

**Updating Reay, Berta & Kohn EBMgt systematic review:
An update from 2009-2012**

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Abstract

Updating Reay, Berta & Kohn EBMgt systematic review: An update from 2009-2012

By: Katherine J. Currie

Evidence-based management (EBMgt) is a relatively new and emerging movement in management theory, and modeled after evidence-based medicine (Briner, Denyer, & Rousseau, 2009). Interest in the topic appears to be gaining momentum, with an increasing amount of literature being published each year. However, according to the systematic review conducted by Reay et al. (2009), this literature, for the most part remains based more on expert opinion and very little empirical studies. As a result, Reay et al. (2009) called for more empirical research to be conducted on EBMgt.

This study reviews the most recent literature on EBMgt to evaluate whether the calls for increased research on the topic have generated stronger levels of evidence. The author replicates Reay et al. (2009) and uses the same inclusion criteria to qualify the published research during the period between 2009 and 2012. The results of this research will be compared to that of Reay et al. to determine whether the research on EBMgt remains, for the most part, expert opinion or has the research strengthened since the last systematic review.

Overall, the findings of this study, similar to Reay (2009), find a severe lack of empirical research regarding EBMgt. This systematic review reiterates the need for more research generating stronger levels of evidence to promote the development, transition of EBMgt learning into practice. This study adds further support to the call for more empirical research to be conducted on EBMgt and its potential benefits to organizational performance.

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Table of Contents

ABSTRACT	II
ACKNOWLEDGEMENTS	III
LIST OF TABLES.....	VI
LIST OF FIGURES.....	VI
CHAPTER I: INTRODUCTION.....	1
WHAT IS THE EVIDENCE?.....	2
RESEARCH OVERVIEW	4
THESIS ORGANIZATION.....	5
CHAPTER II: LITERATURE REVIEW.....	6
THE EBMGT MOVEMENT	6
DOES EBMGT WORK IN PRACTICE ?	8
ADDRESSING THE PRACTICE APPLICATION OF EBMGT.....	9
SUMMARY	10
CHAPTER III: METHODOLOGY.....	11
METHOD.....	11
RESEARCH FRAMEWORK	11
CHAPTER IV: FINDINGS	16
RESULTS.....	16
FINDINGS.....	16
<i>Literature Quantity</i>	16
<i>Levels of Evidence</i>	17
CHAPTER V: DISCUSSION AND CONCLUSION.....	23
SUMMARY OF STUDY FINDINGS.....	23
RESEARCH IMPLICATIONS.....	25
LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH	25
CONCLUSIONS	27
APPENDIX A.....	31
APPENDIX A.....	32

APPENDIX A.....	33
APPENDIX B.....	34
APPENDIX C.....	35
APPENDIX D.....	38
APPENDIX E.....	40
APPENDIX F.....	41
APPENDIX G.....	42

List of Tables

Table 1.	Search Keyword Listing	13
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List of Figures

Figure 1.	Systematic Review Research Framework (PRISMA Flow Chart)	15
Figure 2.	Quantity of Evidence-based management publications per year	17
Figure 3.	Overview of Articles by Level of Evidence	18
Figure 4.	Levels of Evidence Comparison Chart	21

CHAPTER I: INTRODUCTION

Evidence-based management (EBMgt) is a relatively new and emerging movement in management theory, and modeled after evidence-based medicine (Briner, Denyer, & Rousseau, 2009). Interest in the topic appears to be gaining momentum, with an increasing amount of literature being published each year. For example, a Google search returns approximately 4.6 million results, Google Scholar produces about 12,300 results, and the academic database Business Source Complete provides 717 results. It is evident that there is a great deal of discussion on the topic of EBMgt across all media. However, scholars still suggest that practitioners are not implementing EBMgt to its full potential (Reay, Berta & Kohn, 2009; Briner et al., 2009; Liang, Howard, Leggat, and Murphy, 2012; Courtright, Stewart, and Ward, 2012).

Prominent scholars are promoting EBMgt (Tort-Martorell, Grima & Marco, 2011), educators are beginning to adopt the concept into their teaching (Briner et al., 2009), and opportunities are being created within the EBMgt community to encourage collaboration amongst scholars, educators and practitioners (Reay et al, 2009; Liang et al., 2012). All of these factors contribute to the advancement of the EBMgt concept. Reay et al. (2009) suggest that stronger empirical evidence highlighting the positive impact of EBMgt on organizational performance is necessary to encourage its adoption by managers.

As the concept becomes increasingly popular and managers become more aware of the evidence regarding EBMgt, they will be more likely to demand stronger evidence to assist in their decision-making processes (Reay et al., 2009). To this end, this study will look to evaluate the existing evidence on the topic and explore whether the level of evidence has increased over the last five years or if it remains, for the most part, expert opinion.

In 2009, authors Reay, Berta, and Kohn conducted a systematic literature review (on

literature up to 2008) to evaluate the amount of literature and the quality of the evidence regarding EBMgt (Reay et al., 2009). Reay et al. (2009) found that the majority of the literature was based on expert opinions and very little on empirical controlled studies. As a result, Reay et al called for more empirical work to be conducted regarding the development, implementation, and transition of EBMgt scholarship into practice.

This study proposes to evaluate the extent to which evidence on EBMgt is growing and at what levels. This study analyzes the literature published between 2009 and 2012 to evaluate whether the call for increased research on the topic of EBMgt has generated stronger evidence. The results of this research will be compared to that of Reay et al. (2009) to determine whether the evidence has strengthened since the last systematic review.

What is the Evidence?

EBMgt is about asking questions, examining logic, encouraging experimentation, and reinforcing continuous learning (Pfeffer & Sutton, 2006). Briner, Denyer and Rousseau (2009) define EBMgt as:

“making decisions through the conscientious, explicit, and judicious use of four sources of information: practitioner, expertise and judgment, evidence from local context, a critical evaluation of the best available research evidence and the perspectives of those people who might be affected by the decision.” (p. 19)

The literature review conducted by Reay et al. (2009) assessed the quantity and quality of literature concerning EBMgt produced between 1948 and 2008 and evaluated whether the evidence established that EBMgt improves organizational performance.

The need for more empirical research as argued by Reay et. al. (2009) is also evident in

other studies. Scholars suggest that managers do not fully realize the benefits of EBMgt and do not fully utilize the available academic research that is available, in their decision-making processes (Liang et al., 2012; Courtright et al., 2012). Potential reasons for the lack of use of EBMgt may include, for example, lack of applicability, difficult language, as well as lack of time and accessibility of information (Liang et al., 2012; Courtright et al., 2012).

