Data- Informed Decision Making (DIDM) Executive Briefing

Leadership and decision-making can benefit from data-informed decision making, also called evidence-based practice. DIDM supports decisions informed by measurable outcomes; associated critical thinking, ethical judgment, and decision-support tools assist in deploying evidence effectively (Rousseau, 2012).

Applying evidence-based practice to higher education can improve professional judgment and assist in "scaling excellence" (Sutton and Rao, 2014). The quality of higher educational leadership and administration can be improved through thoughtful use of DIDM.

How DIDM Helps

In the past two decades, evidence-based practice movements have emerged in medicine, education, public policy, and management research. In general, interest in DIDM stems from the search for ways to increase productivity and accountability.

DIDM focuses on:

- the use of data, evidence, and scientific principles for critical evaluation of issues and problems (are salaries set fairly through role and responsibility, or are there differences by gender, race, or national origin?);

- use of practitioner expertise, and advancements in practitioner judgment through critical thinking and decision aids that might reduce cognitive bias (which departments are performing well according to measurable, quantifiable characteristics? Which need intervention?); and

- ethical considerations including the impact of decisions on stakeholders.

DIDM starts with the premise that personal judgment alone is not a reliable source of evidence for decision-making. Put colloquially, it is rooted in the axiom that "the plural of anecdote is not data." Areas in which DIDM can contribute include when:

- decision-makers hold erroneous beliefs through unconscious assumptions or over-weighting past experience;

- decisions are based more on opinions than specific measures, making accountability and transparency harder to establish;

- decisions are hard to link to a larger organizational objectives.

DIDM tackles these issues using facets of research common to scientific practice across many fields and disciplines (Rousseau, 2012a; Briner, Denyer, & Rousseau, 2009).

DIDM for Academic Leaders

1. Objectivity

Many decisions have critical impact on units and their members, including their students.

These include the advancement, or not, of PhD students; the number of sections of courses to offer (and therefore staffing and expertise requirements); the time and location of classes; curriculum decisions; degree offerings; marketing of degree opportunities; hiring, promotion, and

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> Quantitative measures, captured rigorously, are essential.

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decisions; space and resource requirements; and more. Leveraging DIDM in these areas provides three advantages to leaders and units:

1. increased confidence in decisions;

2. transparency that can reduce friction when the bases for decisions are known and clear;

3. higher-quality decisions.

2. Culture Congruence

Because scholars are trained in evidence-based practices—gathering, analyzing, and acting upon data—it is an approach that is natural for academics.

Adopting principled, evidence-based approaches to decisions can foster trust in leadership, in the soundness of decisions, and thus overall morale.

Because DIDM values evidence as the basis for strategies and action, its use can enhance communication and positive interactions among colleagues by contributing to a culture in which it is known that the institution values evidence and quality, not politics or personal bias.

3. Reduced Risk

Using DIDM with credible evidence from a variety of sources can reduce risk and increase the likelihood of successful and accepted decisions.

DIDM: Five Steps in Action

1. Ask

DIDM focuses on the decision-making process, and emphasizes making organizational decisions based on critical judgment. Thus it includes an appreciation for the impact of decision-making on stakeholders, as well as that local context is an important consideration.

DIDM begins with the framing of questions. This means identifying and defining questions that can be answered with evidence that is readily available, or that which can be collected over time. It's also important to ask questions about the data and the proposed data collection itself.

Some sample questions are these:

- What are we trying to achieve?
- What decision will be taken as a result of collecting these data?
- How will that further our goals?

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- What results would reflect success (or improvement)?
- Are there other aspects that might be negatively affected that we should also measure?
- What are the financial costs for the data collection?
- Are there regulatory aspects to this data collection?
- Who are the stakeholders in this decision?
- Who might be negatively affected?

- Can I get the data I need?
- Will their sources be reliable? Will their quality be sufficient?
- When I get them, will I be able to share them?
- In what form can I use them to explain or justify the decision?
- Will there be privacy issues?

When conducting a performance review, consider questions like:

- What biases might you have in play?
- Is there a job description or other formal criteria for the person being evaluated?
- Have you attempted informal interventions (e.g., coaching) to improve performance in the interim? Have you discussed any lapses in performance that may have occurred?

Consider the relatively simple example of determining who among a pool of candidates will be chosen for a scholarship. Questions might include:

- What are the scholarship's criteria? (say contributions to lab output, exam results, service, quality of writing)
- How can these be quantified? (for instance— quality of writing could be measured by asking the same board of respected unit members to read samples from each candidate and rank them)

- What records would help us combine these measurements into an overall recommendation? (spreadsheets, a scoring matrix)

- What would help us to defend our decision if it is challenged?

2. Acquire

Literature Review

Once questions are formulated, it's important to recognize that evidence accumulates from a convergence of findings from multiple sources using different research designs and in different contexts. Generally speaking, DIDM will begin with a systematic literature review. This may include information from experts in your university, including your institutional research group, or from scholarship reported in peer-reviewed journals. It may include case studies of other institutions or units that employed DIDM for addressing a similar situation.

