Designing Strategies for the Implementation of EBMgt amongst Senior Management, Middle Management and Supervisors

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Abstract

Proponents of evidence-based management point to a range of benefits accruing to users, including more effective decision-making through exploitation of the science base. Despite this lure, incorporating research evidence findings is relatively new to much management practice. In this chapter, evidence-based management is conceived of as a technological innovation, and we draw on Diffusion of Innovation theory and the Transtheoretical Stages of Change Model to explore some individual and organizational factors impacting the adoption of EBMgt at different levels of management. In light of this analysis, a number of strategies and initiatives to accelerate the adoption of EBMgt are proposed.

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Evidence-based practice
Although the concept of Evidence Based Management (EBMgt) is relatively new, some confusion has developed around precisely what it means. At its core, EBMgt is about managers 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 (Briner, Denyer, & Rousseau, 2009).

In fields where the notion of evidence-based practice has been established longer than in management, observers have noted its mixed reception, even amongst professionals who are neither stupid nor hostile to science and rigor. Amongst medical practitioners, for instance, a range of possible reasons for mixed uptake have been posited, these include: the argument that professional practice is as much art as science and is not algorithmic (formulae cannot account for all possible cases); a lack of faith regarding the scientific process (witness recent debates on the causes of climate change); and, an absence of convincing evidence that dogmatic adherence to the application of research evidence necessarily results in better performance than the judicious application of the professional’s own understanding, experience and judgment (Lewis, 2007).

Whilst some of these issues may be analogous to EBMgt, the unique characteristics of the practice of management demand that if EBMgt is to be more widely promulgated special attention must be paid to encouraging its diffusion amongst and adoption by managers. One outcome of EBMgt, it is argued, can be more effective decision-making (Briner, Denyer, & Rousseau, 2009). To make
EBMgt a reality, managers must put it into use in organizations. EBMgt requires educators, researchers and managers to develop processes and practices designed to facilitate its uptake. Managers vary in their training, backgrounds, experience and attitudes. Their decision-making (DM) responsibilities vary by level in the organization. Across many fields of endeavor Evidence-Based Practices (EBP) have achieved uptake through diffusion, dissemination and implementation processes. Diffusion processes naturally occur through existing social networks, dissemination processes facilitate intentional distribution of research findings, and implementation processes assist their ongoing active use.

Conceptualizing EBMgt as a technological innovation, this the focus of this chapter is on its diffusion and adoption amongst managers. Specifically, it addresses the question of how proponents of EBMgt can design processes to promote evidence-based management practices: What factors must be taken into account? Which strategies from diffusion, dissemination and implementation should be utilized at each level of the organization to maximize uptake? The literature on EB practice, drawn predominantly from healthcare and social service settings, is used to inform the design of such strategies since EBMgt is still new to business organizations. This chapter looks at the factors that influence uptake, focuses on their impact by level, and discusses design elements of processes and practices to infuse EBMgt into day-to-day organizational DM.

**The Challenge Facing EBMgt**

It would be incorrect to suggest that managers do not use evidence in their day-to-day decision making. Managers are well disposed to the use of evidence: they
draw heavily on their own experiences, take cues from their local operating environment and the more attuned may take readings from those who might be affected by the decision. On this basis, and with particular reference to managers’ expertise and judgment, evidence is already widely incorporated into decision practices, though perhaps not always consciously or explicitly.

However, evidence from the research base is less-readily incorporated into decision-making processes. Pfeffer and Fong (2002) found little evidence that business school research is influential on management practice. Other studies support this view (e.g. Johnstone & Lacey, 2002), further showing that research findings have little chance of being implemented without at least being strong, compelling and suitably adapted for local conditions, and implemented in a climate characterized by supportive opinion leaders and conducive organizational conditions (Dopson, Locock, Chambers, & Gabbay, 2001).

The issue, then, about the practice of EBMgt is not so much that managers do not undertake or value evidence, but they appear not well oriented to turning to the academic community for support in the resolution of challenges to which research evidence can contribute.

Changing practitioner behavior is difficult, even where there is rigorous evidence to suggest that change would be beneficial (Kitson, Harvey, & McCormack, 1998). Often, demonstrably efficacious innovations are met with stubborn resistance to adoption either within populations of potential adopters or across the whole population of potential adopters (e.g. David, 1985). Innovation efficacy is not of itself sufficient for adoption to occur (Adams & Bessant, 2008).
Clearly, managers seem to be coping, to an extent, without much recourse to research evidence. The argument in favor of EBMgt is that managers could cope much better and that the quality of decision-making would be less grounded in dogma, hype, personal marketing or, the ‘mindless mimicry of top performers’ (Pfeffer & Sutton, 2006).

Apart from its putative utility, managers are also subject to other forces that may be encouraging greater use of the research evidence. In addition to the contemporary challenging economic environment requiring more effective management decision-making, there are pressures, at least in some quarters, for the practice of management to be more accountable and evidence-based. In the wake of recent financial crises and organizational malpractice (the credit crunch, Enron, WorldCom etc) there is increasing pressure for transparency in organizational affairs.

No form of evidence can offer guarantees of effectiveness, always to improve and not sometimes to worsen practice. However, research evidence provides another and different sort of evidence for the practitioners’ armamentarium which can be drawn upon (like other forms of evidence) and assessed in the context of a specific problem through the filter of judgment and experience in support of decision-making.

