



# Data-Informed Decision Making - Annotated Bibliography

*Selected books, research articles, and popular literature for those seeking deeper knowledge.*

## What is Data-Informed Decision Making (DIDM)?

Pfeffer, J., & Sutton, R. I. (2006). Evidence-based management. *Harvard Business Review*, 84(1), 62-74.

This article addresses evidence-based management and its benefits and applications. The authors firstly discuss the origin of evidence-based management and empirical findings from DIDM in the field of medicine. Here, the idea of DIDM is defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients." They argued that this evidence-based technique (a.k.a. data-informed decision making) can be also applied by managers of organizations (and by extension, leaders of academic units). Given that this technique provides a more scientific and systematic decision making process, leaders can reduce biases, errors, and risks for their unit. For example, you can think of whether the use of incentives or benefits as a compensation strategy may benefit or harm prospects for future research grants or teaching performance.

Kvernbekk, T. (2011). The concept of evidence in evidence-based practice. *Educational Theory*, 61(5), 515-532.

There exists a vast literature on evidence-based practice (EBP) in education. This article discusses several DIDM directions in education. These directions include teaching, abuse of evidence, and future avenues of DIDM research. The author theoretically argues that evidence helps to reduce vague and abstract debating (which can be fraught with bias-laden idiosyncratic preferences) and improve the decision-making process in educational settings with respect to productivity, cost of enrollment, and administration costs. Kvernbekk develops this claim by discussing different concepts of evidence and by inquiring into three aspects of the evidentiary relation: the meaning of "based," underdetermination, and the relativization of evidence.

Schank, R. C., Llyras, D., & Soloway, E. (2010). *The future of decision making*. New York: Palmgrave Macmillan.

We now possess the capability to make great business decisions in even the most difficult situations with the use of today's advanced software capability. The authors explain the new science of decision making and offer examples and advice that will enable readers put it to use in their organizations.

## Empirical Cases of DIDM in Educational Settings

Cooley, V. E., Shen, J., Miller, D. S., Winograd, P. N., Rainey, J. M., Yuan, W., & Ryan, L. (2006). Data-informed decision-making: Three state-level educational leadership initiatives. *Educational HORIZONS*, 85, 57-64.

This article introduces three empirical cases of data-informed decision making processes in three states: Ohio, Michigan, and New Mexico. In Ohio, leaders developed graduate coursework to include a range of data-based decision making skills using a self-paced electronic module. This training module contains several techniques: how to use value-added information and methods for data analysis to improve quality of student achievement, unpack and explore student data, monitor progress of students, prioritize the most important, generate a network to share information, and identify practical achievements. In New Mexico, they targeted "accountability literacy" referring to an individual's ability to interpret and analyze accountability data regarding educational effectiveness. Leaders at Michigan focused on whether data-informed decision making is available at multiple levels of leadership within the state (e.g., the governor, the department of education, professional institutions, and universities). These all levels all influence and prepare Michigan's educational administrators. Together, these studies support the conclusion that DIDM is a conscious effort that requires knowledge, skills, data, and the will to use them correctly within a supportive environment.

Johnson, M., & Black, B. (2012). What's going on? Analysing visual data to understand context-based decision-making processes. *International Journal of Research & Method in Education*, 35, 243-250.



*This study examined how team leaders gave feedback in the high-stakes situation of educational assessments using standardized tests. The authors videoed, observed and coded how leaders performed oversight tasks relating to their team of graders. Results found that there is a stable process of three phases (i.e., Evaluation- Diagnosis-Feedback). The team leaders began by evaluating the data (i.e., comparing their graders' score to the actual test), diagnosed why graders reported as they did, and provided feedback on how graders can improve future work.*

Picciano, A. G. (2012). The evolution of big data and learning analytics in American higher education. *Journal of Asynchronous Learning Networks*, 16(3), 9-20.

This author reviews the growth of DIDM from the 1980s until the 2010s, focusing specifically on the evolution of “big data analytics.” While cautioning that these techniques cannot solve every problem faced by higher education, they are powerful tools if used correctly. To that end, this article reviews concepts and definitions relevant to “big data analytics”, considers appropriate applications for these techniques and technologies, and identifies concerns about proper implementation and increased utilization.

## Advantages of DIDM

Rousseau, D. M. (2006). Is there such a thing as “evidence-based management”? *Academy of Management Review*, 31(2), 256-269.