To help address this issue, Reay et al. (2009) suggest that understanding the roles of researchers and managers in EBMgt presents an opportunity for collaboration to highlight the practical application and to promote increased research. For instance, a recent publication, *The Oxford Handbook of Evidence-based Management* promotes collaboration within the EBMgt community. The handbook examines real life management practice and the role EBMgt may play in improving decision-making (Rousseau, D.M., 2012). Rousseau (2012) advocates “there have been books about different aspects of putting rigor in decision-making, but this pulls EBMgt together into an integrated practice.”(Rousseau, D.M., 2012). Many opportunities exist to help improve management research and management education to support the EBMgt movement. However, executing these opportunities requires better quality relationships and collaboration among key stakeholders to help narrow the research-practice gap (Rousseau, D.M., 2012).

The concept of EBMgt is growing, however, even with increased popularity, scholars suggest that managers still do not use a comprehensive EBMgt approach (Reay et al., 2009; Briner et al., 2009; Liang et al., 2012; Courtright et al., 2012). The limited application of EBMgt, in conjunction with the findings from the Reay et al. (2009) systematic review, emphasizes a need for more empirical data on the potential benefits of EBMgt in organizational decision-making.

This study reviews the most recent literature on EBMgt to evaluate whether the calls for increased research on the topic have generated stronger levels of evidence. The author replicates Reay et al. (2009) and uses the same inclusion criteria to qualify the published research during the period between 2009 and 2012. The results of this research will be compared to that of Reay et al. to determine whether the research on EBMgt remains, for the most part, expert opinion or has the research strengthened since the last systematic review.

Research Overview

A systematic review will be conducted for the purpose of this study “to comprehensively locate and synthesize research that bears on a particular question, using organized, transparent and replicable procedures at each step in the process” (Litell, Corcoran, and Vijayan, 2008., pg. 1). To complete this review, the first step will be to formulate the research question. The next step will be to identify the research articles that meet the specific inclusion criteria. Following detailed inclusion criteria allows for consistency in the dataset collection. The results will first be screened by title and abstract. Only articles within the scope of the research question based on abstract review will be taken further for complete article review. The results will be documented on a spreadsheet. Categories include: the database searched, search term used, total articles retrieved, and a breakdown of the number of articles included and excluded in this study. The final step will be an appraisal of the quality of research by evaluating the research methods used and analysis of the data. This analysis is also documented in detail on a spreadsheet.

As a result of conducting this systematic review, I will provide a further analysis of the available literature to evaluate whether the calls for increased research on the topic of evidence-based management has generated stronger evidence.

Thesis Organization

This study is organized in chapters. Chapter two consists of a literature review, and explains EBMgt, summarizes Reay et al. (2009), and discusses the evolution of EBMgt. Chapter three describes the study methodology. Chapter four summarizes the study findings. Chapter five concludes the discussion, and highlights the limitations of this research, and provides areas for future research.

CHAPTER II: LITERATURE REVIEW

To provide context for the study, this chapter describes EBMgt, provides an overview of Reay et al. (2009), and discusses emerging interest in the field of evidence-based management.

The EBMgt Movement

Evidence-based management (EBMgt) has become increasingly popular over the last few years (Reay et al., 2009; Baba & HakemZadeh, 2012). A scholarly movement has emerged advocating for the use of evidence-based management in decision-making (Tort-Martorell, et al., 2011). However, even with the increasing body of literature on the topic, scholars advocate that practitioners still do not fully utilize this academic research in decision-making processes (Reay et al., 2009; Briner et al., 2009; Liang et al., 2012; Courtright et al., 2012).

Liang et al. (2012) argue that a number of barriers exist that discourage the use of evidence-informed decision making, including: excessive literature to review; a lack of accessibility and applicability to local content; finances to support practice; and buy-in from senior management, as well as difficult language; resistance to change; time pressures and inadequate search skills. Courtright et al. (2012) reiterates these findings and add the following similar reasons: people are too busy with daily responsibilities and resist EBMgt and people have difficulty with processing new information.

The literature provides suggestions to help minimize these barriers and transition to an evidence-based approach. Liang et al. (2012) advise that the interaction between researcher and practitioner helps to increase the applicability of research in practice, and highlights that these partnerships would be successful when they include the intended audience at all stages of the research, with support from organizations and sufficient resources. Additionally, in order to further minimize some of the barriers to implementing an EBMgt approach, Courtright et al.

(2012) suggests that the use of relevant data to establish a need for EBMgt is required to foster EBMgt practices into existing organization strategy, and to promote its use throughout the organization and plan for training and continuous emphasis on EBMgt practices (Courtright et al., 2012).

In response, many prominent scholars are calling for changes to improve upon the current curriculum in management education, to include more emphasis on EBMgt to bridge the research-practice gap (Rousseau & McCarthy, 2007; Charlie, Brown & Rynes, 2011). Khurana (2010) advocates that business schools have promoted the idea of management as a profession and are now taking the necessary steps to provide training (Baba & HakemZadeh, 2012). Furthermore, Briner et al. (2009) suggests that management educators are now adopting an EBMgt perspective in their teaching. For example, Gros, Goul and Demirkhan (2011) highlight a new virtual technology, the TUN e-learning system. The objectives of this program are to facilitate EBMgt learning, to develop and use processes, to practice scenario-based exercises to assist the learning of effective decision making, and to help relate academic research to industry (Gros et. al., 2011). The program focuses on university business education and helps students gain the necessary skills, knowledge, and hands-on experience to employ an EBMgt approach (Gros et. al., 2011).

In order to facilitate easier access to relevant information and to support collaboration within the EBMgt community, a number of organizations have emerged to increase the awareness of EBMgt. For example, the Centre for Evidence-based Management (CEBMa), was established in Amsterdam and with the “mission is to promote, develop and teach evidence-based practice to enhance the profession of management. The CEBMa, provides support and resources to managers, consultants, teachers and academics and others interested in evidence-

based practice" (Pfeffer & Sutton, 2011, "Evidence-based Management", website, para. 1).

Another example is the Evidence-Based Management Collaborative, which brings together international scholars, journal editors and professors, to promote the use of evidence in management practice (Olivas-Lujan & Rousseau, 2010). The main focus of the EBMgt Collaborative is "to close the gap between management research and the ways practitioners make managerial and organizational decisions and educators teach organizational behavior, theory, strategy and human resources management" (Olivas-Lujan & Rousseau, 2010, p. 12).

Does EBMgt Work in Practice?