In spite of the potential benefits of an evidence-based orientation to management, its practice has been slow to diffuse through the business community. A number of factors influence its rate of progress two of which, individual characteristics and organizational culture, are considered in the
following section. Understanding these factors and their interaction at different management levels provide insight on the design of strategies and initiatives to influence uptake.

Factors Impacting the Adoption of EBMgt

Individual Characteristics

In examining the individual characteristics that impact EB practice uptake, Aarons (2004) found that social service agency providers with higher educational attainment and interns displayed positive attitudes toward adoption of EB practices. Aarons developed the Evidence-Based Practice Attitude Scale (EBPAS) to measure four domains of provider attitudes toward adoption of EB practices: Appeal, Requirements, Openness to Change and Divergence. The attitudinal factor of Appeal measures intuitive appeal of the practice, specifically whether the provider believes the practice can be used correctly and is being used by colleagues who endorse the practice. The Requirement factor measures the person's attitude toward EB practices that are mandated by superiors, the organization or an accrediting body. The third factor, Openness to Change, is the individual's general responsiveness to innovation and new learning. The final factor, Divergence, assesses the extent to which providers perceive EB practices to be a departure from their own experience. Aaron's findings are consistent with Shortell et. al.'s (2007) conclusions that preference for personal experiences and perceived threats to autonomy are factors that hinder the use of EBMgt practices.

Another important factor related to EBMgt adoption, at least in healthcare, is the training model of the practitioner (Miller et. al., 2006). Miller distinguished
between two training models: the craft model and the scientific model. Miller and his colleagues suggest that those whose training experience is from a craft model are encouraged to learn by observing and emulating the behavior of master practitioners. Analysis and criticism of the training master's methods and assumptions is discouraged. The craft model promotes loyalty to the mentor and fidelity to his or her methods. Conversely, persons who are trained in the scientific model are encouraged to be skeptical and to demand evidence or proof of efficacy. Scientific training encourages independent analysis and critical thinking skills. According to Miller et. al. people trained under a craft model are less open to alternate views and innovations and are less likely to take a questioning stance toward their own assumptions or approaches, even when presented with evidence that disputes the efficacy of them. Thus, the craft model of training impedes the uptake of EB practices. In the business world management training generally bears greater resemblance to a craft model than a scientific model. Executives value learning derived from on the job experiences (McCall, 2010) and encourage managers to observe and model behavior after successful leaders in the workplace. There is often modest, if any exposure to a critical analysis of management styles or the efficacy of one leadership approach in comparison to another. The lessons drawn from on the job experience are rarely reflected upon and, as Jackson and Lindsay (2010) describe, can be "guided by opinions and biases" rather than informed by evidence or data.
Organizational Culture

Research evidence strongly indicates the influencing power of organizational culture in promoting or hindering the adoption of innovations. A number of authors have shown the adoption of novel practices to be greatly facilitated by supportive cultures (e.g. Anderson & West, 1996), the same has been found to apply in the case of EBMgt. Kovner and Rundall (2006) assert that "a questioning organizational culture," one that encourages questioning behavior among its managers and analysis of decisions in the light of research findings, facilitates EBMgt.

Aarons and Sawitzky (2006) assessed attitudes toward EB practice in two kinds of organizational cultures: constructive cultures and defensive cultures. Constructive cultures are those that values norms of achievement and motivation, individualism, self-actualization, supportive and encouraging interactions with others and found the constructive organizational culture led to more positive attitudes toward adoption of EB practice. In contrast, defensive cultures promote approval-seeking and consensus, conformity and dependence. Such cultures imbue more negative attitudes toward adoption of EBMgt. In these cultures, asking questions and bringing forward research evidence to challenge decisions can be viewed as threatening.

These factors are summarized below:

Individual Characteristics

- Professional training -- Apprentice vs Scientific model
- Experience
• Education
• Intuitive Appeal (alignment with pre-existing values)
• Attitude toward requirement from authority
• Openness to change
• Divergence (tolerance for deviation from current practice)

Organizational Culture
• Constructive and questioning
• Defensive and negative

In order to design processes and practices that facilitate EBMgt uptake, a managers' level within the organization must be taken into account in addition to the factors described above. Different levels within an organization present opportunities and challenges to deploy EBMgt in decision-making. Three general levels may be considered, Senior Managers, Middle Managers and Supervisors. Within each level, four specific aspects are examined: the manager's main focus, sphere of influence, accountability timeframes, and decision-making capacity. Each level's interaction with organizational culture and individual characteristics are explored.

Senior Managers
Senior managers within an organization have strategy setting as a principal focus. They enjoy a broad sphere of influence both within their organization and with other organizations. Shareholders and boards of directors hold senior executives responsible for the performance of the company. Senior managers’ accountability for outcomes is generally assessed quarterly to multi-year for some initiatives.
Their decision-making capacity is broad and filters throughout the organization. Adopting EBMgt, like other organizational initiatives, is heavily impacted by senior managers’ priorities and preferences.

Given the prominence of senior executives in the organization, they have the greatest ability to influence the development of a constructive and questioning culture. The senior managers can set the tone for creating a culture where questioning is encouraged and attention paid to interactions occurring in a supportive environment. Likewise, senior managers can discourage overly conventional and conforming actions and attitudes that would discourage innovations such as the practice of EBMgt. However, despite their influential impact on culture, senior executives are likely to experience resistance in shifting a culture from defensive to constructive. In defensive cultures managers are likely to feel threatened by having decisions questioned or evaluated for effectiveness and predictably will react negatively if EBMgt practice is pushed out without first attention being given to influencing current cultural norms. Of primary importance is establishing a supportive environment where mistakes are assessed as part of the organization's learning process and not used to denigrate those involved in the decision.

