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**Learning Analytics that Maximize Business  
Impact**

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## 1. Introduction

This article covers analytics for evaluating the impact of training and development (T&D). There is a literature on measuring T&D impact, starting with Kirkpatrick's classic model and ROI calculations promoted by Phillips and others. I take a different approach, using analytics of T&D to inform not just program measurement, but also program design and implementation. The approach can be used to improve T&D impact even when direct measurement is impractical.

I recommend a systems approach which recognizes that T&D is only one of a wide range of ways that HR and OD impact organizational effectiveness. T&D is most effective when program designers evaluate the applicability of the entire HR and OD toolkit in any situation, not just T&D on its own merits. Doing so leads to interventions that use T&D where most appropriate, whether as a standalone intervention or as part of a larger set of interventions of which T&D is one component.

The article starts with a critique of the Kirkpatrick and ROI measurement approaches. Kirkpatrick's model is built on a social science measurement foundation, offering a classic approach that focuses on purity of measurement at the cost of practicality. The consequence is the overwhelming majority of T&D measurement efforts fail to complete all four steps of the Kirkpatrick model, especially the last step – business impact. My recommended alternative approach starts with the business impact in mind, and works back to actionable insights on both program design and measurement. It can provide insights into improving business impact even when measuring a direct impact of T&D is not feasible because of interdependencies between T&D and other needed interventions.

ROI calculations are similarly impractical because they are often both too simplistic and too complicated to calculate accurately. ROI collapses information on disparate impacts of T&D

into a single number. Calculating ROI requires assigning monetary values to outcomes that are important for organizational success but are hard to quantify in monetary terms. ROI calculations also ignore unequal probabilities of achieving different outcomes, requiring a judgment call on whether an outcome should be either entirely included or entirely excluded.

The alternative approach described in the rest of the article addresses the deficiencies of both the Kirkpatrick and ROI approaches to evaluating T&D. It embeds the analysis of T&D impact within a systems analysis view of organizational effectiveness. Organizational effectiveness is maximized when the work systems, HR systems, people and processes are aligned and working well together. Improving organizational effectiveness more often than not requires changes in multiple things at the same time, of which improved capability through T&D is only one contribution.

It is possible to measure the independent contribution of T&D, but only when it is the only intervention or change that is employed. If the systems analysis diagnosis identifies multiple work design changes or HR/OD interventions needed to maximize organizational effectiveness, then all of them should be implemented if possible. Doing so enables better organizational outcomes than focusing solely on T&D. This is how the systems diagnosis approach can lead to better T&D program design and implementation, even if that means sacrificing the ability to measure the unique contribution of T&D.

As the article demonstrates, there are situations where both the Kirkpatrick model and ROI calculations may be both feasible and warranted. However, they often apply to a minority of situations where T&D is used or considered as a possible intervention. Rather than start with either of those measurement approaches and end up in a dead end if they are not feasible, it is

preferred to start with the approach recommended here first. After doing the systems diagnostic analysis, both Kirkpatrick and ROI can be evaluated and implemented if appropriate.

## 2. Deficiencies with the Kirkpatrick approach to evaluating T&D impact

There are two ways to think of analytics applied to evaluating T&D program impact: (a) as statistical analysis applied to measure the program as designed, or (b) analysis of the program goals and context to identify the information that matters for decision making and improved organizational effectiveness. Traditional approaches to T&D evaluation focus on how to measure the impact of T&D using the first approach. Kirkpatrick's classic four steps model is widely used – yet is deficient because it focuses on purity of measurement, not practicality.

From a cost-benefit perspective, Kirkpatrick's approach is not ideal because the cost of many of the recommended measurements is too high to justify. It also is not ideal for generating actionable insights because it puts business impact at until the end of the evaluation, following two difficult measurement steps. Thus applying Kirkpatrick often means taking too long to get to business impact; as a result business impact often is never measured nor demonstrated.

There are four steps in the Kirkpatrick model: (1) measure the learners' reactions to the T&D program; (2) show that learning occurred/skills were developed; (3) show application of the learning on the job; (4) demonstrate business impact. People who apply the Kirkpatrick model almost never get to business impact because they get bogged down with steps 2 and 3, and because it can be very difficult to show a direct link to business impact.

The logic behind the steps of the Kirkpatrick model is quite compelling. If it is possible to complete each step, then it is very easy to conclude that the T&D program had the intended

impact and can be given credit for positively contributing to business performance. If evidence of one of the steps is lacking, then the role of the T&D program can be called into question.