In 2009, Reay et al. (2009) conducted a systematic review of the literature on EBMgt. The authors assessed the volume, type and quality of the evidence on EBMgt and also evaluated whether there was any evidence showing that EBMgt improved organizational performance. Literature published prior to 2009 was targeted for the review and dated back to 1948. The research provided a variety of relevant information for both researchers and practitioners on the topic of EBMgt (Reay et al., 2009). Reay et al. (2009) identified a large number of articles published on EBMgt decision-making, with the majority published between 2004 and 2008. Their findings illustrate that the concept of EBMgt has gained a significant amount of attention, particularly in 2006 and 2007, where a substantial increase in publications was identified (Reay et al., 2009).

Although the authors identify a number of articles on EBMgt, they found that the majority of this literature was based more on expert opinion and very little empirical evidence (Reay et al., 2009). The authors advocate that this may contribute to the slower uptake of EBMgt practice. Reay et al. (2009) suggests "before taking action, managers require stronger evidence that demonstrates the value of EBMgt in improving organizational performance" (Reay et al.,

2009, p. 13). This highlights that it is unreasonable for scholars to expect managers to practice EBMgt before it is proven to positively affect performance. As a result, the authors call for more empirical work to be conducted in the field.

Addressing the Practice Application of EBMgt

EBMgt is being widely promoted by scholars and educators to highlight the importance of EBMgt and the potential benefits on firm performance. However, the evidence shows that managers are not utilizing EBMgt to its full potential (Liang et al., 2012). Strategies to promote the EBMgt movement, and encourage the use of EBMgt have been initiated over the last few years, including the “Evidence-based Management Collaborative,” The Centre for Evidence-based Management (CEBMa), as well as the recently published *The Oxford Handbook of Evidence-based Management*. Promoting collaboration between researcher and practitioner helps to increase the applicability of research in practice (Liang et al., 2012). With the implementation of these collaborative initiatives, we would anticipate that the gap between management research and management practice would narrow and in effect translate into more empirical research that promotes the benefits of EBMgt (Liang et al., 2012).

To this end, this study will assess the most recent literature to evaluate whether the quality of the research on EBMgt has changed since the last systematic review. As discussed, as of the end of year 2008, Reay et al. (2009) found that the majority of literature was based more on expert opinion and very little empirical research.

The current economic climate and the post 2008 economy present an opportunity to determine how organizations are adjusting to the new world economy. Jenkins (2009) advocates that one of the factors which has not been given sufficient attention in the wake of the global financial crisis is the extent to which poor decisions, which led to corporate failures were caused

by information overload and poor information design. A need exists to move beyond improving the quality of the data to improve quality decision-making. Therefore, this study will review the published research during the period between 2009 and 2012, and evaluate whether the calls for increased research on the topic has generated stronger levels of evidence to support EBMgt in the decision-making process.

Summary

EBMgt is an emerging movement that continues to gain momentum, with a steady increase in literature being published each year. However, as of the end of year 2008, Reay et al. (2009) found that the majority of literature was based on expert opinions and very few on empirical controlled studies. As a result, the authors called for more empirical work to be conducted about developing, implementing, and transitioning EBMgt learning into practice. This study provides a further analysis of the available literature to evaluate whether the calls for increased research on the topic of EBMgt has generated stronger evidence. The results of this research will be compared to that of Reay et al. (2009) to determine whether the research on evidence-based management learning into practice has strengthened since the last systematic review.

CHAPTER III: METHODOLOGY

Method

In 2009, Reay et al. undertook a systematic literature review on the topic of EBMgt. This study-included literature published up to the year 2008 and was designed to evaluate the amount of literature and the quality of the evidence regarding the concept of evidence-based management (Reay et al., 2009). Reay et al. (2009) concluded that the majority of the literature was based on expert opinions and very few on empirical controlled studies. As a result, Reay et al called for more empirical work to be conducted about developing, implementing, and transitioning EBMgt learning into practice.

Since then there has been much more written about EBMgt. The aim of this study is to conduct a systematic review of the literature that was published since the authors call for quality and empirical evidence. The author chose to replicate the study of Reay et al., (2009) with the same inclusion criteria used by the previous authors to qualify the published research during the period between 2009 and 2012 to determine whether the quality of the research on the concept of EBMgt has changed.

Research Framework

A systematic literature review will be completed and will cover all articles on the subject of evidence-based management published during the period of 2009 to 2012.

A systematic review is a literature review that focuses on a specific topic and provides a thorough overview of the evidence in a particular field (Bennet, G. & Jessani, N., 2011). The purpose of a systematic review is to compile a summary of all possible studies that fall within the scope of the review. Pai et al., (2004) provided an overview of the process as the following five steps: (1) formulation of a research question; (2) identification of search and inclusion criteria for

screening the manuscripts; (3) assessment of quality; (4) amalgamation and summation of results; and (5) interpretation of the results (Bennet, G. & Jessani, N., 2011).

To complete the review, following the formulation of a research question, the process of identifying research articles meeting the inclusion criteria was introduced. The following databases will be used in searching for the published articles: (1) Business Source Complete; (2) Academic Search Complete and (3) PsycInfo. These databases were selected in order to encompass various disciplines without restrictions to any specific field and inclusive of all management levels. Similar to Reay et al, the author is interested in the entire range of work on the topic of EBMgt, from opinion-based articles to empirical studies, in all management settings regardless of industry.

The list of keywords and subject terms used in Reay et al. (2009) study was recycled in this research to minimize deviation in comparing the results, and these keywords are presented in Table 1. To complement the previous study, additional subject terms were also taken into consideration, which in the author's opinion, assists to filter the articles most relevant for inclusion.

The results of the initial search were first screened by the title of the article to determine the articles' relevance to our research question. The screened articles were then subjected to an abstract to further assess whether the inclusion criteria was met.

Table 1: Search Keyword Listing

Keywords Listing	
Evidence-based management	Knowledge utilization
Evidence-based decision making	Research utilization
Organizational decision making	Best practice
Research-to-practice	Best evidence
Strategic decision making	Management research
Implementation science	Knowledge translation
Knowledge utilization	Knowledge transfer

(Source: Reay, Berta & Kohn, 2009)

Only those articles that were within the scope of the research question based on the abstract review proceeded to a complete article review. The following inclusion criteria were used in this study:

1. are written in English;
2. published during the period of January 2009 through to December 2012;
3. peer-reviewed articles;
4. Focus specific to Evidence-based management (all areas of management, i.e.: decision making, human resources, leadership, strategy, etc.)
5. Include all levels of evidence (i.e.: opinion-based, empirical research, meta-analysis, etc.)

