be incurred. A second related approach involves making the justification for the decision explicit and transparent. Even where evidence is limited or ambiguous, identifying what is believed about that evidence, the context, and how each piece of evidence plays a role in the decision allows for a more critical appraisal of the available evidence and the assumptions held by decision makers.

Third, specifying what might, in principle, constitute relevant evidence about the problem or question represents another approach. This is an essential initial stage in conducting systematic reviews (see below) and can, even without conducting the review, help shape understanding of the problem and suggest likely consequences of different decisions. This also applies to internal evidence within the organization, where, again, the process of identifying what sort of data might be relevant can give insight about the apparent problem and potential solutions. This process may also help identify relevant organizational evidence that can be gathered fairly readily.

The approach organizations sometimes adopt in dealing with consultants provides another example of the ways in which elements of EBMgt are already practiced. For instance, when organizations question the evidence behind consultants' recommendations, services, and products and consider how the effects of such may be measured and evaluated, they gain a better understanding of

their problems and the nature of the evidence required to make an informed decision.

Last, the approach taken in some management education programs provides a foundation for EBMgt. For example, classes that focus on the methodological strengths and weaknesses of a particular empirical study and how it might apply practically to organizations provide students with some of the analytical tools they need to practice EBMgt. Similarly, management education that critically analyzes management fads and fashions and questions their novelty, supporting evidence, and applicability is likewise preparing students to contemplate whether particular practices are likely to be effective in the contexts in which they work. More directly relevant are the relatively few programs that teach students how to conduct systematic reviews or rapid evidence assessments. The process of conducting a review not only provides in-depth knowledge about the problem or question addressed by the review but also gives wider insight into how to make decisions using evidence, critical thinking, and a mindful approach to practice. A common misperception is that systematic reviews provide “the answer.” Although such reviews certainly do provide a much clearer picture of what is known and not known and the boundary conditions of that knowledge, undertaking such reviews also provides much deeper insight into the practical problem.

EBMgt therefore represents a way of thinking about or approaching organizational problems and decisions. As indicated above, this way of thinking or at least elements of it can be found in a wide range of existing decision-making and analytical processes. EBMgt is an attempt to incorporate and integrate each of these elements in a conscious, explicit, and mindful way.

Point #3: Academics as Scholars and Educators Are Needed to Build EBMgt Supports

The knowledge and skills scholars possess are needed to produce, appraise, synthesize, and create access to research evidence. We recognize and have heard many times the concerns of scholars thinking about getting involved in EBMgt. The average management scholar is already struggling to get tenure or promotion and balance research,

teaching, and administrative demands. Further, early-career scholars in particular have to focus on getting as many journal articles as possible in the best journals. Hence, contributing to EBMgt may be more possible for senior rather than junior scholars. However, for those inclined toward developing EBMgt, there are exciting roles to play.

So what does EBMgt ask of those scholars interested in making a contribution? There are many possible roles, and just some examples are considered here. Scholars could play a role in systematically collating the available evidence about a given, specific question or problem and then developing ways of judging the quality of pertinent evidence. They might also play a role in “consensus building” by devising and applying explicit methods for developing an agreed interpretation and synthesis of evidence when it is equivocal, as is often the case. Scholars could learn to be better knowledge brokers, feeding relevant and critically appraised evidence into organizations, government policy, and wider political issues such as those around CEO compensation (Kaplan, 2008) and the environmental performance of firms (Ambec & Lanoie, 2008). To practice EBMgt, practitioners may need to acquire, assess, adapt, and apply research evidence to their decisions; and we note that academic skills and knowledge can aid this acquisition and use.

Point #4: Managers and Scholars Need to Better Understand How to Conduct and Use Systematic Reviews

A general consensus across all fields interested in evidence-based practice is that a synthesis of evidence from multiple studies is better than evidence from a single study. Often producing erroneous conclusions, single studies almost never matter in themselves (Hunter & Schmidt, 2004). It is the collective body of evidence we need to understand.