For example, if the learners like the program (step 1) but cannot be shown to have learned the skills (step 2), then the program may never have built the skills as intended. If the intended learning occurred but is not applied on the job (step 3), then the skills might not be useful from the learners' perspective. Finally, if learning occurred and is applied on the job, but there is no positive business impact (step 4), then the program likely provides no value added. The logic of the Kirkpatrick approach is clear: showing each step provides a very compelling argument that the T&D program was valuable and produced a positive business impact.

When the Kirkpatrick model was developed, there were few other viable approaches for measuring the impact of T&D programs. That absence coupled with the easy-to-understand steps led to widespread embracing of the approach. Yet years of experience with the model since then have unequivocally demonstrated that it is not well suited for evaluating most T&D programs.

The problem is that T&D programs usually are quite removed from having a clear and direct impact on business outcomes, so the question itself typically stymies T&D professionals. T&D programs typically are developed in response to a perceived competency gap, so the canonical approach to measuring program success focuses on closing the competency gap. The program is deemed successful if it can be shown that the gap was closed.

As attractive as this conclusion might be, the problem lies in the presumption that the T&D program alone is the right intervention in the first place. A competency gap can be shown for virtually every role in an organization. Considered in a vacuum, it is very easy to argue that competencies always should be improved. Roles are never perfectly designed and staffed, nor are

current T&D approaches ever ideal. Thus a narrow focus on competency gaps only will virtually always come to the conclusion that there are important improvements that can be made.

Yet consider the deficiencies in all the other aspects of organization design that also always exist. Roles and responsibilities are never perfectly designed. Compensation is a blunt tool: it is not well suited for motivating people in most roles to demonstrate the right behaviors and contributions needed to achieve organizational success. Feedback and information sharing almost always fall short of what is needed to support the highest of high performance.

Accountability for behaviors and performance can always be improved. Cross-functional collaboration almost always falls short of what the strategy requires. Leaders get distracted and cannot focus on everything that matters precisely when the right attention is needed.

In light of all of these potential organizational design issues, T&D is only one of a large number of interventions that may be able to improve organizational effectiveness. The Kirkpatrick approach ignores the non-T&D interventions that should be used either in conjunction with or instead of T&D. Thus it also ignores information that could be critical for effective decision making and improved organizational effectiveness.

### 3. Deficiencies with the ROI approach to evaluating T&D impact

The ROI approach to evaluating T&D impact has similar deficiencies as Kirkpatrick, with some unique issues. Similar to Kirkpatrick, ROI focuses only on evaluating the T&D program, ignoring the larger question of whether the program is the right one in the first place. Instead of solely asking what the ROI of the program is, a thorough evaluation should compare the ROI from the T&D program versus other interventions. ROI also works best when evaluating T&D programs as standalone interventions – same as Kirkpatrick. In the common situations

when organizational effectiveness is maximized by multi-pronged interventions of which T&D is only one component, calculating the ROI of T&D is much, much harder to do.

In addition to the deficiencies that ROI shares with the Kirkpatrick model for evaluating T&D, it also has some unique issues. This section addresses the problems with traditional ROI calculations and discusses the implications for evaluating T&D program design and impact.

An issue for ROI is that any benefit included in the calculations has to be expressed in monetary terms. This may seem like a relatively minor issue, but it is not. ROI is useful because it provides a common measurement for comparing the economic benefit of an investment or program. If not all benefits can be expressed in monetary terms, ROI quickly loses value as a decision tool because it cannot fully describe the benefits.

For example, T&D program outcomes typically include improved competencies or leadership behaviors that are deemed important for organizational effectiveness. The benefits of improved competencies can include more clear communication about goals and priorities, better feedback, more seamless cross-functional collaboration, better career planning and talent management, etc. Yet in order for those benefits to be included in an ROI calculation they have to be translated into monetary terms. Doing so is not impossible, but is very difficult to do so for the full range of benefits (Levenson, 2003; Levenson and Cohen, 2003).

For example, more clear communication about goals and priorities can lessen the amount of time needed to complete a work process; which in turn might be traced to more efficient use of resources and a monetary benefit that can be included in ROI. Yet the benefits of better communication do not necessarily show up directly and immediately in more efficient resource use. Instead, more efficient resource use often is realized only after a significant delay following the improved communication, or in conjunction with other interventions such as team coaching,

improved leadership and IT support, changes in the work design, etc. The benefit of improved communication can be expressed in monetary terms and included in ROI only in the minority of cases where it has an immediate and direct impact on resource efficiency.