Similar to Reay et al. (2009), any research articles including one or more of the following criteria are to be excluded from the selection. The exclusion criteria are as follows:

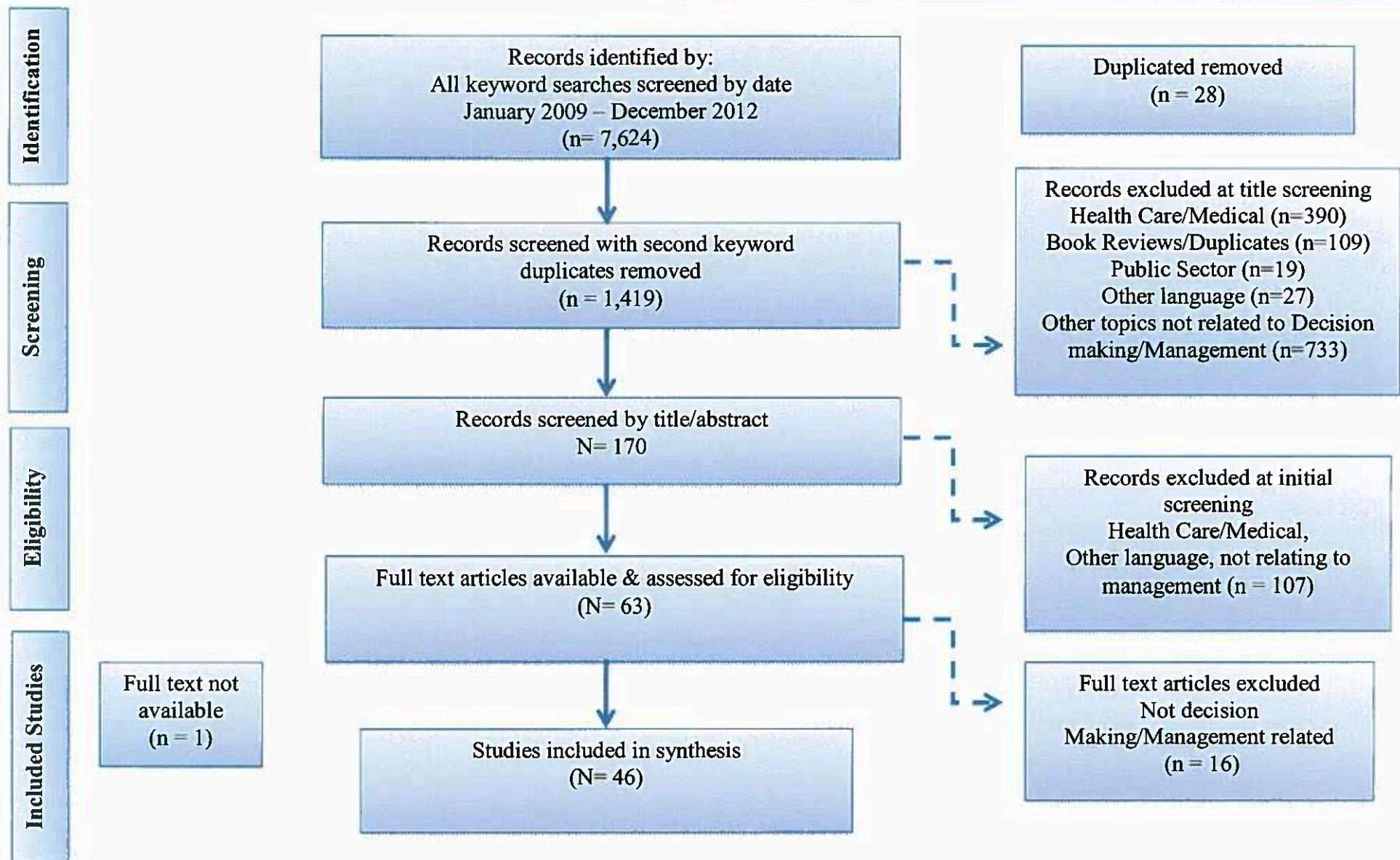
1. are not written in English;
2. published prior to January 2009;

3. any duplicate entries,
4. book reviews, and;
5. articles using the term “evidence-based” but in reference to another topic other than management, (i.e. Health/medical, and public sector);

The results of each search were documented on a spreadsheet; to include the database searched, search term used, total articles retrieved, and a breakdown of the number of articles included and excluded in this study (see Appendix A).

The final step includes the appraisal of the quality of research by evaluating the research methods used and the analysis of the data. This step considers the value of the studies under consideration and eligibility for inclusion based on the criteria as outlined (Bennet, G. & Jessani, N., 2011). In this study, a modified assessment rubric was used, originally developed in medical research and adapted for management research by Reay et al. (2009). The modified rubric establishes a scale of 1 to 6 to assign articles. The strongest level of evidence identified as level 1 and the weakest as 6. Using this criterion, the modified rubric allowed us to categorize the management articles according to the strength of the evidence for comparison purposes. The results for this research will be compared to that of Reay et al. to determine whether the research on EBMgt learning into practice have changed since the last systematic review.

FIGURE 1: SYSTEMATIC REVIEW RESEARCH FRAMEWORK (PRISMA)



CHAPTER IV: FINDINGS

A systematic review was conducted using the framework as outlined in the methodology section of this study. The results of this systematic review will be explored in this chapter.

Results

Following the original selection criteria, a total of one hundred seventy articles were identified. A number of articles, while meeting the lower-level search criteria, did not meet the requirements on the higher-level inclusion criteria. Numerous articles were excluded because the subject of the articles used “evidence-based” in relation to another topic area such as health care/medical, education and social services, etc. These articles did not meet the scope of the study and did not encompass the decision-making process as it relates to management. Additionally, a further twenty-eight articles were excluded because they were duplicate entries, reviews or editorials. Finally, one article was excluded because a full text version was not available. Of the original sample, a total of forty-six articles were included in this systematic review. The results of each database search were documented on a spreadsheet. A breakdown of the number of articles included and excluded in this study is outlined in Table 3.