With regard to personal factors, senior managers present some challenges. Generally, senior executives are highly experienced in their roles. Research shows that length of experience is inversely related to openness to EB practice. The longer one's experience in a role the less favorable their attitudes to EB practice and the more disposed they are to favor their own judgments (Aarons, 2004).
Senior managers are likely to place a high value on their experience. As one consultant to managers said when queried about barriers to uptake on EBMgt,

“Executives’ first response will be, the decisions I’ve made up until now are what has gotten me where I am at, why should I change what has worked so well for me?”

Indeed managerial judgment is highly valued in most business settings. And this is despite the social science evidence to suggest that experience in a role does not necessarily translate into effectiveness in that role and that generally people are over-confident about their own judgments. Explanations that cast doubt about managerial decision-making are not likely to influence senior managers’ opinion. A more effective route to the design of EBMgt is to encourage senior managers’ uptake by characterizing it as a technical innovation that enhances managerial DM and demonstrating its uptake offers potential competitive advantages in a global economy, akin to other technological advances senior managers may have promoted.

Another individual factor that has the potential to positively impact senior managers’ uptake is higher educational attainment and science training. Industries vary in the frequency by which executives have advanced degrees. Many executives do not have degrees above an MBA and despite the general acceptance of an MBA as a requirement for an executive position, individual executives continue to have a mixed response on the necessity of an MBA for effectiveness in a role. The strong emphasis placed on experience often reduces the value placed on attaining advanced degrees. There is also lack of consistency in MBA
programs' expectations that students understand and directly interact with social science research. As a result, executives with MBAs may hold less favorable attitudes toward EB practices than those with advanced degrees in other fields.

While some senior executives have science training, science training in and of itself is not a guarantee that executives will value EBMgt. In industries with physical science-trained executives there can be a devaluing of social science and management research. As an internal consultant who works with executives with backgrounds in engineering stated,

"They are the hardest. They won't accept any management research as valid and they expect people to behave according to black and white decision rules."

The expectation that EBMgt is able to deliver simple decision rules or straightforward equations with one consistent answer can lead to frustration for physical science trained managers when they are confronted with the contextualized, parsed and fractious research from the social sciences and management literature in particular. The frustration can result in suspicion of the utility of social science research and a consequent disinclination to adopt.

An important factor contributing to the uptake of EBMgt is appeal. For the senior executive, an EBMgt design must possess intuitive appeal, be capable of being implemented correctly, and have a track record with colleagues who have been happy with the results. To achieve intuitive appeal, EBMgt must resonate with already held beliefs and attitudes. For example, practices that can be
shown to relate to positive ROI and carry a competitive advantage are likely to have appeal. Even with strong intuitive appeal, senior executives are unlikely to adopt EBMgt practices unless they are confident that they can be implemented effectively throughout the organization. Design of EBMgt within an organization must be structured in a way that can be reproduced systematically or scaled up. Zanardelli (this volume) regularly invokes the three Es to his senior executives – Evidence, Execution and Evaluation. Tying the use of evidence with well-delineated processes to carry out any evidence-based practice reliably is likely to increase adoption. Finally, uptake by senior managers is likely to accelerate if other similar executives have adopted the practice of EBMgt and are satisfied with their results. Ideally EBMgt practices should be shared widely between executive team members to enhance uptake of those less open to change.

The senior manager’s attitude toward a requirement to employ EBMgt that comes from another entity is likely to depend on the perceived business need to meet the requirement. Senior executives are likely to be responsive to mandates that have an effect on the bottom line but their attitude toward requirements from sources that do not offer a financial incentive may be ignored. Kovner and Rundall (2006) cite external accountability as likely to increase the uptake and implementation of EBMgt practices. Large implosions such as Enron and Lehman Brothers along with the 2008 financial crisis has led to increased scrutiny of organizational actions by stockholders, institutional investors and the general public. Some have begun to question and examine current organizational decision processes. Thus, if shareholders, customers or Government authorities place
demands on an organization to engage in EBMgt for decision-making senior managers’ attitude toward uptake is likely to increase. Within this environment senior executives who adopt EBMgt processes may be perceived to be taking steps toward assuring due diligence and proper risk-management practices.

Another individual factor that influences EB uptake across settings is openness to new experiences. This is likely to be true for senior managers as well. Before implementing an EBMgt process, a useful first step is to assess executive team members to learn which are more open to new experiences in general and more likely to try different approaches. For example, a COO familiar with business process improvement strategies may be more open to EBMgt than a CFO who may place a higher value on consistency and stability. Implementing the EBMgt process first in operations may have a greater likelihood of uptake and implementation. Lastly, the divergence between current practice and a proposed EB practice impact uptake. This can also differentially affect senior managers. A Chief Marketing Officer may view EBMgt as similar to conducting measurements in marketing research whereas a CEO with a background in sales may find EBMgt practices quite divergent from the rapid, fluid and intuitive decision-making found in sales negotiations. The opinion that EBMgt diverges widely from current practice may hinder adoption.

Middle Managers
The primary focus of middle managers is tactical execution. As compared to senior managers executives their sphere of influence is bounded within the organization and their accountability for outcomes is more near term with close
evaluation of month end outcomes through quarterly outcomes. Middle managers are held accountable for ensuring activities that support the strategic goals of the organization are taking place. They have influence on the supervisors who report to them and can engage in managing upward activities to influence the senior managers. Middle managers gain recognition and are rewarded for showing solid managerial judgment, seeing that initiatives are carried out and ensuring strategic objectives are reached. Decision-making often occurs under significant time pressures. As senior leaders often put to middle managers, “I am looking at my watch and not the calendar (for results).”