The other challenge with calculating ROI relates to the probability of the benefit occurring. This holds for all ROI calculations, not just T&D ROI. Nothing is ever guaranteed, so the likelihood that a good outcome will be achieved should be included in ROI calculations. This means creating a probability weighted ROI (Levenson, 2003) that takes into account the likelihood of different scenarios occurring.

For example, consider a new product development team that is having problems getting its work done. It is running into challenges with a new IT system that is designed to promote knowledge sharing through the use of virtual white boards, shared documents, and on-line blogs where the team members can exchange ideas in real time. A training program could improve knowledge management through better understanding how the system works, and through taking hallway conversations not previously documented and converting them to on-line dialog; potential benefits include retention of key conversations for others to refer to, and expanded dialog where all teams members can participate in a discussion even if they are not available to do so in real time. The improved knowledge management in turn could increase the likelihood that the team this year develops a new product that increases both revenue and margins.

The issue for calculating ROI is determining the probability that participating in the T&D program leads to the new product development this year. Calculations like this are not an exact science, yet they are important so that the benefits of the T&D program are not overstated. If the improvement in knowledge management is estimated to increase the likelihood of new product development this year by only 5-10%, for example, then a more accurate ROI calculation would

down-weight the bottom line contribution attributed to the T&D program to only 5-10% of the total, and not include the full 100% economic benefit in the ROI calculation.

Because of the challenges of assigning economic values to all potential benefits and the importance of doing probability weighting, accurately calculating T&D program ROI can quickly become very cumbersome. ROI is better than the Kirkpatrick model for evaluating business impact because it starts with business impact in mind. What holds ROI back from being an effective decision making tool, though, are the deficiencies created by having to calculate a single number that fully summarizes the economic benefit. In the next section I propose using an alternative for evaluating T&D programs that is more flexible than ROI, and which can be used to help optimize T&D program design and implementation.

#### 4. Systems analysis as an alternative to Kirkpatrick and ROI

A fundamental goal of T&D analytics is understanding how to improve and maximize T&D's impact. Both Kirkpatrick and ROI fall short of this goal by focusing solely on measuring the T&D program as designed; they do not consider other interventions that may enhance T&D when used as part of a coordinated approach, or which may yield a better return as an alternative to T&D. To provide maximum actionable insights, the analytic approach should address whether and how the program design supports business impact. The scope needs to include the overarching objectives required by the strategy and organization design, and the improvements in systems and processes needed for strategic success. It also needs to consider the role played by T&D alone, by T&D working in conjunction with other interventions, and by other interventions that are independent of T&D. Only with a broad, systems view can the appropriate role for T&D interventions be defined, designed, implemented and measured.

Any model of organization design, such as Galbraith's Star model (Galbraith, 1977), can be used for a systems diagnosis. Figure 1 presents an organizational performance model that draws from organization design principles, and which highlights capabilities that are the focus of most T&D interventions. It separates capabilities out into two levels – individual and organizational/group:

- Individual Capability: the role competencies that are the focus of most T&D interventions.
- Organizational Capability: the ability to accomplish organizational objectives at the group level which lead to strategic outcomes such as cost reduction, margin improvement, quality, innovation, customer satisfaction, etc.

Individual capability contributes to organizational capability but is defined separately from it because organizational capability depends on more than just having the right people in place. For example, effective R&D processes require competent scientists as well as the right organization design, incentives and processes to support innovation. Market share depends both on having the right people in sales and marketing roles, and also on having robust systems and processes that support a strong go-to-market strategy. High performing manufacturing operations depend on having the right people in machine operator and supervisor roles, and also the right equipment, processes and supply chain to simultaneously support efficiency and quality. The interdependency between individual capability and organizational capability is one reason why T&D cannot be evaluated in a vacuum, separate from considering what further contributes to organizational capability beyond T&D.

In addition to capability, the organizational performance model in Figure 1 has two other main components: organization design + job design, and motivation/attitudes + culture/group norms, both of which span the individual and group levels:

- Organization/work design: How the organization is structured at the group level, including divisions, geographies, functions, departments, teams, etc.
- Job design: How individual roles and responsibilities are defined, evaluated, supported and rewarded.
- Culture / group norms: The cultures at the organization, unit and team levels that shape how people act collectively, including establishing behavioral norms.
- Motivation / attitudes: Individuals' attitudes about the work environment and motivation to do what is expected of them.