Findings

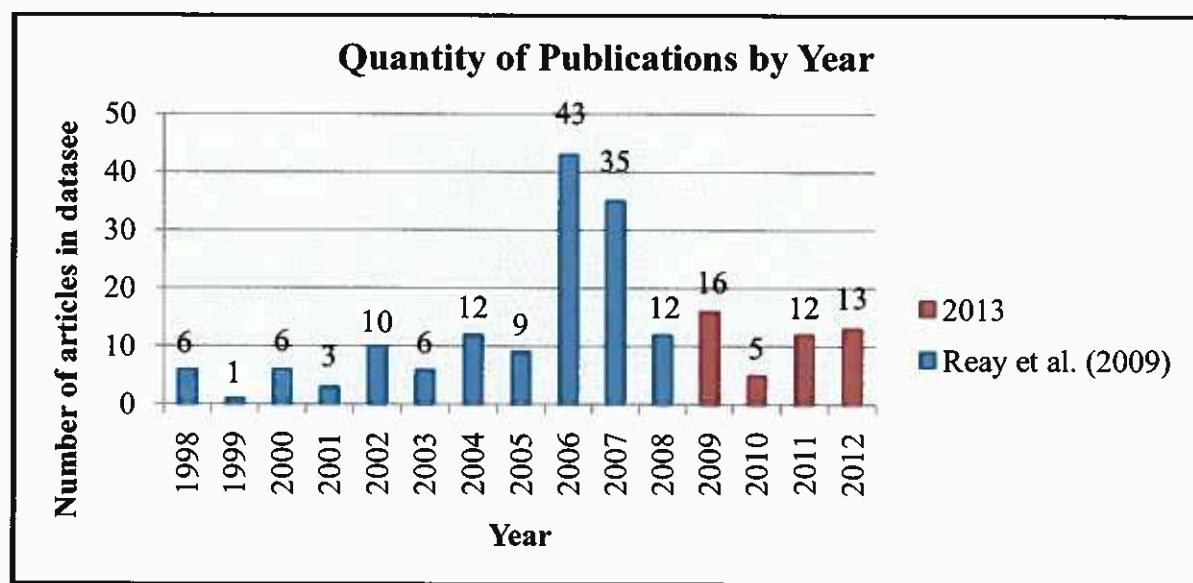
The framework used in this study assisted in identifying the quantity of literature and the corresponding level of evidence for each and is highlighted in Appendix B.

Literature Quantity

Evidence-based management is an emerging field that continues to gain momentum, with a steady increase in literature being published each year. An illustration of the amount of

literature produced by year since 1998 is shown in Figure 1 below. Reay et al. (2009) noted in 2006 and 2007, a significant increase in publications concerning EBMgt. However, the majority of the articles were primarily expert opinion. Over the last three years of the Reay et al. study (2006-2008), the authors did note an increasing number of articles based on higher levels of evidence (Reay et al., 2009). As of 2008, the distribution of literature appears to have returned to a more sustainable level. It has increased each year with the exception of 2010, where only five published articles were identified. A total of 16 articles were identified in 2009, with incremental increase seen from 2010 to 2012, from five to thirteen publications.

Figure 2: Quantity of Evidence-based management publications per year



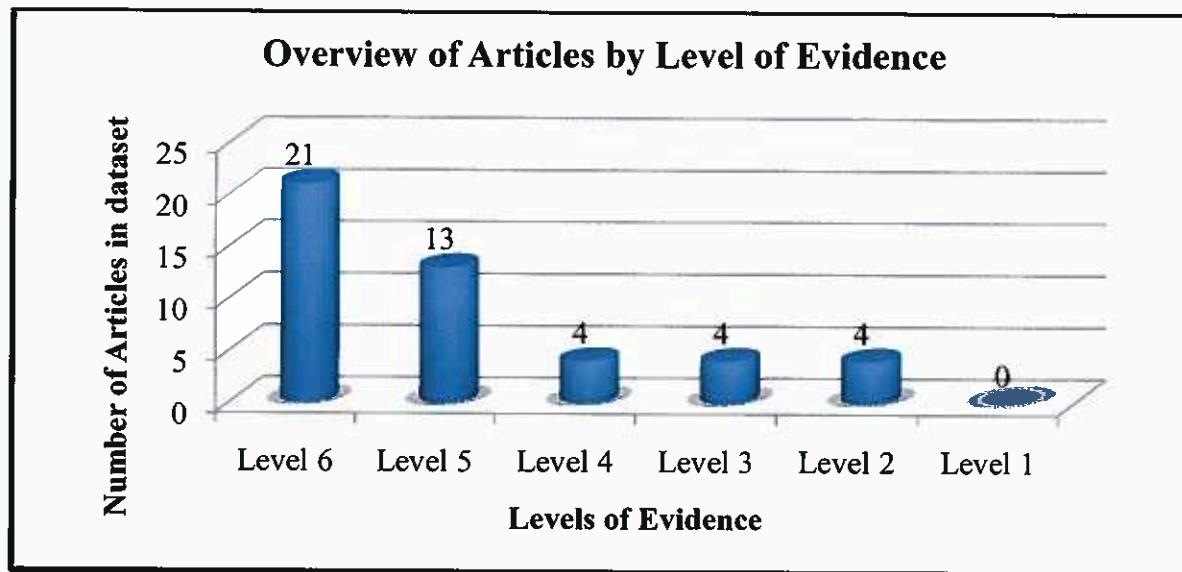
Overall this study found the quantity of literature published annually has decreased since the last systematic review, however is upward trending since 2010.

Levels of Evidence

With the use of the assessment rubric identified in the methodology section of this paper, a total of 45.6% of articles in the dataset were identified as Level 6 (the weakest level of evidence); 28.3% of the articles were identified as Level 5; while Level 2, 3, and 4 all account

for approximately 8.7% of the dataset; with no articles being identified as generating the strongest level of evidence (Level 1). An overview of articles distributed by level of evidence is shown in Figure 2. Similar to Reay et al. (2009), this study found the majority of literature to be generating Level 6 evidence i.e. expert opinion.

Figure 3: Overview of Articles by Level of Evidence



The remainder of this chapter will explain the results for each level of evidence, and provide examples of the articles in each of the groupings. A full listing of references for each category is included in the Appendices.

Level 6

A total of twenty-one articles (45.6%) were identified as having the lowest level of evidence (Level 6). These articles were more expert opinion-based. Similar to Reay et al., (2009), most of the articles used personal experience, examples or anecdotes to back up the papers findings, with no research conducted to validate the arguments presented. An example would be Marr (2009), which uses examples and anecdotes to explain key steps that organizations should take if they aspire to adopt an EBMgt approach to strategic decision-

making. Similarly, Graen (2009) recounts from his own personal experience, that management graduates have had little exposure to EBMgt studies. He proposes that it is necessary to improve upon current management training and seek to become more specialized in application of EBMgt (Graen, 2009). A complete reference list of articles included in this category is outlined in Appendix C.

Level 5

This study identified 12 articles (28.3%) at level 5 evidence. These studies were more descriptive in nature and/or self-reported studies. For example, Bansal, Bertels, Ewart, MacConnachie, and O'Brien (2012) focused in on one systematic review - that they themselves conducted - to illustrate their experience in the research-practice gap - "The Culture Project". Each of the participants shared their experiences while conducting the review. A complete reference list of articles included in this category is outlined in Appendix D.