Systematic reviews have become fundamental to evidence-based practice and represent a key methodology for locating, appraising, synthesizing, and reporting “best evidence.” It should be noted that other fields are very active in systematic reviewing—discussing methods (e.g., Boaz et al., 2006; Greenhalgh & Peacock, 2005; Petti-

crew, 2001), providing training (Centre for Reviews and Dissemination, 2009; Critical Appraisal Skills Programme, 2009; EPPI-Centre, 2009), and developing related techniques such as rapid evidence assessments (REA Toolkit, 2009) and best evidence topics (Best BETs, 2009).

Methodological developments in systematic reviews in medicine have been significant, and the approach promoted by the Cochrane Collaboration, the worldwide community of clinicians and research scientists who conduct systematic reviews of medical evidence to answer questions critical to the practice of medicine, is widely regarded as a benchmark. A systematic review is a replicable, scientific, and transparent approach that differs greatly from a traditional literature review in several important ways.

First, a systematic review rigorously addresses a clearly specified answerable question usually derived from a policy or practice problem: “[T]he question guides the review by defining which studies will be included, what the search strategy to identify the relevant primary studies should be, and which data need to be extracted from each study. Ask a poor question and you will get a poor review” (Counsell, 1997, p. 381).

Systematic reviews in medical science are often structured according to the PICO approach:

- P — Patient or Problem. For which group is evidence required?
- I — Intervention. The effects of what event, action, or activity are being studied?
- C — Comparison. What is the alternative to the intervention (e.g., placebo/different intervention)?
- O — Outcomes. What are the effects of the intervention?

An example of a well-formulated systematic review question for a medical problem is provided in the Cochrane Handbook: “[Is] a particular antiplatelet agent, such as aspirin, [intervention] . . . effective in decreasing the risks of a particular thrombotic event, stroke [outcome] in elderly persons with a previous history of stroke [population]?” (Higgins & Green, 2006, p. 62).

Clearly this approach is less appropriate to the study of complex questions and multidisciplinary

topics outside medicine. Drawing on the work of Pawson (2006), Denyer and Tranfield (2009) argue that well-formulated review questions in management and organization studies need to take into account why or how the relationship occurs and in what circumstances. They reformulate PICO into CIMO for use in the social sciences:

- C — Context. Which individuals, relationships, institutional settings, or wider systems are being studied?
- I — Intervention. The effects of what event, action, or activity are being studied?
- M — Mechanisms. What are the mechanisms that explain the relationship between interventions and outcomes? Under what circumstances are these mechanisms activated or not activated?
- O — Outcomes. What are the effects of the intervention? How will the outcomes be measured? What are the intended and unintended effects?

Denyer and Tranfield (2009, p. 682) provide an example of a question framed with these components: “Under what conditions (C) does leadership style (I) influence the performance of project teams (O), and what mechanisms operate in the influence of leadership style (I) on project team performance (O)?”

Second, a broad range of stakeholders often contributes to the development of review questions and processes (Tranfield et al., 2003) and to the effective dissemination of review findings to appropriate audiences (Petticrew, 2001, p. 100). For example, reviews by the Evidence for Policy and Practice Information Centre (EPPI Centre) on education topics frequently have short statements from teachers, principals, or school governors, providing interpretations of the findings and suggestions for how these might be implemented.

Third, extensive searches are conducted of both published and unpublished studies. The aim is to find *all* studies relating to the question. Greenhalgh and Peacock (2005) demonstrated the limitations of search strategies that focus solely on citation databases. For complex questions, a systematic search should always use several methods, including searching electronic data-

bases, hand-searching known journals, soliciting expert recommendations, and cross-referencing.

Fourth, criteria for the inclusion of studies are explicitly determined before the review commences. This helps ensure that reviews are impartial and balanced, preventing reviewers from including only those studies supporting their particular argument. Systematic reviews are not restricted to papers published in the “top” journals. “Gray literature” such as unpublished papers and conference reports are often included. This is deemed necessary and appropriate to help overcome publication bias and the file drawer problem (where researchers file away studies with negative or neutral outcomes as they are more difficult to publish). Every study included in the review must meet the predetermined criteria specified for the particular review.

Fifth, systematic reviews summarize the findings of all the individual studies in a transparent and accessible format. Findings from individual studies are often presented so that “other researchers, decision makers and other stakeholders can look behind an existing review, to assure themselves of its rigor and validity, reliability and verifiability of its findings and conclusions” (Pawson, 2006, p. 79). Systematic reviews have processes for synthesizing multiple studies in order to provide results that are more than the sum of the parts. As with any method, the approaches chosen should be appropriate to the purpose of the study and the nature of the available data (cf. Noblit & Hare, 1988; Pawson, 2006; Rousseau et al., 2008).

