

PERFORMANCE INDICATOR MAPS: A VISUAL TOOL FOR UNDERSTANDING, MANAGING, AND CONTINUOUSLY IMPROVING YOUR BUSINESS METRICS

Ingrid Guerra-López, PhD

Organizations are complex systems that require managers and employees alike to understand the interdependencies between their performance accomplishments and those of others, as well as the specific means and actions that affect them. Performance indicator maps (PIMs) are graphical representations that illustrate the relationships among organizational performance indicators. When properly designed, performance indicator maps can increase the effectiveness of feedback generated by dashboards, trigger tangible improvement actions today, and allow us to get the results we want tomorrow.

TRADITIONAL SCIENCE AND RESEARCH have been heavily based on studying independent factors or variables. However, as we look at organizations and programs across sectors, it is obvious that there is no such thing as a purely independent variable (Gharajedaghi, 1999). In fact, all variables are interdependent, and as organizations become more sophisticated, the concept of single cause-and-effect relationships seems further removed from reality, as well as claims of being able to isolate the effects of training or any other organizational initiative.

Understanding the interdependency of factors or indicators that have an impact on human, program, and organizational performance requires a shift from pure analysis to synthesis. Analysis consists of taking apart that which we seek to understand in order to explain the behavior of the separated parts and extrapolate an explanation to the whole. Synthesis consists of looking at system components and their interdependencies in order to understand their integrated impact on the whole. In other words, we must look at the entire organization and understand that

any impact observed is rarely attributable to one solution or one cause alone. In the same way, actions and solutions often have an impact on more than one indicator and in different ways. Organizational success depends on having all relevant facts, not merely looking at what is occurring in one small area.

PERFORMANCE DASHBOARDS

The proliferation of performance dashboards has raised awareness of the importance of simultaneously monitoring various performance indicators. Performance dashboards, or performance monitoring and feedback systems, are collective sets of metrics used to gauge performance in order to manage and improve it. In this sense, they can support objective and proactive decision making that can lead to measurably improved performance. The concept of a dashboard was adopted from automobile dashboards, which provide drivers with critical data that help them drive and maintain the automobile safely, efficiently, and

effectively. Although several studies have shown evidence of a positive relationship between monitoring and performance, results are still quite mixed (Carroll, 2008), and in a meta-analysis of 131 rigorous studies, Kluger and DeNisi (1996) found that about one-third of performance monitoring and feedback interventions had a negative impact on performance.

While the technology used to support dashboards gets better every day, many dashboards never meet their full potential to facilitate the continual improvement process through monitoring and useful feedback that supports decision making. Santos, Belton, and Howick (2002) point to two key issues that prevent performance dashboards from reaching their full potential: problems in their design and implementation and problems with the analysis and use of the information produced by the measurements.

Poorly designed dashboards compromise their implementation and, in turn, their effectiveness. One important factor for organizations to consider is the selection of an appropriate measurement framework. Some strides have been made to design procedures to identify and group performance measures in a way that makes interpretation more straightforward. However, both Neely (1999) and Bititci, Turner, and Begemann (2000) recognize that much still has to be done to identify relationships among measures. While there may be some understanding of the relationships among various performance measures tracked, organizations continue to design performance dashboards without formally accounting for these interdependencies of the measures, which could ultimately undermine the validity and utility of the feedback that the system produces. In other words, looking at data without knowing what is related to what and how does little to inform what we should do next.

In this article, I propose performance indicator maps as a way to identify performance indicators and begin to confirm their interdependencies. I conclude with suggestions about how best to design performance indicator maps in the context of a broader performance dashboard initiative.

PERFORMANCE INDICATOR MAPS

Performance indicators, also referred to as business metrics, are specific and concrete gauges of a result, process, or activity that allows us to make complex systems palpable and manageable. Much as the gauges on your car's dashboard provide a snapshot of its performance status, performance indicators provide organizations with the essential information that could potentially help them make effective decisions. These indicators are

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the basis for the data we track both now and into the future (in fact, continuously) that can be used for making decisions regarding specific actions for improvement (Guerra-López, 2010). Successfully using this feedback then depends on how well feedback is provided to and perceived by those responsible for improving performance (Havnes, Smith, Dysthe, & Ludvigsen, 2012). If feedback is not perceived as important and performance improvement actions are not specified as part of using the dashboard correctly, these maps will provide little support to users and might make performance worse. With a clear performance indicator map, we increase our changes of providing feedback that helps users take the right performance improvement actions today to get the results we want tomorrow. In other words, PIMs can be used to reduce organizational risks significantly.