Level 4

A total of 4 articles were classified as Level 4, 8.7% of the dataset. These particular studies included small-samples or single-site case studies. These case studies had established research procedures and for the most part, were theoretically motivated and conducted by researchers at an arm's length from the organization being studied (Reay et al., 2009). For example, Man, Lui, and Lai (2010) combined a theoretical framework with actual practice to illustrate how EBMgt can be accomplished in product development. The gap between practitioner and researchers is a recurring problem. Authors believe that more open communication and sharing between researchers and practitioners will help to minimize this gap. Man et al. (2010) suggests that more interaction between practitioners and scholars is required to find out what their needs are to identify research that is relative. The case study highlighted how

little academic research has informed industry practices (Man et al., 2010). Finally, Man et al. (2009) recommended a formation of an EBM community, drawing together scholars. A complete reference list of articles included in this category is outlined in Appendix E.

Level 3

A total of 4 articles, 8.7% were classified as presenting level 3 evidence. These studies were classified as multi-site case studies or large-sample quantitative studies with data collection from more than one organization (Reay et al., 2009). To illustrate, Miller (2009) conducted a case study based on an experiment by analyzing data from a number of student groups and different classes. Some student groups were provided brainstorming instructions and other groups were provided with nominal group technique. A comparison of the quantity of ideas produced by each group revealed that “brainstorming continues to be regarded as an effective method to facilitate creativity” (Miller, 2009, p. 229). Miller (2009) demonstrates the benefits of using nominal group technique versus brainstorming groups for idea generation. The author feels that the value of EBMgt is highlighted in this experiment by showing students to see material evidence from their own actions, which likely contradicts their opinions about the usefulness of brainstorming (Miller, 2009). A complete reference list of articles included in this category is outlined in Appendix F.

Level 2

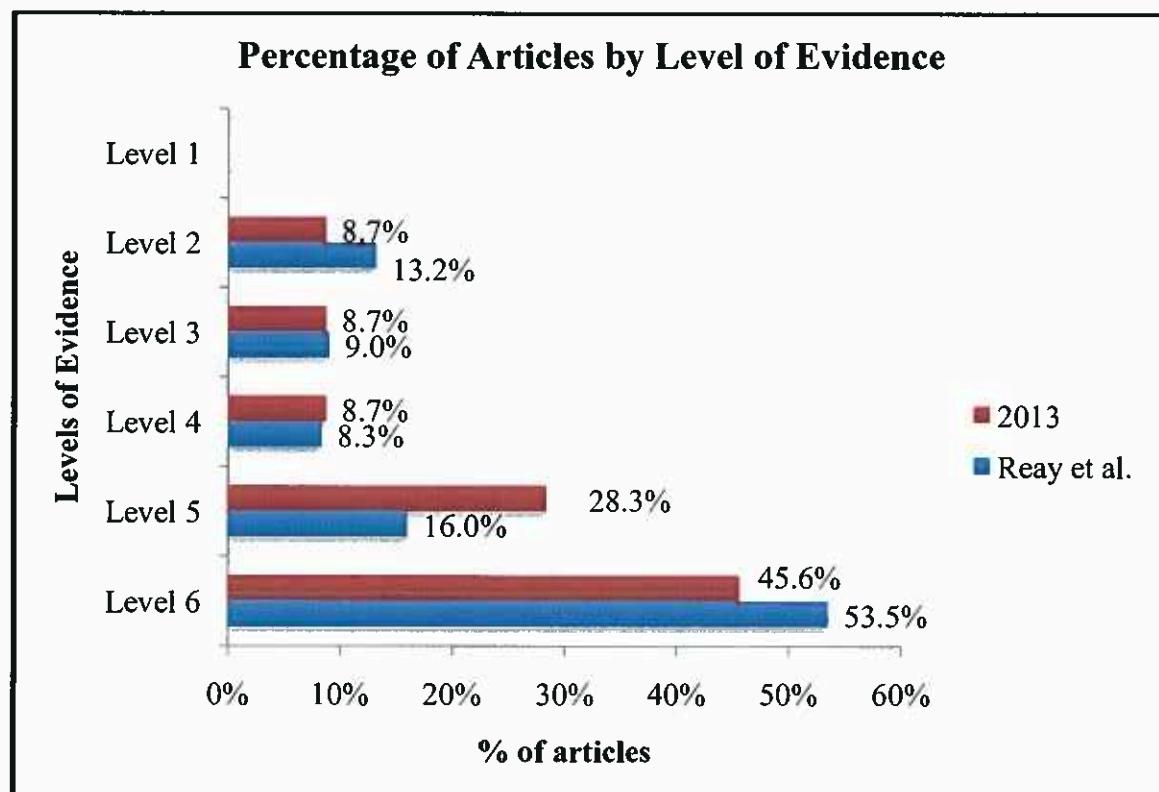
This study identified 4 articles, 8.7% as level 2 evidence. Articles identified at this level, are high quality literature reviews, which provides synthesis and actionable recommendation (Reay et al., 2009). For example, Liang et al. (2012) conducted a literature review of descriptive, qualitative and quantitative studies, discussions, and reports to identify material on evidence-informed decision-making (EIDM) among health service managers. The authors identified

barriers to EIDM and presented factors that may help to encourage the application of evidence in the decision making process. Factors such as, collaboration, organizational support, strong leadership and presentation of evidence, are all areas that could be evaluated to encourage the use of EIDM (Liang et al., 2012). The study highlights that EIDM is important to improving the quality of decision-making and presents a framework to assist with developing a better understanding of how these factors interact and affect EIDM (Liang et al., 2012). A complete reference list of articles included in this category is outlined in Appendix G.

Level 1

Like Reay et al. (2009), this study found no articles generating the strongest level of evidence, being Level 1 evidence.

Figure 4: Level of Evidence Comparison Chart



This study highlights a decrease in the amount of literature published since the last systematic review, conducted by Reay et al. (2009). However, the publishing levels are trending upwards. The lowest level of evidence, level 1, shows a slight decrease since the last systematic review, from approximately 54% of the dataset to 46%. Articles identified at Level 5 evidence show a notable increase, from 16% in 2009 to 28% , while articles generating level 3 and level 4 evidence remain relatively consistent with the findings of Reay et al., at almost 9%. Articles producing level 2 evidence appear to have decreased from 13.2% in 2009 to 8.7%. Overall, the literature included in this study continues to be predominantly expert opinion and lacking in empirical evidence.