The organizational context of the middle manager, whether embedded in a constructive, questioning culture versus a negative, defensive culture, affects his or her readiness to implement EBMgt. Middle managers in constructive cultures who feel supported to try out new approaches and assess outcomes without fear of retribution are most likely to experiment with EBMgt. Those in defensive and negative cultures are at greater personal risk for attempting something different and are likely to perceive minimal pay off from implementing an EBMgt approach. Additionally, due to the close scrutiny of near term outcomes middle managers may perceive that EBMgt processes will reveal their misjudgments and errors. This level of transparency leaves middle managers particularly vulnerable in defensive cultures. As Kovner (this volume) indicates, reflection on strategic decisions, transparent accountability, building a questioning culture and improving how managers are trained are key steps to implementing EBMgt. Each step is particularly necessary to support middle management adoption of EBMgt.
Taking into account the personal demographic factors of experience and education, middle managers may have somewhat less experience than senior managers and as a result be more receptive to EBMgt. However, middle managers can also be long tenured employees who view their current status as a result of exercising judgment and making decisions without the support of EBMgt and question its utility. Educational background is again likely to be mixed in middle management levels with fewer advanced degrees, which could limit interest in applying EBMgt practices. In some environments middle managers have advanced technical and science degrees and this generally portends a positive influence on EBMgt uptake. However, the same caveat about unrealistic expectations of being able to obtain concrete answers from social science research still applies. The nature of social science research findings may alienate those with a physical science research model of achieving definitive outcomes.

The individual attitudinal aspects of EBMgt (appeal, requirements, and openness to new experience, and divergence from current practices) are likely to have different meaning among middle managers compared to senior managers. Middle managers need EBMgt processes that are designed to be intuitively appealing at a pragmatic level. In these situations, adoption is likely to be increased if EBMgt practice meets an identified need (Wejnert, 2002). Middle managers are not interested in whether a practice is empirically efficacious if there is no proof of effectiveness in their environment. According to Myers & Goes (1988) innovations viewed as feasible, workable and easy to use are adopted
more readily. Middle managers will not be convinced to employ EBMgt processes unless their teams are able to implement the processes effectively.

The individual characteristic ‘attitude toward requirement’ will vary with middle managers depending upon the source of the requirement. If the requirement is coming from senior leaders or an outside accrediting body, i.e. is necessary to attain ISO certification, uptake is likely to be enhanced. Middle managers by virtue of their role within an organization are likely to comply rather than resist such requirements. Openness to change can be variable within the middle management ranks. Managers in divisions such as IT, where innovation is the norm, may be more accepting of new approaches. Conversely managers in divisions that operate at a currently successful steady state may be less open to adopting new practices. Again, knowing which middle managers are more open to new experiences can be useful in determining where to first initiate EBMgt practices. Any divergence between current practice and EBMgt is likely to have a large impact on middle managers. These managers must shepherd initiatives through lower levels and ensure accurate execution. New practices that appear to diverge strongly from current practice carry with them potential complications for effective execution. However, if EBMgt processes can be presented as similar to, yet a refinement of, current decision-making and one that can facilitate effective execution, uptake is enhanced. Indeed in some situations middle managers may welcome research evidence to assist them in challenging current practices that are not effective.
Supervisors

The primary focus of supervisors is to implement processes directly through individual contributors and teams. Their sphere of influence is quite narrow, generally having the greatest impact on direct reports and some persuasion over peers. Managing upward can occur in limited situations. Supervisors are held accountable for outcomes as immediate as end of day or end of shift in manufacturing environments. As such they are concerned with consistency and repeatability. Day-to-day decision-making often requires immediate solutions, or end of day recommendations and time pressures are acute.

First line supervisors in constructive cultures may be more open to experimentation when supported by superiors. Encouragement to ask questions may also embolden early career supervisors to critique standard practice. In constructive cultures EBMgt offers first line supervisors the time to learn what works for their area and to implement new practices with evidence of effectiveness. As one healthcare supervisor explained, "awareness and support" were necessary to use data-driven processes because they can be both "painful and illuminating." Defensive cultures are likely to represent a strong barrier for supervisors to implement EBMgt practices. The values of being conforming and subservient are antithetical to adopting EBMgt practices. Front line supervisors have little autonomy in most circumstances and implementing actions that are contradictory to current practice, regardless of how well supported by the research, are likely to result in negative appraisals by superiors. Supervisors in
defensive cultures are aware of their place within the organization structure and unwilling to risk their position by violating cultural norms.

With regard to the demographic factors that affect EB uptake, first line supervisors are the least likely to have advanced degrees which may limit the value they place on research data. However, they also are likely to have the least experience in the manager role and less experience in a role is associated with more positive attitudes toward EB uptake. Particularly for those new to a supervisory role, EBMgt may offer reassurance that they are implementing sound processes and those that are most effective at achieving their immediate outcomes. Additionally having their perceptions validated or refined by evidence gives new supervisors greater confidence in their skills.