Performance indicator maps are graphical representations that illustrate the relationships among organizational performance indicators (Figures 1 and 2 provide two examples). The creation of a map can be triggered by the development of a performance dashboard or created in the context of a needs assessment or perhaps a monitoring and evaluation process. Essentially they should be created for any effort that requires performance measurement in order to properly interpret the data that are generated, within their organizational context, and take effective action to improve performance.

A performance indicator map allows users to organize both lagging and leading indicators. Lagging indicators, measures of the ultimate results the organization seeks, tend to be the summative results of many actions and shorter-term objectives. If only lagging indicators are tracked, it is probably too late to do anything to improve them—for example, ultimate social and financial results (lagging indicators can be found on the right of Figure 1 and at the top of Figure 2). Leading indicators tend to be more specific, often tracked back to specific employee responsibilities that if properly monitored and acted on have the potential to have an impact on the lagging indicators tomorrow. Tracking leading indicators is critical because they allow us to alter the future in a desirable and more predictable way.

For example, the number of sales leads generated by the sales force on a daily basis (a leading indicator) can directly influence sales volume and revenue at the end of the month (a lagging indicator). Tracking allows us to take corrective action proactively rather than waiting to see what our sales and revenue figures are at the end of the month, with the risk that our targets may not have been reached.

Leading indicators, often called key performance indicators, are those that we want to track most often because they determine how well we will reach our established objectives. In the example in Figure 1, the use of grant writing services was identified as a key or leading performance indicator because the client use rate of this service is directly related to the client use of other center services. These two in turn have a significant impact on whether grant funds are awarded to clients (the researchers who depend on grants to advance their work), who then spend their funding on the medical research equipment of the center. Referencing their access to the equipment in their proposals to prospective funders happens to be a great asset to researchers because they can use a significant portion of the requested budget on advancing their work

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and making scientific discoveries rather than on purchasing expensive equipment. This of course makes their proposal more attractive to prospective funders, which in turn increases the rate of successfully funded projects, which in turn has a significant impact on the center's bottom line and the advancement of medical discoveries that save lives.

If an organization does not understand these relationships, it has difficulty making sound decisions about what services are most critical; the types of personnel required; the scheduling of personnel, outreach, or marketing activities to promote grant writing services and medical