CHAPTER V: DISCUSSION AND CONCLUSION

The purpose of this study was to conduct a systematic review of the literature published on the topic of EBMgt between 2009 and 2012. The aim was to evaluate the extent to which the evidence on EBMgt is growing and at what levels. The results of this research were compared to that of Reay et al. (2009) to determine whether the evidence has strengthened on EBMgt since the last systematic review. Overall the findings of this study have proven to be quite unexpected and contradictory to what was anticipated considering the increased awareness on the topic through research and teachings. This final chapter will discuss the findings further.

Summary of Study Findings

The findings of this study highlight an upward trend in published literature from 2009 to 2012, with the exception of 2010 where only five articles were published. The published literature has dropped significantly from 2006 and 2007 levels, where 43 and 35 articles were published, respectively. However, Reay et al. (2009) identified most of these articles as being based on more expert opinion. In other words, researchers may have reacted to Reay et al. (2009) by self-policing. They appear to be reducing the total amount of output on EBMgt, and making an attempt to strengthen, which is illustrated with the increase in descriptive studies.

This study found that the majority of the literature being published still remains based more on expert opinion with very little on empirical controlled studies. The lowest level of evidence, level 6, did show a slight decrease since the last systematic review, but remains the most prevalent in research. Articles identified at Level 5 evidence show a notable increase, 12% increase over the last review, while level 3, and level 4 remain status quo, as compared to Reay et al. (2009). Articles identified as generating level 2 evidence have actually seen a decrease of almost 5% since the last systematic review.

The higher levels of evidence have not seen any noteworthy shifts over the last 5 years.

This may be attributed to the fact that managers still do not utilize EBMgt to its full potential and more work needs to be done to highlight the importance of an EBMgt approach. With that being said, there does appear to be an increase in articles identified as having level 5 evidence. These studies are considered to be more promising practice articles. This increase may be attributed to the recent attempts to promote the concept, educate and proceed with a more collaborative approach. The literature emphasize strategies that are being implemented to help encourage the use of EBMgt, such as the “Evidence-based Management Collaborative”, The Centre for Evidence-based Management (CEBMA), and most recently the “Handbook for EBMgt”. The increase in level 5 articles may signify a slight narrowing of the research-practice gap. The endorsement of prominent scholars, and the promotion of collaboration between participants, may lend to the increase in more applicable research, which in turn encourages EBMgt, albeit slowly.

Overall, the findings of this study echoes that of Reay et al. (2009) and the literature still remains, for the most part, predominantly more expert opinion and lacking in empirical evidence. In order to promote the implementation of an EBMgt approach, more rigorous research is required to promote its positive contribution on organizational performance.

This systematic review emphasizes the need for research generating stronger levels of evidence to promote the implementation of an EBMgt approach. This study adds further support to the Academy of Managements call for more empirical research to be conducted on transitioning EBMgt learning into practice.

Research Implications

This study, much like Reay et al. (2009) highlights that research is still needed to better understand EBMgt and what can be done to help facilitate its application in the decision making process. Although it is a relatively new topic, many decades have been spent developing the concept. The findings of this study provides additional evidence in support of the need for stronger empirical evidence to support EBMgt and its previously documented positive impact on organizational performance, so that a case can be made for managers to adopt EBMgt in the decision making process.

This study contributes to the academic community by providing a continuation of the study conducted by Reay et al. in 2009, offering further insight into the progress of the EBMgt movement. The findings in this study emphasize that more work needs to be done to help augment the strength of research on the topic of EBMgt to demonstrate the value in improving organizational performance.

Additionally, this study contributes to both the academic community and to practitioners by further supporting the efforts of scholars to promote EBMgt and educators to teach EBMgt. It also supports the current emphasis on collaborative communities, which are facilitating the advancement of evidence in relation to this topic.

Limitations and Recommendations for Future Research

It is important to note the methodological limitations of this study. First, this study used the same assessment rubric developed by Reay et al. (2009), for comparative purposes. This rubric was modified from an assessment rubric used in the medical field, which the authors had prior experience with and modified to fit management literature. Management literature, however tends to be more qualitative and difficult to interpret. Reay et al. (2009) acknowledged

that the development of the rubric was not as rigorous as those that have been produced to assess research in the medical field and warrants further development. This rubric was used in this study so that a valid comparison could be made with the work of Reay et al. (2009). This also represents an opportunity for further study. Now that the data has been collected, the study can be repeated using a more rigorously designed assessment rubric to evaluate the strength of the evidence and be compared to this study to see if there are any variations in the findings.

Secondly, this study has completed searches in three academic databases to assess literature for the dataset. However, the “gray” area literature has not been searched, which may have provided additional research with higher levels of evidence. This research tends to be informally published reports that may be difficult to locate, as they are not typically located in published journals. Briner et al. (2009) suggests that the search of this literature would be critical in locating a large number of reviews on management issues, which would have been commissioned by organizations. An analysis of this literature presents an opportunity for future study to observe any variations in the overall result and evaluate whether the strength of the evidence is augmented by these reports.

Finally, a single reviewer conducted this systematic review. Typically, a team of at least two individuals would conduct the review to help minimize any potential for data collection and analysis bias. However, the author made every attempt to follow the specific protocol required when conducting a systematic review to ensure reliability, validity and replicability.

The findings of this systematic review illustrates that an opportunity still exists for future research to be conducted examining the use of EBMgt in the decision making process and what impact it may have on organizational performance. Exploring the effects of EBMgt management on firm performance may help to advance awareness and provide further incentive for managers

to utilize an EBMgt approach in everyday decision-making.

Conclusions

In conclusion, this study provides a further look into the quantity and quality of the literature being published on the topic of EBMgt. The author completed a systematic review of the literature relating to EBMgt decision-making. This systematic review provided a developed research question and outlined detailed selection criteria, which allowed for consistency in literature selection. The results of this systematic review were well documented within the framework adopted from Reay et al. (2009).

The updated research shows that the amount of literature since the last systematic review has decreased and the evidence remains predominantly more expert opinion articles. However, the study also highlights a noteworthy increase in descriptive/self-reported studies. Overall, the findings of this study, similar to Reay (2009), find a severe lack of empirical research regarding EBMgt. This systematic review reiterates the need for more research generating stronger levels of evidence to promote the development, transition of EBMgt learning into practice. This study adds further support to the Academy of Managements call for more empirical research to be conducted on EBMgt and its potential benefits to organizational performance.