Sixth, in relation to final review outcomes, the summarized or synthesized findings are often condensed into a set of practical conclusions. Where numerous studies provide consistent results, systematic reviews might provide reasonably clear conclusions about what is known and not known. If, on the other hand, the review identifies gaps or inconsistent findings, practical conclusions are more nuanced or circumspect and raise questions for future research.

Given its success in medicine, the systematic review methodology has been adopted in many fields. As Petticrew argued, “Systematic review is an efficient technique for hypothesis testing, for summarizing the results of existing studies, and for

assessing the consistency among previous studies; these tasks are clearly not unique to medicine” (2001, p. 99).

We believe it is unfeasible and undesirable for management research to simply adopt the benchmark of the Cochrane model or any other field’s approach toward the review process or the hierarchy of evidence. All academic fields are different. Which evidence is “best” depends entirely on its appropriateness to the question being asked (Boaz & Ashby, 2003). If the question is “what effect does intervention X have on outcome Y?” then a meta-analysis of randomized trials may indeed be the best possible evidence. Similarly, if the question is about tools for personnel selection, meta-analysis of predictive validity studies is likely to be appropriate and may provide relevant evidence for practitioners (e.g., Le, Oh, Shaffer, & Schmidt, 2007). For other questions, longitudinal studies or quasi-experiments might be the best evidence available.

If, on the other hand, the question is “how do women interpret their role on male-dominated boards?” then qualitative data will form the best evidence. If the question is “why or how does goal setting result in higher team performance?” then we need theory as well as evidence from which we can infer processes. For other, more complex questions, of the sort common in management and organizational studies, we may need to integrate different forms of evidence. Best evidence can be quantitative, qualitative, or theoretical. Quantitative and qualitative contributions need to be appraised separately in a systematic review using criteria that are relevant to the particular methods employed in the original studies. We do not believe that it is possible to judge qualitative research using criteria designed to evaluate quantitative research, and vice versa.

We also believe that there are alternative approaches to meta-analysis as a mode of synthesis. Elsewhere (Rousseau, Manning, & Denyer, 2008) we have argued that synthesis can involve aggregation, integration, interpretation, or explanation. The most appropriate method of synthesis depends on the types of evidence reviewed, which in turn depend on the review question. It seems likely, given the idiosyncratic features of manage-

ment and organization studies, that a range of approaches will be required.

In terms of practical utility, it is important to note that systematic reviews never provide “answers.” What they do is report as accurately as possible what is known and not known about the questions addressed in the review. The Cochrane Handbook (Higgins & Green, 2006, p. 167) is careful to point out that although “the primary purpose of the review should be to present information, rather than offer advice, the discussion and conclusions should be to help people to understand the implications of the evidence in relationship to practical decisions.”

Academic research is only one sort of evidence, but it has the advantages of greater rigor and independence. Yet EBMgt is about drawing on a range of sources and types of evidence such as financial information, monitoring data, surveys, public opinion, practical experience, consultants, anecdotes, and internal organizational research. Any of these sources of information can be useful and valid in making a decision, depending on the decision and its circumstances.

We argue above that systematic reviews in management and organizational studies have a set of features that can be used to assess their quality. We now apply our six quality criteria to the RBK article (see Table 2). It should be apparent that fundamental problems exist with the RBK article as a systematic review. From the need to reformulate its question and its limited, unsystematic selection criteria to its omission of essential documentation, the RBK review falls short of the requirements for an informative systematic review. As we note in our evaluation of RBK’s review, framing the initial question itself is difficult, requiring thoughtful vetting and often the involvement of various stakeholders differing in expertise and perspective (Rousseau et al., 2008).

Nonetheless, there are several alternative ways of answering RBK’s question about the evidence for EBMgt. First and foremost is to examine how existing systematic reviews have been put to use. As already noted, systematic reviews are a key part of evidence-based practice, and a number of systematic reviews have been commissioned by commercial firms, public sector agencies, and not-for-

profit organizations (see Table 3 for examples of systematic reviews, rapid evidence assessments, and other forms of synthesis produced by colleagues at our own institutions). This list is not representative or comprehensive, but it does show that practitioners in a range of organizations are attempting to incorporate evidence into their decisions. Reviewing the outcomes of the managerial decisions based on such reviews exemplifies a more appropriate source of evidence than the academic literature used exclusively in the RBK review.