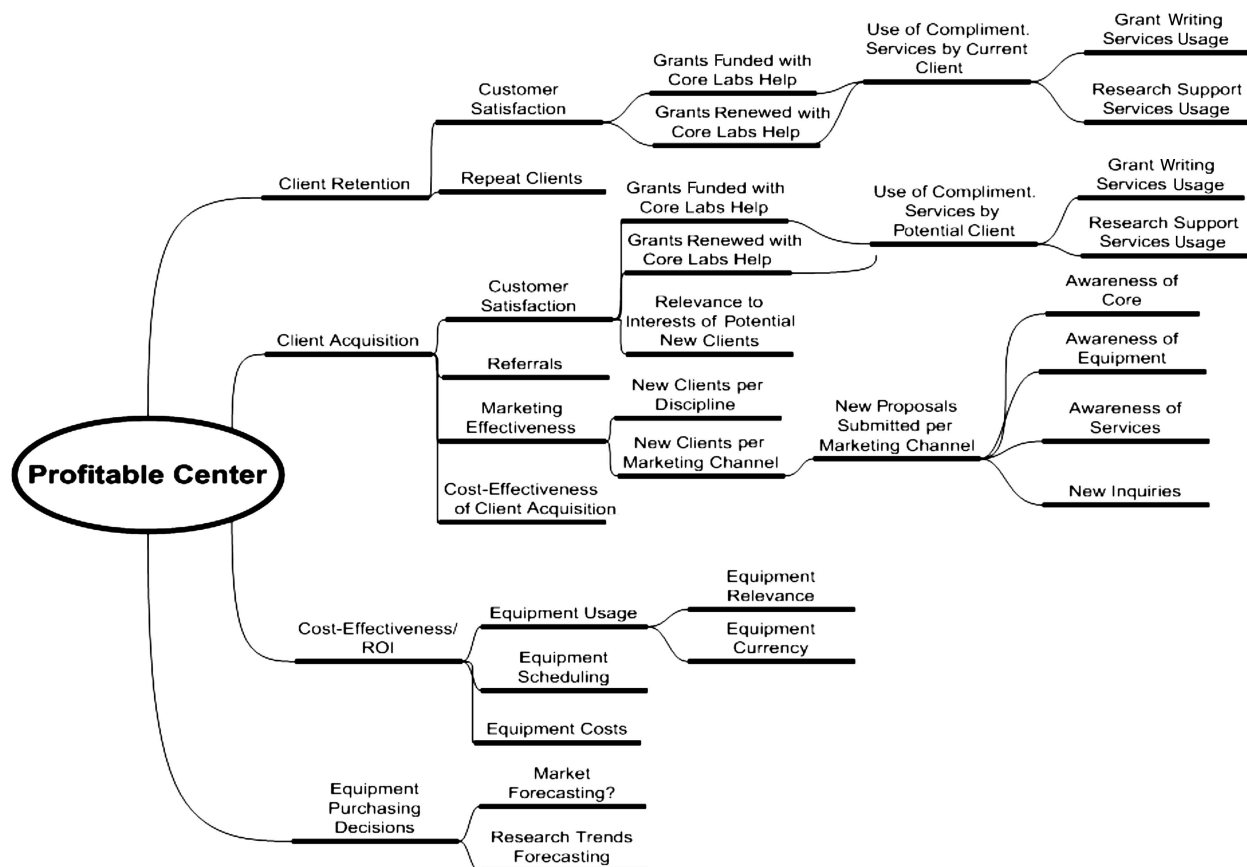


FIGURE 1. PERFORMANCE INDICATOR MAP FOR A MEDICAL RESEARCH EQUIPMENT CENTER

research equipment available; budget allocation; and so on.

Figure 2, also shows how specific initiatives might be integrated into the performance indicator map and linked to the specific performance indicators they are supposed to target, so that stakeholders are clear on the measurable value the initiatives are supposed to deliver. This allows monitoring and evaluation to be a proactive and ongoing management practice, as opposed to an afterthought with no money or time to carry it out.

SUCCESS GUIDELINES OF PIMS

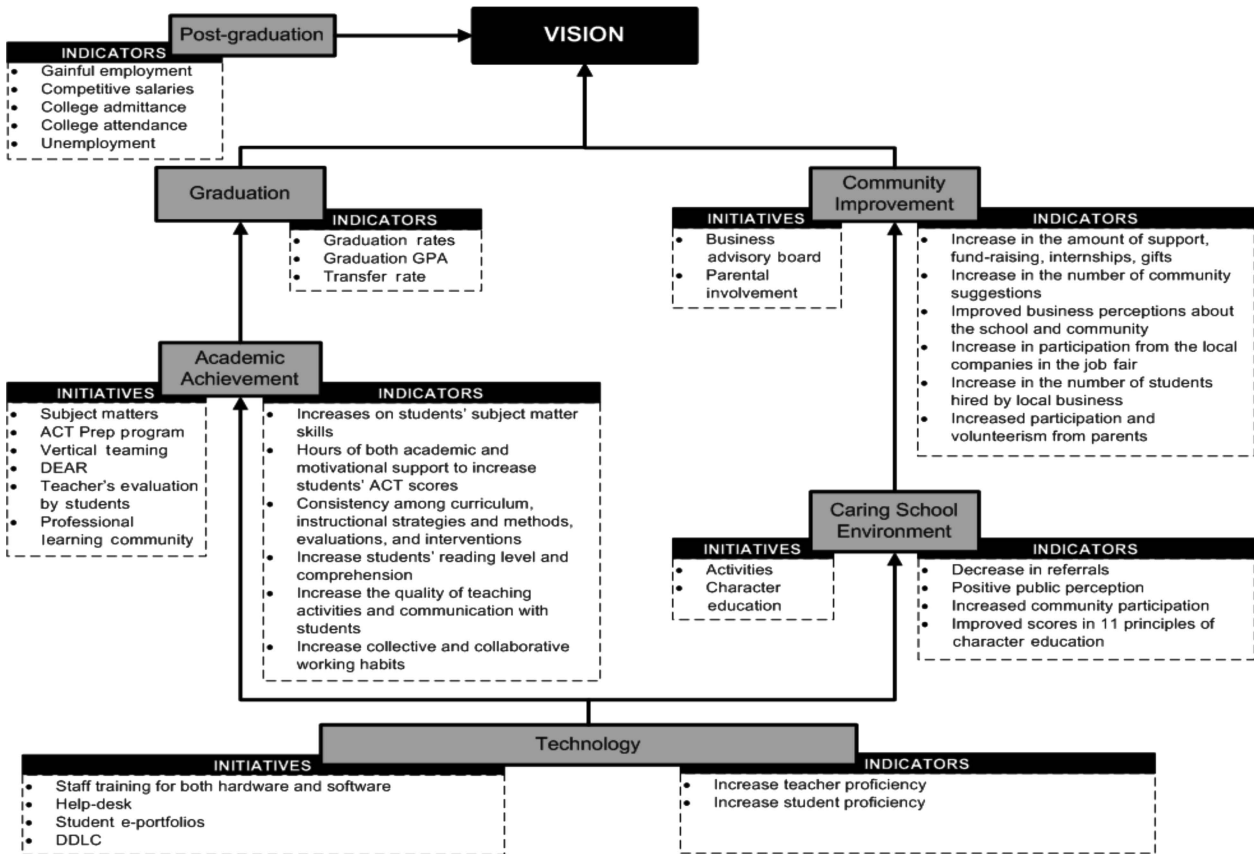
These are important considerations when creating performance indicator maps:

1. *Gain leadership and organizational-wide commitment and participation.* Agree on the scope and ultimate purpose of the performance indicator map. If you are creating the performance indicator map as the basis for designing a dashboard, make sure that the organization is well represented by the groups participating. Depending

on the roles of participants, they may have a better understanding of one cluster of indicators than of others. Both leadership and employees should participate, and the process will likely require feedback from and revisions by all groups.

2. *Identify the best people for various important roles*—for example, a lead for the dashboard implementation process, a lead for the performance indicator map design, a lead for implementation, and a lead for maintaining the PIM current. While you want to have integration and free-flowing communication among them, it is also important to realize the strengths and limitations of each group. Some may be better suited to lead the design of the performance indicator map because they understand performance systems than to lead the technology choices required to bring the performance indicator map to life in a dashboard setting. Furthermore, you may want someone to lead the data collection and analysis who has strengths in evaluation and statistics that will ensure the credibility and validity of the data.

3. *Identify strategic, tactical, and operational objectives* (perhaps from the current strategic plan, specifically the



Note. DEAR=Drop Everything and Read, DDLCC=Detroit Digital Learning Community.
Source: Based on Guerra-López and Toker (2012).

FIGURE 2. PERFORMANCE INDICATOR MAP FOR AN URBAN HIGH SCHOOL

organizational vision and mission) from those responsible for setting organizational direction (Kaufman, 2006). After all, the performance measurement system is supposed to help organizational members accomplish organizational objectives. Not starting with these objectives could misalign a system, which will ultimately not deliver on its intended benefits. It is critical to start with the ultimate ends in mind and branch backward toward the more specific indicators, and perhaps even the ongoing or planned interventions that are supposed to target those indicators.

4. *Identify performance indicators and metrics* that must be managed to have an impact on organizational objectives and their relationships to one another. Recall that tracking the right measures and interdependencies is imperative. Building a system that houses a seemingly unrelated and trivial list of measures could be overwhelming and demoralizing and have a negative effect on the adoption of the performance measurement system as a legitimate monitoring, management, and improvement tool.

5. *Identify who is responsible for the various sets of indicators and confirm intended data users and their roles.* This is critical for the design, implementation, and ultimate use of the dashboard. No one knows the measures of a given area of responsibility better than those responsible for it. Consulting with them will create buy-in from the start, as well as a more useful and responsive dashboard.

6. *Consider what questions related to the various set of indicators must be asked and answered to manage them effectively* (Guerra-López, 2007). Each performance measure will have specific decision points, so be sure you understand what decisions have to be made and what questions have to be answered so that the dashboard in general, and specifically the performance indicator map, is designed to provide support for making these decisions.

7. *It is critically important to determine how the feedback should be illustrated and communicated to intended users*, so that it triggers improvement rather than hopelessness, resistance, or loss of interest. Research consistently tells us that the usefulness of the feedback is determined by the recipient, not the provider of feedback (Havnes et al., 2012; Kluger & DeNisi, 1996). Be sure you understand the most useful feedback format for your users, and design it to those specifications.