In our performance review question, obtaining the formal performance review process, evaluation tool, and job description are examples of literature review.

In our scholarship example, it might be useful at this stage to gather the background information about who has been awarded the scholarship, and the goals and criteria established by those that set it up in the first place.

A consistent challenge in deploying DIDM is the need to reason from evidence while recognizing that evidence is not "neutral" or "value-free." Indeed, what counts as "evidence" is intrinsically problematic because there are multiple ways of looking at a problem, and often multiple measures that could be used as indicators (e.g., for academic success, student grades, scores on certifications, retention rates, and satisfaction with instructors could all be seen as proxies for success of the educational mission). Often, single indicators are less robust than a composite view that includes metrics from a range of perspectives. This requires balance in selecting and interpreting which evidence will inform practice.

Internal Evidence

Gathering evidence about context and about particular elements under consideration is a central element of the DIDM process. For example, context is relevant in faculty evaluations. The financial constraints of a unit, the average cost of research and grant size in the field, average time to publication, as well as the opportunities for professional development must be considered.

Context is important in performance reviews in general. Has the person being evaluated had any major life changes lately? Has the unit undergone major changes?

Sourcing data

DIDM processes can access a plethora of data. Your unit and university generate a variety of data. They key is to be aware of the sources of existing data, and how those can be leveraged to evaluate decisions that are upcoming, especially those that were made previously without the benefit of DIDM. Considering information that would be valuable for future strategic decisions should factor into establishing data collection systems: acquiring data for DIDM may require planning to ensure data are available when needed.

Before collecting or using data, consult with relevant experts or officials on security and privacy considerations that are beyond the scope of this note, yet are critical considerations for ethical and appropriate use of information.

3.Appraise

Critically evaluating the validity and generalizability of evidence is fundamental to evidence-based practice.

Although the ideal situation for DIDM is the use of randomized control studies, all research designs are flawed in some way (McGrath, 1981). For example, controlled studies offer high internal validity but may be less suited to generalization. Surveys and field research may offer low internal validity, yet may be more useful to management practice. Exercise critical assessment to judge the trustworthiness, value and relevance of evidence for a particular context, including how studies were

conducted., internal validity, generalizability, and relevance. Some initial appraisal questions include:

- Is this resource from a known, reputable source?

ASSUMPTIONS CAN BE DANGEROUS
They can lead to accepting the obvious (assumed truth) thereby missing the obvious (actual truth).

- Has the evidence been evaluated in any way? If so, how and by whom?

- How up-to-date is the evidence?

- Is the measure a good proxy for the item being quantified? Is there a better one?

- Do the data mean what you think they mean?

In our performance review example, this is a critical stage. A senior faculty member may indicate a staff member is a poor performer, yet doing work for that faculty member may not be the actual role of the staff member. Impressions are hard to change, so good or poor past performance can bias current views.

One possibly contentious aspect in our scholarship example is contributions to the lab's experiments, protocols, and administration. It would be critical, for instance, to make sure that those being evaluated for the scholarship know in advance what measures are being used to evaluate this aspect of the scholarship, and that those making the choice can support the use of those measures as proxies for the qualities the scholarship means to reward.

4. Apply

One of the key goals of DIDM is to assist leaders avoid conventional assumptions in decision-making. Assumptions can be dangerous: They can lead to accepting the obvious (assumed truth) thereby missing the obvious (actual truth).

The tendency to hold expectations or maintain opinions that are unreasonable or lack factual evidence is a common problem of humanity and one of the most common cognitive biases. It can be tempting to to set aside the conclusions of the DIDM process because they clash with

preconceived views, saying "well, the data suggest X, but my gut says Y". If a decision is supported by evidence that earlier was considered relevant and reliable, exercise caution before rejecting that evidence when the conclusions create discomfort.

When the scholarship is awarded, have the backup information available to share at an appropriate level.

The application stage of the performance review is when you conduct the critical conversation and complete the paperwork. It may be that during the conversation, you discover new information that may circle you back through the process.

5. Assess

Deciding does not end the process, as DIDM emphasizes the importance of ongoing evaluation: going back to the original question to assess the effect of the decision, reviewing the internal evidence to see how the decision might have affected both the context and the element under review. These data points become part of the evidence for other decisions. Continuous improvement is the goal, so the cycle begins again: what went well with the award of the scholarship? What did not go so well? How could the measures be improved to more accurately capture the original aim? What went well during the performance review? What went poorly? Did you overlook a facet of the process or a critical question that might arise again? Are job descriptions out of alignment with needs? Does the performance evaluation tool match needs? How are you and the unit member evaluated going to move forward to enable continuous improvement?