Alternatively, an evaluation of EBMgt might investigate the outcomes resulting from applications of specific established research-based principles (e.g., Locke, 2009). For example, one might consider the uses to which the well-established principles of goal setting have been applied (Locke & Latham, 2002) and evaluate the body of evidence (published and unpublished) that bears on the effectiveness of practitioner applications of goal-setting principles. Thus, one can examine the effectiveness of EBMgt in the general sense, following the commissioning of a core knowledge product related to EBMgt practice, the systematic review. Or one can examine the effectiveness of a particular practice that is purported to be evidence-based (that is, subject to managerial research, such as 360-degree feedback or pay-for-performance). Such global or particular assessments constitute two of many useful approaches to assessing the effectiveness of practices related to EBMgt.

Conclusion

EBMgt is already happening in a variety of ways. Yet, as a new concept, its uptake and evolution are in fits and starts. Its new forms may be at first unrecognizable, or resemble the proverbial old wine in new bottles and vice versa. Careful discernment is needed to appraise where it stands. As has happened in other fields, there will be more, new, and different ways in which it will be explored and practiced. Empirical work is also required to address the key question raised in the RBK review: Does practicing EBMgt improve the process and outcome of decision making in organizations?

Table 2
An Evaluation of the RBK Systematic Review

Systematic Review Checklist	Some Limitations of the Reay et al. Approach to Systematic Review	Suggested Ways of Overcoming Limitations Based on Standard Systematic Review Methodology
<p>Does the review explore a clearly specified, answerable question, which is usually derived from a policy or practice problem?</p>	<p>Three questions are addressed in the review:</p> <ol style="list-style-type: none"> 1. Is there a substantial body of evidence in the management literature concerning the concept of evidence-based management? 2. What is the quality of the evidence (where it exists) regarding evidence-based management? 3. Is there evidence that employing evidence-based management will improve organizational performance? <p>The review incorporates contributions from all management study settings, regardless of industry and inclusive of all levels of management.</p> <p>The review covers the entire range of work in the area of evidence-based management, where the range is anchored by theoretical contributions on one end and applied/intervention studies on the other. The breadth of the review makes comparison difficult.</p> <p>It is not clear, for example, what would constitute a “substantial” body of evidence, what “employing” evidence-based management means, how an “improvement” would be identified, or the how the “organizational performance” is defined. Each term is open to multiple interpretations, making both searching for and interpreting evidence and ultimately answering the questions very difficult.</p>	<p>Rather than tackling this topic with a single overarching review, it would be more effective to conduct several systematic reviews that would adopt different methods to address different and more specific questions about EBMgt.</p> <p>The question could be delimited by intervention type. For example, How do managers (at all levels and in all industries) [context] access, make sense of and utilize [mechanisms] the findings of reviews of research evidence (systematic or otherwise) [intervention], and does this lead to more effective decision making [outcomes]?</p>
<p>Were a broad range of stakeholders involved in the review?</p>	<p>The review questions, procedures, and report were developed exclusively by the authors.</p>	<p>For the question outlined, a review consultation group comprising scholars working in evidence-based management, research utilization, and other related fields could be created. It would also include managers and policy makers who had commissioned and used reviews of research evidence. Librarians and information scientists would also be included. It is likely that the initial question outlined above would be further refined by the group.</p>
<p>Were extensive searches conducted of both published and unpublished studies?</p>	<p>Searches were conducted in EBSCO, ABI Inform, and Web of Science (excluding medicine) for the search terms “evidence-based management” and its variants. The search terms do not include all members of the family of approaches that comprise evidence-based management and would not have picked up any evidence about these. In addition, terms were included that were not relevant to EBMgt and, in the case of the search term “best practice,” are in fact the antithesis of EBMgt.</p> <p>The paper excludes evidence-based practice in related fields. For example, there is a significant amount of published material in the field of education that addresses management issues such as school leadership. Similarly, because the medicine database was excluded, papers in health care management may have been missed.</p> <p>The paper makes no reference to some of the key papers and debates published on the subject in journals such as the <i>British Journal of Management</i>, <i>Journal of Management Studies</i>, and <i>Organization Studies</i> (see references). It is unclear whether these papers were identified and not used or not found in the search.</p> <p>Only five articles were found from cross-referencing and citation searches. Very often in systematic reviews this is a key way of finding relevant evidence. Book chapters, working papers, commercial research, government publications, and other possible sources of evidence were not included.</p>	<p>For the second question outlined above a set of search terms would be devised, such as: (reviews OR evidence assessments OR syntheses OR systematic review OR meta analyses, etc.) (knowledge OR research OR ideas OR evidence, etc.) (utilization OR transfer OR adoption OR dissemination OR exploitation OR commercialization OR assimilation OR absorption OR implementation, etc.) (decision OR judgment OR recommendation, etc.) <i>Please note: This is just a small selection of the terms that should be used.</i></p> <p>Simple operators such as truncation characters or the core components of keywords would be used to ensure that we covered all the alternatives; “review*” would cover reviews OR reviewing, etc.</p> <p>Boolean logic operators would be used to combine the terms, such as (review* OR evidence assessment* OR syntheses* OR systematic review* OR meta analys*, etc.) AND (utili*ation OR transfer OR adopt* OR disseminat* OR exploit* OR commercial* OR assimilate* OR absorption OR implement*, etc.).</p> <p>Using citation search and cross-referencing is essential. A search of the “gray” literature would be crucial to locating the large number of systematic reviews on management issues that have been commissioned by organizations (see Table 3).</p>