All of these components, including individual and organizational capability, have to be aligned and working well in order for the organization to have successful business performance. It is possible for T&D interventions to positively influence other components of the organizational performance model, but first and foremost T&D improves individual capability. If the other parts of the organizational performance model are not designed and working optimally, the ability of T&D alone to improve business performance is limited.

This point is demonstrated in Figure 2 which shows a causal model of organizational performance. In Figure 2, the main components of the organizational performance model from Figure 1 are replicated in the Individual Level Factors box and in the Group / Unit Level Factors box at the top center of the diagram. The HR / Human Capital Factors at the top left include interventions and programs such as T&D that help set the stage for improved performance. The Strategic Outcomes in the center flow from the Individual Level and Group / Unit Level Factors, and in turn lead to Strategic and Financial Performance at the bottom of the diagram. Figure 2 shows clearly that T&D interventions can contribute to improved organizational performance, but that they also are only one contributor in a highly complex system. It is the rare case when

T&D alone will have a direct impact on improved business performance, which creates the flaw behind narrowly focused analytic approaches such as Kirkpatrick and ROI.

As an alternative to those narrowly focused approaches, the models in Figures 1 and 2, or their equivalents, can be used to diagnose, evaluate and improve the design of T&D programs. The steps for doing so are outlined below.

Step 1: Refine potential interventions through initial assessment. The first step involves using a diagnostic such as the Performance Model in Figure 1 to assess the work design and identify the barriers to improved performance. Existing data on organizational performance and the insights of leaders and key stakeholders, gathered through interviews, usually are sufficient to identify the main potential barriers to improvement. Identifying the potential barriers is equivalent to articulating hypotheses about the drivers of organizational performance in Figure 1.

For example, lack of cross-functional collaboration can hinder organizational effectiveness. Problems retaining key talent can diminish organizational capability. Compensation that is too stingy can retard talent recruitment. The product innovation pipeline may have dried up. Rapid expansion into new business lines or geographies may be going more poorly than expected. Identifying these and other potential barriers to improved organizational performance form the initial phase of the systems diagnosis.

The process of articulating the leading hypotheses about the drivers of organizational performance is a very important analytic step even though no statistical analysis or complex calculations may be involved. Decades of social science research and practice provide a deep knowledge base about the drivers of motivation and behavior in organizations. This knowledge base can provide insights into the factors to be improved, even in the absence of conducting new data analysis (Levenson, 2014). That knowledge base should always be tapped during the initial

assessment phase to reach preliminary conclusions about the drivers of organizational performance that are more versus less likely.

There are two important and related results that emerge from the initial systems diagnostic assessment: the most likely factors behind improved organizational performance are identified, and the least likely factors are also identified. For example, a competency gap among a small group of incumbent employees could be identified as a possible barrier to improved performance: the skills of a minority of people in that group might need to be improved to accomplish the organizational strategy, with the target employees to be helped comprising only 5-10% of the total employees in the group. Further investigation could reveal that those same employees already had been through extensive training, coaching, and attempts to provide developmental opportunities. This additional information would lead to the conclusion that T&D most likely is NOT a leading candidate for closing the competency gap among the target group; alternatives such as better performance management and/or recruiting a different set of people for those roles stand a much better chance of closing the competency gap. In this case the conclusion of the initial assessment is that a T&D intervention most likely is not warranted, and other approaches should be considered instead.

As a different example, consider a much larger group of employees for which a competency gap is identified – a group comprising more than 50% of the total employees in the target population. If no previous attempts at T&D interventions had been tried, the initial assessment might rule in T&D as a potential contributor to improve capabilities and performance. Yet if no other intervention had been tried, the initial assessment likely would also identify other interventions or programs that could be tried at the same time as a T&D program.

In this case, the conclusion of the initial assessment could be that an integrated approach combining T&D plus other interventions is the right way to go.

As a third example, consider a similarly large group of employees with an identified competency gap, similar to the second case above, and for which the initial assessment also finds the following situation. Starting compensation for the role is set at below-market rates, in an effort to keep costs down historically, but is balanced by a dynamic work environment offering the opportunity to do interesting work and potentially progress into more lucrative jobs elsewhere in the organization. This work design leads to attracting and hiring people who have average to below-average initial skills needed for high performance in the role, but who have the aptitude for building the competencies needed for high performance. In this case the initial assessment might reasonably conclude that a T&D standalone program may be all that is needed to improve organizational performance.