8. *Find out where to get these answers (data sources).* Knowing where to locate the data is just as important as the data themselves. For example, when it is important to track complaints of feedback, some examples of data sources might include daily or weekly sales reports, human resource records, or customers. You may not have access to all the required data at first, but if the

performance indicator map has identified that it is important to have those data, that is an important indication of a blind spot. Pursue sources and ways of collecting those data over time.

9. *Set standards or target levels for each indicator to be tracked.* Determining whether there is a performance gap requires two data points. First, what is the ideal or desired level of performance for the indicator identified through consensus building of the relevant stakeholders, industry standards, and the like. Second, we require the actual level of performance of the indicator, which is essentially what we seek to track on a timely basis with the dashboard. The difference between these two levels identifies the performance gaps to address.

10. *Determine how to analyze and display these answers.* This has to be addressed when the dashboard is being designed. Consult with people who are well versed in data analysis to set up system functions that allow users to view the data in multiple ways in the simplest way possible. The simpler the dashboard is, the more useful it is likely to be. Be sure as well that the analysis approach will produce feedback that is useful for users.

11. *Design and develop a customized schedule for finding these answers* (some might be minute-to-minute, some hourly, daily, weekly, monthly, quarterly, or annually). Again, consult with those responsible for the different areas of measures to inform you on the frequency with which those measures have to be measured and tracked in order to make timely decisions that will help you reach your desired outcomes.

12. *Partner with technology experts to select the best technology for your organization.* It is important to note that “best technology” does not mean the most expensive; rather, it means just that it is the best suited for what you want to accomplish. You may not want to purchase large software and service packages but create your own customized dashboard, often with simple and open access technology.

13. *Integrate the dashboard into the overall organizational performance management system.* Measurement will be useful to the extent that measurement data are used to manage and improve performance. If a performance management system is already in place, be sure that the performance indicator map is well aligned to this so that it enhances performance management rather than be something apart and fragmented.

14. *If implementing a full dashboard, be sure to create a change management plan that will ensure a smooth transition toward using this tool effectively.* Just because the system is available does not mean that people will automatically accept it and use it. Careful thought about how to manage the integration of this change has to be given

at the beginning. As with all other interventions, we do it not for them but with them.

15. *Continuously use the data to confirm your assumed relationships and update the performance indicator map as required.* Keep in mind that the initial relationships you draw up are hypothesized at first. Once the data are analyzed, you might find that what you thought had an important impact over another indicator actually has no important impact. This is useful information, because you can now begin to make decisions about what efforts can be modified or cut altogether if they offer no value to important results.

CONCLUSION

As with everything else in an organization, a performance indicator map must be understood and used from a system perspective. Designing this map without aligning it to organizational strategy and management will not yield the potential benefits. Consider as well external factors (e.g., social, geopolitical, cultural, economic) that affect the organization, as well as what impact the organization has or could potentially have on these external factors. How could these factors contribute to the design, use, and value added of the performance indicator map (and your dashboard as a whole)?

It is also important to think about the entire performance system and how well the performance indicator map is aligned to deliver desired results that contribute to an efficient and effective organization. One critical element is the proper linkage among performance expectations, measures, feedback, and other consequences and incentives.

It is worth noting once again that the success of a performance dashboard hinges on an effective performance indicator map that tracks the appropriate sets of indicators (both leading and lagging), at the appropriate times, for the appropriate reason: managing and improving performance. If the system is not thoughtfully designed with this end in mind, it is doubtful that it can deliver a meaningful return on investment. 🌅

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INGRID GUERRA-LÓPEZ, PhD, is an associate professor and director of the Institute for Learning and Performance Improvement at Wayne State University and principal of Intelligence Gathering Systems. She has served on the board of directors of the International Society for Performance Improvement (ISPI) and is editor of ISPI's research journal, *Performance Improvement Quarterly*. Her research, consulting, and teaching focus on improving human and organizational performance through needs assessment and evaluation, with a particular focus on the identification and mapping of performance indicators. She has published 6 books and approximately 50 articles. Her latest coauthored book, with Roger Kaufman, *Needs Assessment for Organizational Success*, has become an American Society for Training and Development best seller. Her book *Performance Evaluation: Proven Approaches for Improving Program and Organizational Performance* is one of the most widely used evaluation books in instructional systems and performance improvement graduate programs. She may be reached at Ingrid.guerra-lopez@wayne.edu