Table 2
Continued

Systematic Review Checklist	Some Limitations of the Reay et al. Approach to Systematic Review	Suggested Ways of Overcoming Limitations Based on Standard Systematic Review Methodology
<p>Were prespecified relevance and quality criteria for the selection/inclusion of studies created and made explicit before the review commenced?</p>	<p>It is unclear whether or how the prespecified selection criteria were applied. In other words, there was no attempt to establish in principle what would constitute research evidence relevant to the three review questions.</p> <p>The authors largely identify conceptual papers that explicitly mention EBMgt (e.g., Rousseau, 2006). It is not clear how such papers provide evidence relevant to any of the three research questions.</p> <p>The authors also include papers that do not explicitly mention EBMgt but are on research utilization (e.g., Beyer and Trice, 1982). However, they exclude the rest of the body of literature on research utilization. They include a review article by Ployhart (2006) on staffing best practice and again exclude the whole body of knowledge on this topic. The rationale for these decisions is not made explicit.</p> <p>The selection criteria do not allow the inclusion of articles that are about evidence-based management but do not use that label.</p> <p>The paper adopts a hierarchy of evidence used in one setting (medicine) to judge the quality of research in relation to specific types of medical systematic review questions. This is inappropriate.</p>	<p>A table of inclusion and exclusion criteria should be included to delimit the review.</p> <p>A fit-for-purpose quality appraisal approach would be adapted from the freely available checklists (e.g., CASP, 2009). Some journals also publish comprehensive sets of quality appraisal questions that could be adapted for use in a systematic review. See, for example, the evaluation criteria for qualitative papers produced by the <i>Journal of Occupational and Organizational Psychology</i>. Different sets of criteria would be used depending on the nature of the data and also the review question.</p>
<p>Does the review summarize the findings from all of the individual studies in a transparent and accessible format, and are the findings synthesized into a coherent whole?</p>	<p>The evidence base is not made accessible to the reader. Very few of the 144 coded articles are referred to in the manuscript.</p> <p>Some of the analyses performed (e.g., publications by management area or year of study) are not relevant to the review questions.</p>	<p>A descriptive analysis including specific examples and detailing the study characteristics would be conducted, along with an audit trail explicitly demonstrating the link between the review findings and the review conclusions.</p> <p>Key emerging themes could be highlighted relating to the ways in which managers access, make sense of, and utilize the findings of reviews of research evidence. Whatever overarching categories emerge for the tabulation, these should also have a detailed audit trail back to the core findings to justify and ground the conclusions.</p> <p>Where possible, details of both the quantitative and qualitative evidence would be tabulated showing what links, if any, exist between the use of reviews of research evidence and the effectiveness of decision making.</p>
<p>Does the study identify what is known and what is not known relating to the questions posed, and does it provide a set of practical conclusions for policy, practice, and future research?</p>	<p>The review appears to fall into the trap of reverting to a traditional literature review. The authors employ a narrative approach to describe and comment on a set of papers that they have selectively chosen to support their argument. For example, the first review question is "Is there a substantial body of evidence in the management literature concerning the concept of evidence-based management?" Given this, the review should focus on the meaning of "substantial" and then say whether or not the body of evidence found is substantial. The review fails to do this. More fundamentally, it is not made clear why substantiality of a body of evidence is relevant.</p>	<p>The results to the question posed above would provide:</p> <ol style="list-style-type: none"> (1) A summary explaining how managers (at all levels and in all industries) [context] access, make sense of, and utilize [mechanisms] the findings of reviews of research evidence (systematic or otherwise). (2) The evidence showing the effect of reviews of research evidence (systematic or otherwise) on decision making [outcomes]. <p>The aim would be help people to understand the implications of the findings in relation to practical decisions. For example, the review would be of value to an organization considering commissioning a systematic review or a scholar wondering if conducting a systematic review will have any effect on organizational decision making.</p>