These three examples illustrate the range of possible conclusions regarding the suitability of a T&D intervention, which can be reached through the initial systems diagnosis using key stakeholder interviews and analysis of existing organizational performance data. This initial assessment can be used to optimize T&D program design before it is implemented, identifying whether T&D is among the categories of preferred interventions, and whether it should be considered on its own as a standalone intervention or implemented as one part of a larger set of interventions. The ability to do an assessment of likely T&D impacts without the difficulties of the Kirkpatrick or ROI approaches is a strength of the systems diagnosis approach.

The other advantage of the systems diagnosis approach is it more clearly frames the role of individual competencies' contribution to business performance relative to other factors. It can always be argued that improved competencies help the organization to perform better. Yet just

because improved competencies *might* help does not mean that the greatest return will come from closing the competency gap, as compared to other approaches.

As Figure 2 demonstrates, it can be hard to draw a direct link between increased competencies and improved organizational performance. This is especially true for managerial competencies where there is little documented evidence that increased competencies positively impact the bottom line (Levenson, Van der Stede, Cohen, 2006). Thus T&D programs for managers can have a hard time positively impacting business performance even in cases where there may be a perceived managerial competency gap.

This brings us to the critical observation that any intervention, including T&D, which is designed to improve business performance should be focused on the true barriers to team/group performance. Whether increased competencies *can* help the business is less important than whether they *should* be the focus of efforts to improve organizational effectiveness. The latter can be answered only through a systems diagnosis that takes into consideration the full range of potential interventions or changes and how they can improve business performance.

Step 2: Identify the business outcomes that matter and how training can impact them. As shown in Figure 2, there are many potential outcomes that are indicators, either directly or indirectly, of business performance. Financial measures such as ROI are not necessarily needed to demonstrate a positive business impact. If you can demonstrate a clear link between a T&D program and improvements in strategic outcomes such as cost, margins, quality, innovation, customer satisfaction, etc., that link alone may be sufficient to justify the investment in the program – without having to calculate a specific dollar value of the link.

What matters is identifying the specific strategic outcomes that matter for business performance, and understanding the role they play in realizing the strategy. It is not sufficient to

show that a T&D program can help boost revenue, or cut costs, or improve quality, etc. What is necessary is both showing a link to tangible outcomes that help the business, and making sure those outcomes are strategically important.

For example, consider a lean manufacturing operation that uses a just-in-time (JIT) inventory management system for its suppliers. In a JIT system, the raw materials and other inputs needed for production are scheduled to be delivered with high frequency to minimize stockpiles held on site. Such a system keeps profits up by lowering the warehousing cost of holding the inventory on site, and by reducing the risk of inventory over-buying in the event of a rapid and unexpected sales decline that requires a cutback in production. In this type of work setting, training workers in the principles of JIT inventory management can build skills that directly contribute to organizational success. The specific skills could include how to meet the dual and competing objectives of uninterrupted inventory availability (to avoid disrupting the manufacturing process) and low stockpiles (to minimize storage and excess purchasing costs).

In other settings that use inventories, though, training workers in JIT principles may help with cost reduction but may work at cross purposes with the strategy. For example, maintaining low inventories of surgical and cleaning supplies in a hospital can reduce inventory costs but at the risk of a patient's surgery going wrong or increasing the chances of an infection. In a hospital, the potential benefits of JIT practices for managing the surgical and cleaning supplies inventory may be more than offset by costs that are unacceptable for the strategy.

The reason for the differential strategic importance of JIT inventory control in the two work settings is due to the nature of the product or service that is produced. In a manufacturing plant that produces durable goods like cars, electronic equipment, etc., falling short on the inventory needed for production can introduce delays in the production process, but minor delays

typically do not have a big impact on either product quality or sales. In addition, the inventory inputs into production (steel, rubber, plastic, circuit boards, semi-finished parts, etc.) account for a relatively large portion of total production costs for durable goods; keeping inventory low can free up large amounts of cash that can be used for other purposes to support the strategy.

In the hospital setting, in contrast, falling short even once on the supplies needed to perform a surgery can substantially compromise patient safety and open the hospital to malpractice suits and loss of reputation that drives business elsewhere. In this case, the potential downside cost of falling short on surgical or cleaning supplies is proportionately much larger than the comparable costs in the durables manufacturing case. In addition, the proportion of total costs that the surgical and cleaning supplies account for is much smaller for the hospital – where employee compensation costs are a much larger fraction of total expenditures – than the comparable inputs to production are in durables manufacturing.