The other personal factors under consideration in regards to first line supervisors are appeal, requirements, openness to change and divergence. EBMgt's appeal to supervisors may be in the credibility it gives to their DM in situations. When supervisors can show good cause for their decision and that their choice has outcome data behind it that can bolster the chances of the decision being accepted by both those that work for them and those above them. Supervisors, as other managers, find word of mouth reports that confirm satisfaction with a practice as highly motivating to accept the practice. In accordance with other levels, receiving communication about the benefits of EBMgt from peers and superiors drives its appeal and uptake. Organizational requirements to include EBMgt as a necessary part of decision-making are also likely to increase uptake at this level.
Knowing that senior leaders, their managers or outside groups expect the use of EBMgt is likely to increase compliance among supervisors. The personal characteristic of openness to change will vary at this level as at other levels in the organization. Again, for organizations that want to increase uptake of EBMgt, identifying those supervisors who show openness to change offers insight into where EBMgt pilot projects should be housed. Starting initiatives with supervisors who display positive attitudes toward change is likely to accelerate adoption across work teams. Finally, the characteristic of attitude toward divergence has the potential to cut both ways with supervisors. Supervisors could perceive EBMgt to diverge widely from current decision-making practice and consequently impede their ability to hit objectives. This would produce strong negative attitudes toward uptake. Alternatively, supervisors could perceive EBMgt as similar to their current decision-making processes and potentially beneficial in meeting expectations by improving accuracy. EBMgt processes must be developed with modest divergence from current practice and reveal direct benefit.

**Designing Strategies to Promote the Adoption of EBMgt**

The concept of EBMgt may be relatively new, but the desire to reduce the research-practice gap is decades old. Calls to close the gap recur frequently in the academic literature, yet tend not to be heeded by managers or by educators. Johns (1993) found that managers often view research-based personnel practices as administrative innovations rather than technical innovations and consider administrative innovations simply a matter of managerial operating style. This is...
analogous to educators’ concept of their teaching style, and likewise their disinclination to engage in research-based teaching practices that do not comport with their adopted teaching style. Consequently, when research-based practice findings are viewed as a matter of style and the findings do not comport with current perceived operating styles, they are less likely to be incorporated into day to day practice. As a result the impact of research-based practices can be minimized. Technical innovations are frequently viewed as independent of operating style and technical innovations are more likely to be implemented based on perceived benefit to the organization. To enhance the impact of EBMgt and facilitate uptake by managers and educators, academic research findings should be presented as part of a knowledge production process that drives innovation and positive outcomes. Thus EBMgt would benefit from being viewed as a technical innovation that has the capacity to enhance decision-making accuracy. Just as in information technology, engineering, or the pharmaceutical industry where basic research leads to innovation, so too can management research be viewed as a driver of DM innovation in organizations. Characterizing EBMgt as a DM innovation also eliminates the concerns expressed over contradictory findings or research recommendations that change over time. People expect innovations to continually transform and a static state is not desired. As an example, it is reasonable to anticipate that current goal-setting theory and research (Locke & Latham, 2009) will be refined and modified with additional research and implementation in different settings with different people. New findings should be expected and welcomed as advances in understanding management activities
which continue to inform practice. By defining EBMgt as a technical innovation to improve DM accuracy, its proponents might draw on innovation theory to encourage uptake through the design of diffusion, dissemination and implementation strategies.

To design effective processes and practices EBMgt proponents should employ processes that enhance diffusion, dissemination and implementation. Diffusion is the naturalistic process by which innovations become known and are eventually adopted. Dissemination is formal and planned communication about an innovation (Greenhalgh et. al., 2004). It is distinct from diffusion processes because dissemination is intentional and includes targeted distribution of information and intervention materials to a specific audience (Procter et. al., 2009). Implementation is when innovations are put into active use, ultimately becoming taken-for-granted. Successful implementation strategies require knowledge of the factors that facilitate uptake and barriers that derail it. See table 1.

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**Innovation Attributes**

Innovation attributes are people’s subjective impressions of an innovation, impressions which powerfully impact individuals’ adoption decisions (Moore & Benbasat, 1991) and should be considered in the design of EBMgt processes and practices. Rogers (2003) identified five attributes that enhance the adoption of
innovations: relative advantage, compatibility, low complexity, trialability and observability, each of which is briefly considered below:

The *Relative Advantage* of EBMgt, the extent to which an innovation is perceived as being better than the idea it supersedes, must be established by demonstrating EBMgt must be seen as an improvement over current decision-making processes, one that leads to greater accuracy and clearly better results. Generally, the advantage must be conceived and presented in terms of some technical superiority or economic benefit: usefulness, in which the potential user positively assesses the contribution of the innovation to increasing job performance within a given organizational context, must be demonstrated.

One strategy would be to link relevant research evidence to a specific business need and demonstrate the advantage of EBMgt DM over current standard practice. For example, placing the concept of EBMgt decision-making within risk management and identifying the practice as a better tool to assess the risk vs. rewards of endeavors can show its relative advantage over intuitive DM. Another example is to identify EBMgt as helping managers develop broad cross-cultural knowledge required to thrive in global competition. Including research evidence gathered in international contexts increases corporations' skill in negotiations and business development. Particularly at the senior managers level EBMgt must be seen as an innovation that results in competitive advantage.

However, the benefits of incorporating the research evidence into decision-making are still only speculated upon. Even in more established fields of practice there is little solid empirical evidence of its unique contribution. This is a
significant gap and, if the use of research evidence in decision-making is to be effectively promoted credible evidence demonstrating its beneficial impact must be made available. There is an urgent requirement for future studies to address this challenge.