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Appendix A

Systematic Review Article Inclusions/Exclusions

Database	Keyword 1	Keyword 2	Results	Articles identified	Excluded Articles	Included Articles
Business Source Complete	Evidence-based Management	N/A	39	39	11	28
	Evidence-based Decision Making	N/A	16	16	12	4
	Organizational Decision Making	N/A	64	64	56	8
	Research-to-practice	N/A	855		0	0
	Research-to-practice	Management	211	211	193	18
	Strategic Decision Making	N/A	242			
	Strategic Decision Making	Management	78	78	73	5
	Best practice	N/A	22	22	21	1
	Evidence-Informed Decision Making	N/A	0	0	0	0
	Evidence-based Management	Knowledge transfer	1	1	0	1
	Evidence-based Management	knowledge translation	0	0	0	0
	Evidence-based Management	Management research	8	8	5	3
	Evidence-based Management	Best Practice	0	0	0	0
	Evidence-based Management	Research Utilization	0	0	0	0
	Evidence-based Management	Strategic decision making	1	1	1	0
	Evidence-based Management	Knowledge utilization	0	0	0	0
	Evidence-based Decision making	knowledge translation	0	0	0	0
	Research-to-practice	Evidence-based Management	3	3	1	2
	Strategic Decision Making	Evidence-based Management	1	1	1	0

Appendix A

Systematic Review Article Inclusions/Exclusions

Database	Keyword 1	Keyword 2	Results	Articles identified	Excluded Articles	Included Articles
PsycINFO	Evidence-based Management	N/A	30	30	18	12
	Evidence-based Decision Making	N/A	37	37	28	9
	Organizational Decision Making	N/A	43	43	28	15
	Research-to-practice	N/A	2264			
	Research-to-practice	Management	236	236	225	11
	Strategic Decision Making	N/A	82	82	69	13
	Best practice	N/A	876			
	Best practice	Decision Making	38	38	33	5
	Evidence-Informed Decision Making	N/A	6	6	6	0
	Evidence-based Management	Knowledge transfer	0	0	0	0
	Evidence-based Management	knowledge translation	1	1	1	0
	Evidence-based Management	Management research	1	1	0	1
	Evidence-based Management	Best Practice	0	0	0	0
	Evidence-based Management	Research Utilization	0	0	0	0
	Evidence-based Management	Strategic decision making	0	0	0	0
	Evidence-based Management	Knowledge utilization	0	0	0	0
	Evidence-based Decision making	knowledge translation	0	0	0	0
	knowledge utilization	N/A	16	16	12	3
	Research-to-practice	Evidence-based Management	1	1	1	0
	Strategic Decision Making	Evidence-based Management	0	0	0	0

Appendix A

Systematic Review Article Inclusions/Exclusions

Database	Keyword 1	Keyword 2	Results	Articles identified	Excluded Articles	Included Articles
Academic Search Complete	Evidence-based Management	N/A	109	109	106	3
	Evidence-based Decision Making	N/A	117	117	108	9
	Organizational Decision Making	N/A	29	29	25	4
	Research-to-practice	N/A	1940			
	Research-to-practice	Management	129	129	127	2
	Strategic Decision Making	N/A	111	111	104	7
	Evidence-Informed Decision Making	N/A	14	14	9	6
	Evidence-based Management	Knowledge transfer	0	0	0	0
	Evidence-based Management	knowledge translation	0	0	0	0
	Evidence-based Management	Management research	0	0	0	0
	Evidence-based Management	Best Practice	0	0	0	0
	Evidence-based Management	Research Utilization	0	0	0	0
	Evidence-based Management	Strategic decision making	0	0	0	0
	Evidence-based Management	Knowledge utilization	0	0	0	0
	Evidence-based Decision making	knowledge translation	1	1	1	0
Research-to-practice		Evidence-based Management	2	2	2	0
Strategic Decision Making		Evidence-based Management	0	0	0	0
Totals			7624	1447	1277	170

Appendix B

Levels of Evidence Rubric

Levels of Evidence		
Level of Evidence	Management Research	Articles in Dataset
Level 1	Randomized Controlled Studies, Meta-analyses	
Level 2	Non-randomized Controlled Studies (a) high quality, replicable literature review which provides a synthesis and actionable recommendation. (b) a systematic literature review non randomized controlled studies	Liang et al. (2012); Levy et al. (2010); Reay et al. (2009); Heisig (2009);
Level 3	Observational Studies Comparative, multisite case studies or large-sample quantitative studies involving data collection from more than one site (organization)	Courtright, Stewart & Ward (2012); Miller (2009); Hamlin et al. (2011); Liberman-Yaconi, Hooper, Hutchings (2010);
Level 4	Before After Studies Small-sample qualitative or quantitative studies. Theoretically motivated and are completed by trained researchers who have (at most) an arm's length relationship with the organization under study for objectivity.	Pearson et al. (2012); Gary et al. (2012); Man et al. (2010); Booker et al. (2011);
Level 5	Descriptive Studies Descriptive studies and/or self reported studies. These studies generally include observations, admonitions, and recommendations of import to managers.	Bansal et al. (2012); Gros et al. (2011); Morrell-Samuels et al. (2009); Ramsey (2011); Thomas (2009); Farley-Ripple (2012); Briggs and McBeath (2009); Burnette et al. (2011); Supyuenyong and Swierczek (2011); Citroen (2011); Heavey et al. (2009); Butler (2010); Cray and Inglis (2011)
Level 6	Expert Opinions Opinion of respected authorities or expert committees without additional data. Some papers offer anecdotal evidence as a means of supporting expressed opinions.	Akdere & Altman (2009); Walter et al. (2012); Mesny & Mailhot (2012); Graen (2009); Marr (2009); Edwards (2011); Barzelay and Thompson (2009); Briner et al. (2009); Tingling and Brydon (2010); Tort-Martorell et al. (2011); Juniper (2012); Wensley (2009); van Aken and Romme (2009); Driouchi and Bennett (2012); Baker & Welner (2012); Rowley (2012); Jenkins (2009); Baba and Hakem Zadeh (2012); Charlier (2011); Martin and Parmar (2012); Urban & Trochim (2009),

Appendix C

Level of Evidence - 6

Akdere, M., & Altman, B. A. (2009). An organization development framework in decision making: Implications for practice. *Organization Development Journal*, 27(4), 47-56.

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Appendix D

Level of Evidence - 5

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Appendix E

Level of Evidence - 4

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Pierson (2012), Building capacity for evidence informed decision making in public health: a case study of organizational change. (2012). *BMC Public Health*, 12(1), 137-148. doi: 10.1186/1471-2458-12-137

Appendix F

Level of Evidence - 3

Courtright, S. H., Stewart, G. L., & Ward, M. M. (2012). Applying research to save lives: Learning from team training approaches in aviation and health care. *Organizational Dynamics*, 41(4), 291-301. doi: 10.1016/j.orgdyn.2012.08.004

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Appendix G

Level of Evidence - 2

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