Thus a T&D JIT program to train employees in the durables manufacturing setting can be highly strategic, and the only benefit that may need to be demonstrated is that the employees improved their ability to operate a JIT inventory control system. If that benefit can be clearly demonstrated, senior executives likely would not call for an ROI or other financial calculation to justify continuing the T&D program. In the hospital setting, in contrast, even if a careful ROI calculation showed a direct link between JIT inventory management training and decreased holding costs of inventories, that evidence would not be sufficient to justify a JIT inventory T&D program. What matters is showing a direct link between the T&D program and outcomes that are important for strategic success, not just outcomes that have a financial benefit.

Step 3: Measure the impact. The discussion to this point has highlighted the following tradeoff when it comes to T&D program design and measurement: the purest and cleanest

statistical measurements are not necessarily feasible in cases where the T&D program is designed to have maximum business impact. This occurs because maximum impact may be achieved only through combining T&D with other interventions, and/or because T&D's impact may be realized only through improving capabilities that indirectly impact business performance.

It may be impossible to identify a direct and unique contribution of T&D to business performance, given all the other factors that contribute to performance. So the analytics at best might be able to show that the combined impact of T&D plus other interventions have a business impact, and you may have to settle for that. It is not as clean as saying T&D had X% ROI or contributed \$Y to the bottom line, but it is usually much more accurate and credible. That also makes it much more useful as an aid to decision making.

When there are multiple interventions or changes implemented at the same time, a pure measurement of T&D impact is not feasible. Yet that may not matter, if the goal is to demonstrate a positive contribution of T&D to improved organizational performance, and understand how to maximize the impact. What is needed is the information for accurate decision making: estimated economic impact may be an important component but certainly not the only basis for decision making.

It is important to keep in mind in these situations that the calculated unique impact of T&D can easily be an over- or underestimate. If other interventions are needed at the same time, then it is easy to overstate the importance of T&D on its own merits. On the other hand, if only direct and clear impacts that are attributable to T&D are included in an ROI calculation, then the resulting figure likely understates the importance of T&D in improving business performance.

Thus the calculated economic impact of T&D can help inform decision making about its value but should be viewed with some caution. Estimated economic values of T&D's impact

should never be the sole criteria used for determining whether a program's impact is positive, especially when deciding whether to continue, discontinue or alter the program. This is where the deficiencies of the ROI approach can be seen most clearly: because it is impossible to clearly and accurately identify all the economic values of any HR or OD intervention, ROI will never be a sufficient metric for determining the value of T&D programs.

Let's consider again the Kirkpatrick model. Kirkpatrick usually is not a viable option for evaluating and improving the business impact of T&D programs because the second and third steps are so difficult to calculate. But what about the fourth step – demonstrating business impact? Though it is stated explicitly as one of the core parts of the evaluation, the Kirkpatrick model does not provide a great deal of guidance on how to demonstrate business impact. In fact, the Performance Model or an equivalent systems diagnosis approach can be used as a “how to” for the fourth step in the Kirkpatrick model. Especially in the cases where calculating the second and/or third steps of the Kirkpatrick model is onerous, an alternative option is to skip either or both of those steps and go straight to the fourth step – demonstrating business impact.

In conclusion, whatever method is used to estimate the business impact of a T&D program, the most important objective is to increase the information available for effective decision making. The business impacts of a T&D program are not always immediately realized and do not necessarily occur with complete certainty. As such, calculating the economic value of a T&D program is often similar to evaluating the economic worth of an insurance policy: clear positive benefits typically can be articulated, but they may occur only infrequently and with less-than-clear-cut economic value. Determining the value of the T&D program thus often depends not just on the cost of the program, but also on the benefits of attaining good outcomes or

avoiding bad outcomes when they occur infrequently. Thus determining the business impact of the T&D program is often similar to determining the actuarially fair price of an insurance policy.

## References

Galbraith, J. *Organization Design*, Reading, Massachusetts: Addison-Wesley Publishing Company, 1977.

Kirkpatrick, D. and J. Kirkpatrick. *Evaluating Training Programs: The Four Levels*, 3<sup>rd</sup> Edition, San Francisco: Berrett-Koehler, 2006.