Innovations that are compatible with adopters' values, norms, and needs are more readily adopted. Recent work has refined compatibility’s conceptualization to include four distinct aspects: compatibility with previous experience, with preferred working style, values and, existing working practices (Karahanna, Agarwal, & Angst, 2006) and, in empirical applications of Rogers’s framework, compatibility has consistently been shown to be positively associated with adoption. This, then, is a critical area on which to focus.

Making certain that the recommended practice is consistent with the end user's current frame of reference is necessary to facilitate uptake, for example by aligning EBMgt with current work practices focused on contemporary management concepts and practices such as Knowledge Management (KM), Business Intelligence (BI) and Business Process Re-engineering. The greater the divergence of a new practice from the current one the worse the manager's attitude toward adopting it is likely to be. Initially EBMgt may best be introduced within an organization as a methodology similar to Six-Sigma or Lean Engineering to maintain familiarity and enhance uptake.

However, promoting compatibility with previous experience, preferred working style and values are more challenging tasks in a context that has little tradition of connecting with the research base. In this case, longer term strategies
must be considered, including: researchers undertaking more collaborative research that addresses the real-world problems managers face and, in the design of training program, ensuring that managers are versed in research methods, means, purposes and outputs of so that they can reasonably assess the quality of a piece of work on which they might base a decision.

Innovations that are perceived as simple to use are more easily adopted. Complex innovations place extra demands on the learning capacity of individuals and firms as they are required to take on new knowledge and skills to assimilate the innovation effectively. Management and organization studies are characterized by a diversity of modes of knowledge production, and ontological and epistemological positions. One of the principal artifacts of EBMgt is the systematic review, a rigorous scientific investigations of the literature generating a synthesis of individual studies by means of an explicit analytic framework defined by clear and precise aims, objectives and methodological criteria (Tranfield, Denyer, & Smart, 2003). Whilst systematic reviews usefully synthesize the research evidence, they are complex studies in their own right and further translational efforts are necessary to ensure important messages are appropriately communicated.

In spite of recent methodological developments that have increased the opportunity to synthesize the diversity of primary studies, the use among the research community (by-and-large the producers of syntheses of the evidence) to utilize these methods is in the earliest stages of adoption. Greater efforts must be
made by the research community and more incentives be made available to promote the use of these methods widely.

Ease of use and simplicity are necessary design elements to drive uptake. The principles and practices of EBMgt must be phrased in non-technical, jargon-free language. Senior managers expect concise executive summaries and bulleted presentations. Extensive research bodies must first be synthesized through systematic reviews and then further pared as narrowly as possible to express the core concepts, recommendations and caveats. Middle managers and supervisors are impacted by complexity as well. Those responsible for execution and implementation in organizations are slow to adopt practices that require extensive retraining or added steps.

*Trialability* refers to the opportunity to test out innovations without needing to make a commitment to fully adopt, implying a risk-free exploration of the innovation prior to committing to sustained usage. When designing EBMgt practices in organizations starting with pilot projects or beginning in one manufacturing cell can facilitate diffusion more effectively than system-wide implementation. Piecemeal implementation has drawbacks, but given that organization-wide change processes tend to occur in fits and starts and are generally uneven, initially limiting EBMgt practice is preferable. As discussed above identifying those managers with attitudes most open to change and most likely to find EBMgt methods appealing are strong starting points for EBMgt implementation. Uptake is enhanced as managers adapt and customize EBMgt processes to their unique circumstances.
Lastly, greater *observability*, defined as the opportunity to directly and easily observe the benefits of an innovation, can facilitate diffusion. Arguably, the use of scientific evidence in managerial decision-making should have a positive impact on the users’ careers and in their organizations. Lack of observability of the benefits of EBMgt can be a challenge in organizations. It is difficult to observe the direct outcomes of management decisions since their impact unfolds over time in changing economic circumstances. Furthermore there may be modest interest in collecting or analyzing data on the efficacy of management decisions. However, linking managerial decisions to business outcomes and revealing choice points that can produce stronger results are likely to be appreciated and replicated within the organization. Processes should be designed so results are reported out and widely distributed across the organization. The improved DM accuracy that results from EBMgt must be made visible across levels and divisions.

**Dissemination Strategies**

Effective dissemination of EBMgt requires communicating through multiple channels within organizations and those available outside of organizations. Dissemination in the design of EBMgt processes and practices is important. The number of managers using EBMgt in their decision-making is by any accounting extremely small, dissemination is necessary to increase awareness and knowledge.

There is a variety of dissemination channels that can be used to facilitate the transfer of research evidence from the academic community through to practice, including publication in peer-reviewed and practitioner journals,
teaching from undergraduates to executives, attending conferences, contract research programs, sharing facilities, adopting roles in industry, personnel exchange and so forth. It appears, though, that academics have their preferred methods and that these do not always overlap with those preferred by managers (D’Este and Patel 2007), thus limiting opportunities to trial. The academic community needs to become better at getting close enough to managers in order that they can be clearer about the specific problems for which solutions are required.

Providing information through channels that managers currently access is more effective than expecting managers to access research journals. Salas and Kosarzycki (2003) suggest that non-technical, jargon-less writing must appear in outlets such as trade magazines, *Harvard Business Review*, *Business Week* and the *Wall Street Journal* to directly reach managers and facilitate uptake of research findings. Additionally the media, as another driver of dissemination (Rabin et. al., 2006), should be enlisted in articulating relevant and compelling stories of the effectiveness of EBMgt in enhancing organizational decision-making. Recently social networking tools have been used to disseminate research information to practitioners and create connections between the academic community. Websites, blogs, pod casts, rss feeds, and other communication pathways should be employed.