A top management scholar reflects on the concept of evidence-based management, providing her own insights into what it is (and isn't), what it should be, why it is important, why there is a research-practice gap (that is, why DIDM isn't practiced), and what we as educators should do about it.

Pfeffer, J. & Sutton, R. I. (2006). *Hard facts, dangerous half-truths, and total nonsense*. Boston: Harvard Business School Press.

Jeffrey Pfeffer and Robert Sutton show how companies can bolster performance and outrun the competition through evidence-based management, an approach to decision-making and action that is driven by hard facts rather than half-truths or hype. This book guides managers in using this approach to dismantle six widely held—but ultimately flawed—management beliefs in core areas including leadership, strategy, change, talent, financial incentives, and work-life balance. The authors show managers how to find and apply the best practices for their companies, rather than blindly copy what seems to have worked elsewhere.

Rynes, S. L., Giluk, T. L., & Brown, K. G. (2007). The very separate worlds of academic and practitioner periodicals in human resource management: Implications for evidence-based management. *Academy of Management Journal*, 50(5), 987-1008.

In this article, the authors examine the differences between the viewpoints held by top management scholars and those published in the popular management literature (magazines or periodicals that managers themselves read), and bridge journals (those that have readership from both scientists and managers). This study shows that there is little correspondence between literature read by scientists and that which managers read. Further, popular press articles tend to source their information from interviews with other managers, whereas bridge journals tend to employ more science, and scientific journals rely on science most often to the exclusion of interview and anecdotal information. This shows a significant lack of appreciation for management science as a source in the DIDM ecosphere.

## Disadvantages of Using DIDM

Loeb, S. (2012). In light of the limitations of data-informed decision making. *Education Finance and Policy*, 7(1), 1-7.

Decision makers in educational settings have improved their decision making quality through the implementation of DIDM programs. DIDM gives decision makers access to resources, knowledge, options, and logic, all of which can be leveraged to meet needs and goals. Improvement in educational systems may come more quickly and more easily through the used of data and systematic methods prescribed by DIDM. However, there have been several drawbacks or negatives on the implementation of DIDM in educational decision making processes.

The author argued that the use of data in decision making is rarely transparent, it is difficult to quantify all types of the data and collect all required data, there is a lack of awareness of assumptions in databases in the data gathering process, the data system design may be ill-equipped to deal with the actual problems or data, and it may cost too much to collect and use the data. DIDM is helpful, but it is not free or easy.

Wladawsky-Berger, I. (2013). Data-informed decision making: Promises and limits. *The Wall Street Journal*. Retrieved from: <https://blogs.wsj.com/cio/2013/09/27/data-driven-decision-making-promises-and-limits/>

Although many scholars and management people argue the importance and necessity of data science in organizational decision making processes, confusion remains regarding what DIDM actually is. This confusion can lead to disillusionment and the view that DIDM is simply another corporate buzzword. The author defined data-informed decision making as “the practice of basing decisions on the analysis of data rather than purely on intuition.” This article addresses some strengths and limitations of DIDM. In particular, regarding disadvantages, the author states that 1) data are not easy to find and datasets can often be so massive they are difficult to explore, 2) DIDM requires connecting vast arrays of data, from which naturally arise serious concerns about privacy, data ownership and data control, 3) causal relationships in the data (e.g., new recruitment plans and enrollment outcomes) may not exist in reality but be the result of chance or a spurious correlation (ice cream consumption and street crime are correlated but not causal), and 4) context adds an idiosyncratic difficulty in implementing DIDM.

## How to Use The Data

Briner, R. B., Denyer, D., & Rousseau, D. M. (2009). Evidence-based management: concept cleanup time? *The Academy of Management Perspectives*, 23(4), 19-32.

This article defined DIDM in organizational settings and identified several common misconceptions. For example, rather than a single approach, DIDM should be thought of as a suite of tools and techniques. DIDM enables multiple methods and sources of data in your decision making process. In addition, for DIDM to be most efficient, leaders should support an atmosphere that values data and systematic decision making processes.

Rousseau, D. M., & McCarthy, S. (2007). Educating managers from an evidence-based perspective. *Academy of Management Learning & Education*, 6(1), 84-101.

Evidence-based management (EBM) entails managerial decisions and organizational practices informed by the best available scientific evidence. In this study, they describe the core features of educational processes promoting DIDM. These features include several tips for behavioral principles to promote values for the importance of scientific methods, develop procedural knowledge on DIDM, and suggest the necessity of providing feedback. They also identify key factors in organizational research, education, and management practice that inhibit the use of DIDM and ways these can be overcome.