EBMgt will help focus management research on addressing the questions, problems, and challenges that managers and other practitioners face. We do not contend that all management research requires

such a focus. Instead we note that a wealth of valuable and relevant evidence exists to be mined for practical use. The use of systematic reviews will also help management scholars identify in a more robust

Table 3
A Small Sample of Research Reviews Commissioned by Organizations and Government Agencies

Title	Date	Authors	Commissioning Organization	Focus and Impact	Publications
External Knowledge: A Review of the Literature Addressing the Role of External Knowledge and Expertise at Key Stages of Business Growth and Development	2005	Bessant, J., Phelps, B., & Adams, R.	Department for Trade and Industry (U.K.)	Presented to the U.K. government's Leadership and Management Advisory Panel, which was particularly interested in using it to identify the distinctive phases of organizational growth and factors that might affect different approaches to leadership and management.	Available from the Advanced Institute of Management (www.aimresearch.org) Phelps et al. (2007)
No Going Back: A Review of the Literature on Sustaining Organizational Change	2005	Buchanan, D. A., Ketley, D., Gollop, R., Jones, J. L., Lamont, S. S., Neath, A., & Whitby, E.	National Health Service Modernization Agency (U.K.)	Authors were members of the Research Into Practice team within the U.K.'s NHS Modernization Agency. It explores factors affecting the diffusion and sustainability of new working practices. A diagnostic called the "sustainability wheel" was created to help clinical and managerial teams identify factors threatening improvement sustainability. Internal briefings were run for service improvement leads based on the findings.	Buchanan et al. (2005) Buchanan et al. (2007)
Networking and Innovation: A Systematic Review of the Evidence	2004	Pittaway, L., Robertson, M., Munir, K., Denyer, D., & Neely, A.	Department for Trade and Industry (U.K.)	The review synthesizes research linking the networking behavior of firms with their innovative capacity. It presents evidence on the principal benefits of networking as identified in the literature.	Available from the Advanced Institute of Management (www.aimresearch.org) Pittaway et al. (2004)
Human Capital Management: A Systematic Review of the Literature	2008	Parry, E.	Ceridian Consulting	The review output was a model of factors affecting human capital and its impact on performance and a list of possible measures. The model was used to develop a diagnostic tool to maximize human capital.	Report owned by the commissioning organization.
Review of the Effectiveness and Cost Effectiveness of Interventions, Strategies, Programmes and Policies to Reduce the Number of Employees Who Move From Short-Term to Long-Term Sickness Absence and to Help Employees on Long-Term Sickness Absence Return to Work	2009	Hillage, J., Rick, J., Pilgrim, H., Jagger, N., Carroll, C., & Booth, A.	National Institute for Health and Clinical Excellence (U.K.)	The review led to guidance for primary care workers and employers on the management of long-term sickness and incapacity.	Available from NICE (www.nice.org.uk)
Mitigating Risks to Health and Well Being: Provision of Welfare for Families During Separation	2009	Parry, E., & Paddock, S.	Ministry of Defence (U.K.)	This review examined the practices used to alleviate the negative impacts of separation on the families of personnel in the armed forces and compared practice in the U.K. armed forces with that in overseas militaries and in civilian organizations. This review was used as a basis for future empirical work and for policy development in this area.	Report owned by the commissioning organization.