Cautions about DIDM

Despite its advantages, there are several cautions or disadvantages to consider.
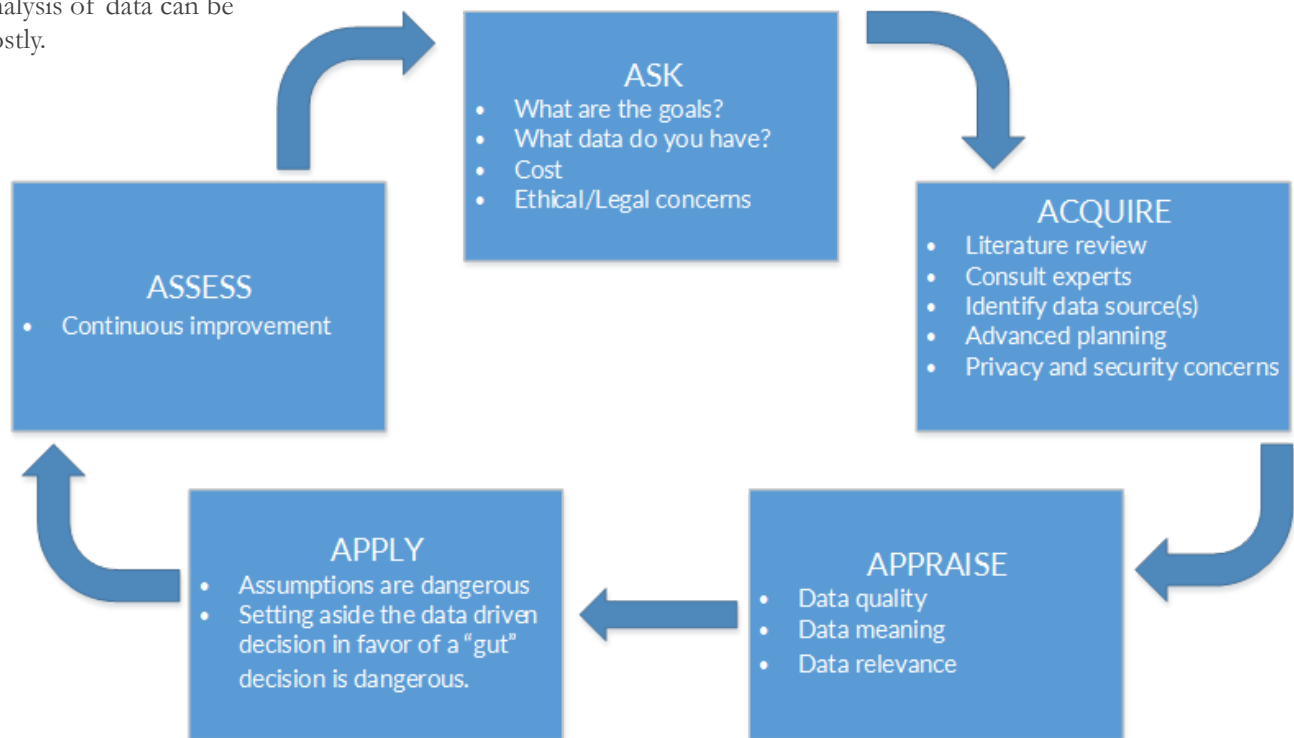
Analysis Failure

DIDM is is a complex process. "Analysis failure" can occur when leaders or data analysts do not fully understand the evidence, have incomplete information on the issue at stake, do not understand the context, or fail to appreciate the

DIDM process. Improper use and analysis of data can be costly.

Data Quality

It may not be easy to assess or secure quality data for a given situation from available sources. Assessing critically the source, structure, content, limitations, and nature of the available evidence is key in avoiding possible negative consequences of flawed applications of DIDM. For example, early academic productivity metrics were sometimes flawed when applied to disciplines that rely heavily on information dissemination outlets not commonly indexed, such as conference proceedings.

Cost

It can be costly to obtain, appraise, analyze, and interpret data. Sometimes, help or advice from a third party is helpful to produce a quality DIDM process.DIDM can also be time-consuming compared to other models of decision making, and sometimes requires a phased or staged implementation.

On the way to DIDM

The conscious use of tools and resources for reasoning from evidence, in a structured context, can improve decision-making and leadership. Together, the combination of carefully-framed questions, multiple sources of evidence, ethical judgment, and leadership expertise can provide a strong foundation for reducing cognitive bias, improving the quality of decisions, and scaling excellence over time.

Perhaps the most difficult challenge for applying DIDM is that what counts as "evidence" is intrinsically problematic. Some measures are difficult to quantify (e.g., research quality) and more difficult to compare across units.The quality of evidence-based decisions remains grounded in professional ability, critical analysis, and the use of validated tools for supporting decision-making.

DIDM can be effective in a range of arenas. The increasing wealth and availability of quality resources for DIDM will continue to expand those arenas, and it will continue to be an important tool for formulating and defending sound decisions.