Some scholars have been writing systematic reviews with the express purpose of summarizing the state of current knowledge relating to a phenomenon with practitioner purposes in mind. But these, still, are few in number, expensive
to produce and often in a format that does not provide rapid, accessible and digestible summaries of key points.

Within an organization dissemination through multiple communication processes is necessary to facilitate adoption. Disseminating information related EBMgt DM should include executive summaries, internal newsletters, intranet postings, webinars, staff presentations with Q & A and ongoing requests for feedback, and suggestions for refinement or customization. Dissemination alone has a modest impact on uptake of EB practices. Implementation strategies are required for the EBMgt process to be accepted as a standard practice.

**Implementation and Stages of Change**

Implementation and adoption requires both organizational and individual change processes. At the organizational level, establishing a questioning and constructive culture is necessary. Development of a constructive culture must overcome significant barriers. People in organizations often gain status from, and are rewarded for, exercising managerial judgment and for executing others' decisions without consideration of their outcomes. Allowing others to have input into decision-making can reduce the perceived status of many decision-makers.

Making statements like "the research says" tends to reduce, not enhance, how others perceive a manager's confidence and competence. Perceived confidence, stature and competence are strong currencies managers trade in to be successful in their role and gain further promotions. In defensive cultures questioning decision-making processes, identifying faulty assumptions or bringing up countervailing viewpoints is seen as exhibiting resistance and being
an obstructionist. As Kovner and Rundall (2006) state, "challenging decisions and introducing research evidence into problem-solving discussions can cause anxiety among managers, creating a sense that managerial judgment and expertise is perceived by colleagues as inadequate or not trustworthy."

These are difficult emotions to override and require thoughtful action to ameliorate their impact. Leaders of the organization have the greatest influence on creating a constructive culture. Characterizing the adoption of EBMgt as a sign of organizational and personal achievement (i.e. Black Belt in Six Sigma), such that its implementation means that the company and its managers are innovators and on the leading edge can quell anxiety and encourage motivation for adoption. Additional practices identified to encourage the development of a questioning and constructive organizational culture include sharing research journals and articles among managers, leaders making an EBMgt approach to DM a requirement, manager development and training in EBMgt processes and directly linking compensation to acquiring metrics and using relevant evidence in DM (Kovner & Rundall, 2006).

For implementation to occur, individuals must adopt an innovation. Rogers identified five steps in adoption: Knowledge, Persuasion, Decision, Implementation and Confirmation. Managers learn about the practice of using EBMgt in DM (knowledge) and receive confirmatory information that it is useful (persuasion). Managers become convinced of its effectiveness and make a choice to try it (decision). They actively engage in using EBMgt in DM (implementation) and obtain feedback that they are achieving stronger results.
(confirmation). These roughly parallel the stages of change model of Prochaska and DiClemente (1988). An advantage of using Prochaska and DiClemente's Transtheoretical Model is that it offers specific interventions to facilitate progress through the implementation steps. These interventions can guide the design of processes and practices to enhance EBMgt adoption.

As EBMgt is in its infancy, (perhaps more accurately described as embryonic), the majority of managers are in a precontemplation stage with regards to changing their DM approach to include EBMgt. The precontemplation stage is one in which a person is not considering change and has a paucity of knowledge about the benefits of changing. This is a main reason why dissemination through multiple outlets is necessary. Dissemination needs to include emotional arousal that stirs the person toward the needed change, or away from the old behavior. This can result from sharing compelling stories of improved productivity, retention, engagement or profitability from using an EBMgt approach. Conversely the tales could be cautionary about the losses, cost over-runs and employee dissatisfaction incurred from not using EBMgt in DM. Raising awareness is one method of advancing people from the precontemplation to the contemplation stage of change.

People in the contemplation stage are aware of the need for change, but not convinced the benefits outweigh the costs. Managers at this stage require persuasion to propel them forward. People tend to over estimate the costs of change and underestimate the benefits. The literature on implementation of EB practice finds lack of access, lack of time, preference for peer viewpoints and
preference for personal experience as common impediments to action. Two drawbacks to making the change to EBMgt are time pressures and effort required. Intuitive decisions are emotionally appealing and quicker than well-vetted, reflective decisions. Past experience is regarded as reliable and less effortful than disciplined, rigorous thinking. Another common rationale for not making changes is someone else may not like it. Managers who contemplate reducing their reliance on peers' managerial viewpoints in favor of research-supported findings may fear being less regarded or supported by colleagues.