way what is known and not known about a given problem or question. At its core, EBMgt helps managers focus on the need for professional reflection and judgment about the validity and value of various

kinds of evidence in the decisions they make. It is fundamentally a process of informed practitioner judgment. As such, EBMgt can aid critical thinking and the appraisal of all forms of evidence.

References

- Ambec, S., & Lanoie, P. (2008). Does it pay to be green? A systematic overview. *Academy of Management Perspectives*, 22, 45–62.
- Best BETs (2009). Retrieved October 5, 2009, from <http://www.bestbets.org/>
- Boaz, A., & Ashby, D. (2003). *Fit for purpose? Assessing research quality for evidence-based policy and practice*. ESRC UK Centre for Evidence-Based Policy and Practice (Working Paper 11). Available from: <http://kcl.ac.uk/content/1/c6/03/46/04/wp11.pdf>
- Boaz, A., Ashby, D., Denyer, D., Egan, M., Harden, A., Jones, D. R., Pawson, R., & Tranfield, D. (2006). A multitude of syntheses: A comparison of five approaches from diverse policy fields. *Evidence and Policy*, 2, 479–502.
- Briner, R. B. (1998). What is an evidence-based approach to practice and why do we need one in occupational psychology? *Proceedings of the 1998 British Psychological Society Occupational Psychology Conference*, 39–44.
- Buchanan, D. A., Fitzgerald, L., & Ketley, D. (Eds.). (2007). *The sustainability and spread of organizational change: Modernizing healthcare*. London: Routledge.
- Buchanan, D., Fitzgerald, L., Ketley, D., Gollop, R., Jones, J. L., Saint Lamont, S., Neath, A., & Whitby, E. (2005). No going back: A review of the literature on sustaining organizational change. *International Journal of Management Reviews*, 7, 189–205.
- Campbell Collaboration. (2009). Retrieved October 5, 2009, from <http://www.campbellcollaboration.org/>
- Centre for Reviews and Dissemination. (2009). Retrieved October 5, 2009, from <http://www.york.ac.uk/inst/crd/methods.htm>
- Cochrane Collaboration. (2009). Retrieved October 5, 2009, from <http://www.cochrane.org/>
- Counsell, C. (1997). Formulating questions and locating primary studies for inclusion in systematic reviews. *Annals of Internal Medicine*, 127, 380–387.
- Critical Appraisal Skills Programme. (2009). Retrieved October 5, 2009, from <http://www.phru.nhs.uk/Pages/PHD/CASP.htm>
- Dane, E., & Pratt, M. G. (2007). Exploring intuition and its role in managerial decision making. *Academy of Management Review*, 32, 33–54.
- Denyer, D., & Tranfield, D. (2009). Producing a systematic review. In D. A. Buchanan & A. Bryman (Eds.), *The SAGE handbook of organizational research methods* (pp. 671–689). London: SAGE Publications Ltd.
- Denyer, D., Tranfield, D., & van Aken, J. E. (2008). Developing design propositions through research synthesis. *Organization Studies*, 29, 393–413.
- Drucker, P. F. (1966). *The effective executive*. New York: HarperCollins.
- EBMgt Collaborative. (2009). Retrieved October 5, 2009, from http://wpweb2.tepper.cmu.edu/rlang/ebm_conf/
- EPPI-Centre. (2009). Retrieved October 5, 2009, from <http://eppi.ioe.ac.uk/cms/>
- Greenhalgh, T., & Peacock, R. (2005). Effectiveness and efficiency of search methods in systematic reviews of complex evidence: Audit of primary sources. *British Medical Journal*, 331, 1064–1065.
- Higgins, J. P. T., & Green, S. (updated September 2006). *Cochrane handbook for systematic reviews of interventions*. The Cochrane Library, vol. 4.2.6. Available from <http://www.cochrane.org/>
- Hunter, J. E. & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings*. Newbury Park, CA: Sage.
- Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review*, 31, 386–408.
- Kaplan, S. (2008). Are U.S. CEOs overpaid? *Academy of Management Perspectives*, 22, 5–20.
- Kovner, A. R., Elton, J. J., & Billings, J. D. (2005). Evidence-based management. *Frontiers of Health Services Management*, 16, 3–24.
- Le, H., Oh, I., Shaffer, J., & Schmidt, F. (2007). Implications of methodological advances for the practice of personnel selection: How practitioners benefit from meta-analysis. *Academy of Management Perspectives*, (21) 3, 6–15.
- Lemieux-Charles, L., & Champagne, F. (2004). *Using knowledge and evidence in healthcare: Multidisciplinary perspectives*. Toronto: University of Toronto Press.
- Locke, E. A. (Ed.). (2009). *Handbook of principles of organizational behavior: Indispensable knowledge for evidence-based management*. New York: Wiley.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *Annual Review of Psychologist*, 57, 705–717.
- Lowenstein, R. (2006, January 22). When business has questions, Drucker still has answers. *New York Times*, Bu 7.
- Noblit, G. W., & Hare, R. D. (1988). *Meta-ethnography: Synthesizing qualitative studies*. London: SAGE Publications.
- Pawson, R. (2006). *Evidence-based policy: A realist perspective*. London: SAGE Publications.
- Petticrew, M. (2001). Systematic reviews from astronomy to zoology: Myths and misconceptions. *British Medical Journal*, 322, 98–101.
- Pfeffer, J., & Sutton, R. I. (2006). *Hard facts, dangerous half-truths, and total nonsense: Profiting from evidence-based management*. Cambridge, MA: Harvard Business School Press.
- Phelps, R., Adams, R., & Bessant, J. (2007). Life cycles of growing organizations: A review with implications for knowledge and learning. *International Journal of Management Reviews*, 9, 1–30.
- Pittaway, L., Robertson, M., Munir, K., Denyer, D., & Neely, A. (2004). Networking and innovation: A systematic review of the evidence. *International Journal of Management Reviews*, 56(34), 137–168.
- REA Toolkit. (2009). Retrieved October 5, 2009, from <http://www.civilservice.gov.uk/networks/professional/gsr/resources/gsr-rapid-evidence-assessment-toolkit.aspx>
- Rousseau, D. M. (2005). Evidence-based management in health care. In C. Korunka & P. Hoffmann (Eds.), *Change and quality in human service work*. Munich: Hampf Publishers.