Levenson, A. *Employee Surveys That Work: Improving Design, Use, and Organizational Impact*, San Francisco: Berrett-Koehler, 2014.

Levenson, A. and S. Cohen, “Meeting the Performance Challenge: Calculating ROI for Virtual Teams,” in C.B. Gibson and S.G. Cohen, eds., *Virtual Teams that Work: Creating Conditions for Virtual Team Effectiveness*, San Francisco: Jossey-Bass, 2003.

Levenson, A., “ROI and Strategy for Teams and Collaborative Work Systems,” in M. Beyerlein, C. McGee, G. Klein, L. Broedling, and J. Nemiro, eds., *The Collaborative Work Systems Fieldbook: Strategies, Tools and Techniques*, San Francisco: Jossey-Bass/Pfeiffer, 2003.

Phillips, P. and J. Phillips, *Return on Investment (ROI) Basics*, ASTD Press, 2006.

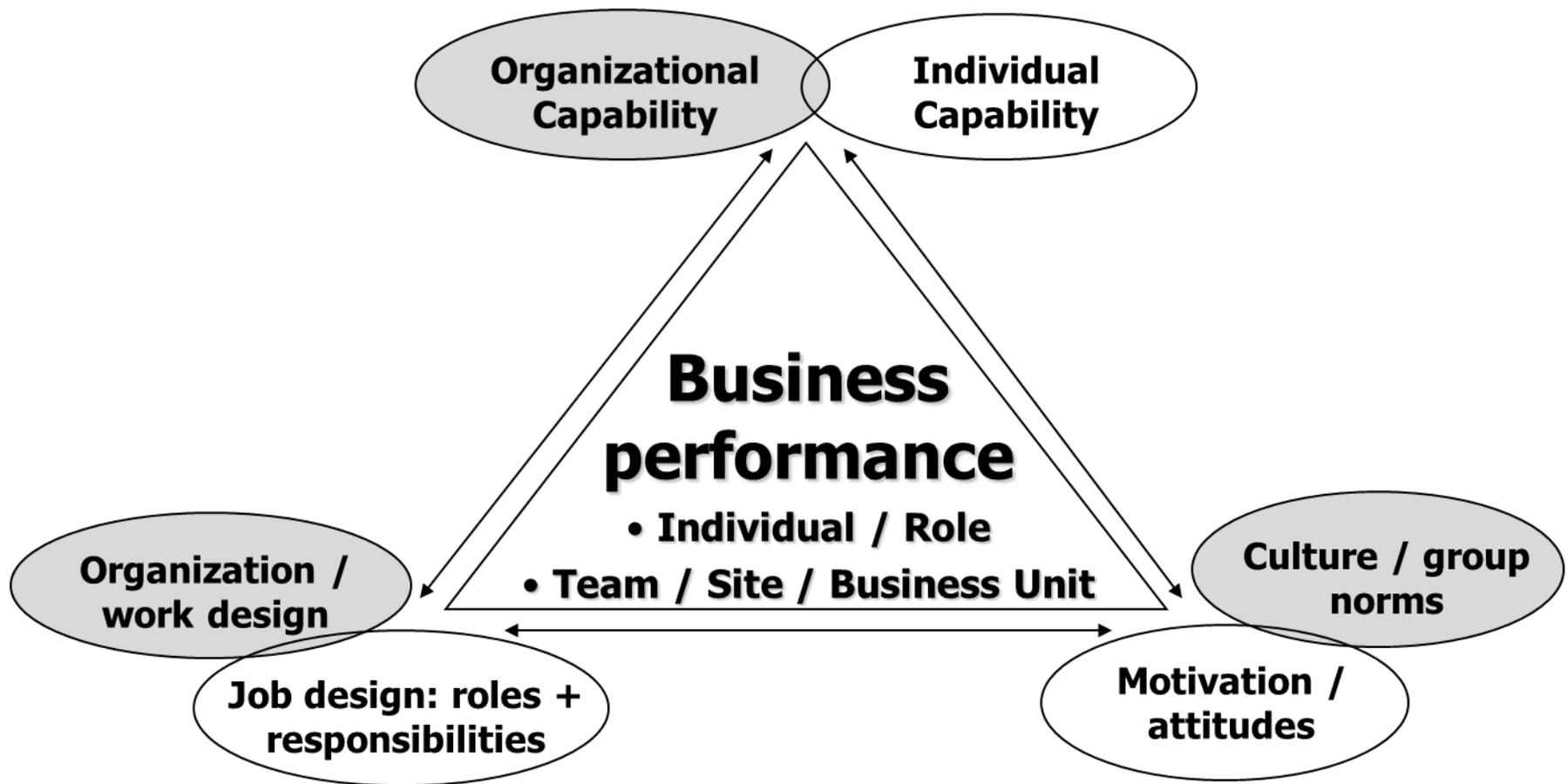
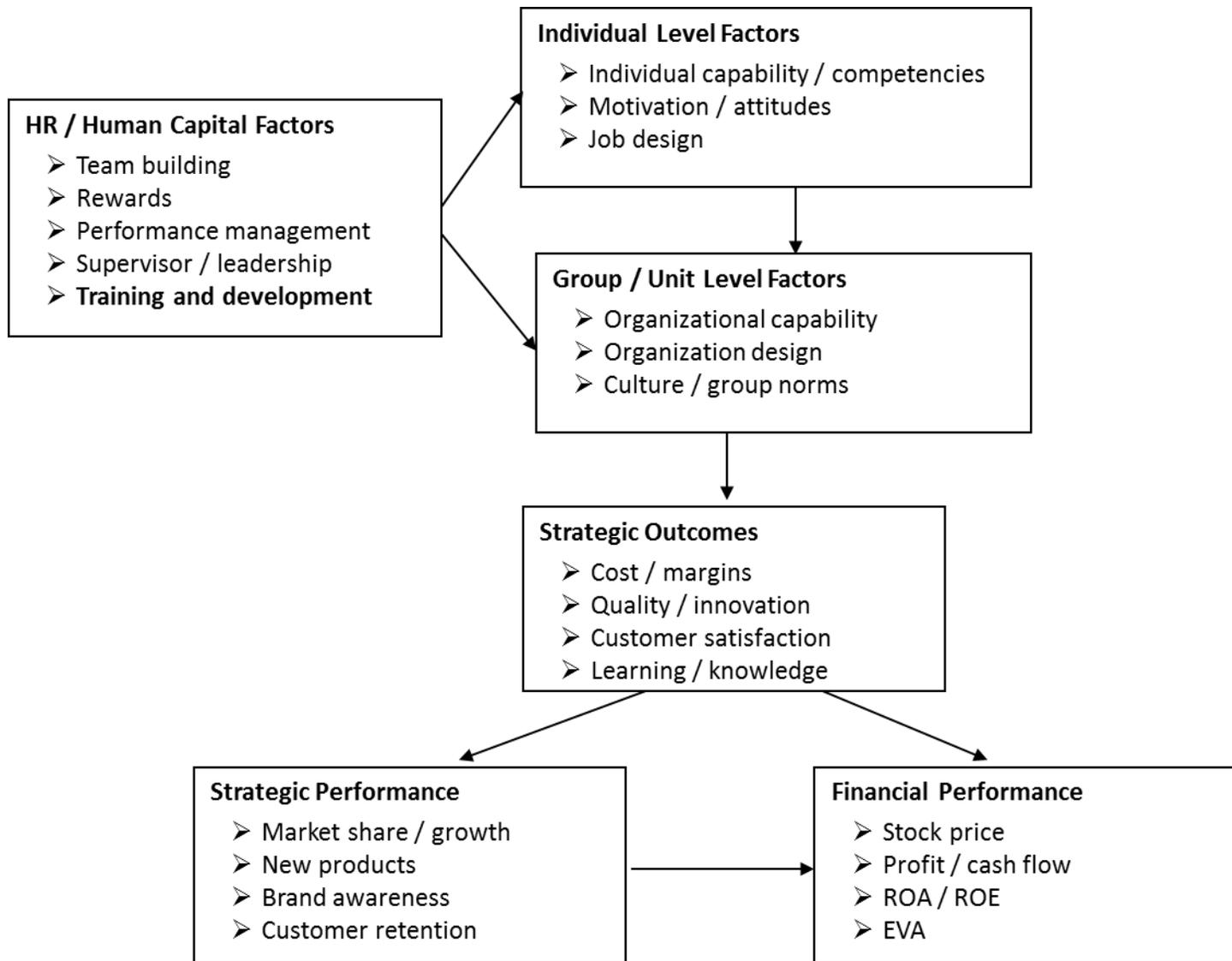


Figure 1: The Performance Model – Group Level vs. Individual Level



**Figure 2: A Causal Model of Organization Performance**