Making a convincing case for the benefits of change can overcome personal anxiety and put the costs of change in a more realistic perspective. The benefits must be identified in ways that are meaningful to managers for example pointing to return on investment from EBMgt. Despite time pressures, if front line managers are assured that acting on research data is likely to improve their metrics, they are willing to sacrifice time to achieve better outcomes. As a front line manager in a healthcare setting explained, he would rather take the time to collect and analyze data-driven information that shows a clear advantage of one method over another than act quickly without it. Demonstration projects on the benefits of EBMgt or interactions with other similar organizations that have successfully implemented EBMgt can be effective in motivating managers to move from the contemplation stage to preparation. Likewise, recruiting authority figures, opinion leaders, and EBMgt champions within an organization to disseminate information and influence peers (Dearing, et. al., 2006) can move people and organizations closer to the preparation stage.
Preparation is the step where plans are made to adopt new behavior. A strong plan enhances the likelihood of successful adoption and sustained use for both the individual and the organization. Most managers have experienced change processes that lasted for a few months or years only to be dropped in favor of previous practices or another fad. Solid preparation includes gathering information, training, consulting with those experienced in EBMgt and planning for impediments. Failure to develop processes that offer multiple routes to attaining the best available evidence in a rapid and simple manner, such as via websites and intranets are unlikely to succeed. Preparation is the step where all processes must be reviewed for ease of use and speed of results. As one internal HR consultant inside a large academic research institution explained, "managers must find something useful in less than 5 to 7 minutes when they access an online database," Successful implementation requires making the organizational environment as conducive as possible for EBMgt practices. An important preparatory step is for organizations to assign opinion leaders to push out and monitor the uptake of EBMgt. For interactive networks to develop and successfully spread interest in EBMgt, directors of EBMgt must be distributed across different functional areas, not housed in a center or within a staff department. This also provides a framework for different areas to work together to achieve implementation. A plan of action to move forward employing EBMgt in DM requires recursive iterations between proponents and skeptics. Responding to skeptics' questions and criticisms improves organizational preparation and gradually brings skeptics into alignment with EBMgt uptake. Moving too quickly
through the preparation stage reduces successful implementation but companies should also avoid preparation fatigue while awaiting total acceptance since it is both unlikely and unnecessary in this stage.

With adequate preparation, taking action to implement is the next step. This is when people put EBMgt into use in making organizational decisions. It is important to distinguish between core principles of EBMgt that should not be altered and more peripheral aspects that can be tailored to the specific environment. One core principle is that organizations and managers should exhibit a strong preference for well-vetted evidence over opinion. Involving managers in ongoing research stimulates interest, sustains behavior change, and produces constructive and effective reinventions of EBMgt processes.

Partnerships between academic institutions and organizations can be pathways to continued adoption activity. Many organizations fund university institutes to produce research on topics that are relevant to their business. Executives, housed within the institute, become adept in research methodology. The resultant research is first disseminated directly to the funding organization, and then moves into the academic publication stream for general distribution. Dearing and colleagues (2006) explain that organizations must continue to support new practices in order to sustain their ongoing use and encourage adaptations to their unique circumstances. Stakeholders who take a long-term view to implementing EBMgt into organizational decision-making achieve greater success. Supportive actions are needed until the practice becomes part of the institutional fabric or simply the way decisions are made.
The final implementation process is confirmation, whereby the decision to put an innovation into practice is affirmed by satisfaction with outcomes. This is necessary to sustain use of the practice over the long term. The Stages of Change model describes this as *Maintenance*. By this point users feel confident that they are able to continue the practice on an ongoing basis with little risk of failure. Transparent appraisal processes verifying the positive outcomes obtained by including relevant research create motivation to continue its practice. Demonstrating that EBMgt can be applied reliably throughout the organization builds user confidence and reduces the chance of falling back into past practices.

**Future Directions**

EBMgt is a means for managers to increase the accuracy and effectiveness of the day-to-day decisions they make in organizations. EB practices are encouraged across medicine, education and social services. The research on diffusion, dissemination and implementation in these other areas is a practical starting point for the design of EBMgt processes and practices. The major stakeholders: researchers, educators and managers each have a role in advancing the science of evidence-based management. As follows

**Scholars and Researchers**

- Conduct systematic reviews
- Disseminate systematic review findings
- Use social media to report immediate results
- Produce appealing executive summaries
- Publish in mass media outlets
• Create research institute partnerships with organizations and maintain ongoing dialogue
• Understand the influencing strategies that work within each organization that are key to getting messages heard
• Understand that evidence needs to be presented in a timely manner
• Be honest about the limitation of evidence -- do not promise answers where none can be delivered.

Educators and Consultants
• Teach social science research methodology
• Teach systematic review findings to students
• Maintain websites that catalogue research results
• Use social media to link students/managers/researchers
• Cast EBMgt as an innovation in DM accuracy
• Construct EBMgt procedures compatible with past practices
• Generate EBMgt podcasts, webinars and presentations
• Develop conferences for EBMgt managers to interact

Organizations and Managers
• Create constructive and questioning cultures
• Fund systematic reviews in relevant areas of interest
• Develop quick access points to relevant research
• Establish research findings reading groups
• Use social media to link managers with researchers
• Maintain an intranet site of relevant research results
• Assess managers for openness to change
• Offer EBMgt training and skill development
• House executives in research institutes to learn methods
• Pilot EBMgt in receptive areas of the organization
• Disseminate results widely and request feedback
• Name Directors of EBMgt to remove uptake barriers
• Require EBMgt in organizational DM
• Link compensation with use of EBMgt in DM
• Teach managers to be sensitive to their context and develop the skill of applying the findings of research to the demands of day-to-day management practice
• Develop critical and evaluative skills for managers so that they can assess the evidence for themselves
• Employ EBMgt KM systems and maintain outcomes as BI

Conclusion

EBMgt is done by managers; it cannot be imposed upon them by researchers, educators or consultants (Briner et. al., 2009). Proponents of EBMgt are faced with the task of designing processes that appeal to senior managers executives, middle managers and front line supervisors. A starting point is to understand the factors that have driven EB uptake in healthcare and social services. In these settings manager characteristics (training type, educational attainment, experience, attitudes toward EB) and organizational factors (constructive or defensive) affect uptake of EBP. Principles derived from Diffusion of
Innovations (Rogers, 2003) and the Transtheoretical Stages of Change Model (Prochaska & DiClemente, 1984) offer guidance on accelerating EBMgt adoption.
References