- Rousseau, D. M. (2006). Is there such a thing as evidence-based management? *Academy of Management Review*, 31, 256–269.
- Rousseau, D. M., Manning, J., & Denyer, D. (2008). Evidence in management and organizational science: Assembling the field's full weight of scientific knowledge through syntheses. In A. Brief & J. Walsh (Eds.), *Annals of the Academy of Management*, Vol. 2.
- Rousseau, D. M., & McCarthy, S. (2007). Evidence-based management: Educating managers from an evidence-based perspective. *Academy of Management Learning and Education*, 6, 94–101.
- Sackett, D. L., Rosenberg, W. M., Gray, J. A., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: What it is and what it isn't. *British Medical Journal*, 312, 71–72.
- Sackett, D. L., Straus, S. E., Richardson, W. S., Rosenberg, W., & Haynes, R. B. (2000). *Evidence-based medicine: How to practice and teach EBM*. New York: Churchill Livingstone.
- Sherman, L. W. (2002). Evidence-based policing: Social organization of information for social control. In E. Waring & D. Weisburd (Eds.), *Crime and social organization*. New Brunswick, NJ: Transaction Publishers.
- Smith, G. C. S., & Pell, J. (2003). Parachute use to prevent death and major trauma related to gravitational challenge: Systematic review of randomised controlled trials. *British Medical Journal*, 327, 1459–1461.
- Thomas, G., & Pring, R. (Eds.). (2004). *Evidence-based practice in education*. Buckingham, UK: Open University.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Toward a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14, 207–222.
- Weick, K. E. (1989). Theory construction as disciplined imagination. *Academy of Management Review*, 14, 516–531.
- Yates, J. F. (1990). *Judgment and decision making*. Englewood Cliffs, NJ: Prentice Hall.