Measurable and Continuous Performance Improvement: The Development of a Performance Measurement, Management, and Improvement System

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Performance management systems are widely employed in organizations, yet there are high rates of dissatisfaction among users as well as significant criticism of the quality and utility of related academic research. Poor measurement of performance indicators and, consequently, poor alignment to performance management interventions may limit the effectiveness of efforts to strategically assess and manage human performance. Following an overview of pertinent literature in human resource disciplines as well as human performance technology, we draw on relevant theories to develop a Performance Measurement, Management, and Improvement System that aligns performance measurement with strategic, tactical, and operational goals and generates meaningful data to drive performance interventions and decisions. We outline a research agenda with recommendations for research across levels and contexts of human performance as well as within different cultural settings and globally distributed organizations. Finally, we propose that empirical validation employ analytic network processing, a technique for modeling complex processes.

The task of managing human performance in alignment with organizational strategy has been an area of inquiry in human resources–related fields for many years. Although organizational use of performance management systems is widespread, dissatisfaction among both management and employees is also high, and the value added questionable at best (Aguinis, 2007; Aguinis, Joo, & Gottfredson, 2011; Biron, Farndale, & Paauwe, 2011; Hantula, 2011; Nankervis & Compton, 2006; Pulakos & O'Leary, 2011). Performance management has the potential to generate significant value for organizations, but it is frequently ineffective, is often viewed skeptically by employees, typically requires a significant investment of resources and capital, and may actually undermine strategic improvement when implemented poorly (Aguinis, 2007, 2009; Biron et al., 2011; Pulakos & O'Leary, 2011).

These findings can be traced back to both poor measurement of important performance indicators and, consequently, poor alignment to performance management interventions. Nathan (2009) cautions that performance measurement should not be confused with performance management but should instead be seen as a prerequisite for effective management. The value of performance management practices will continue to be questionable unless they are rooted in a performance measurement system that continuously feeds decision making, as well as produces evidence and supports communication of value added.

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Within human resource management (HRM) and allied fields, performance management is typically defined as a set of ongoing, integrated activities that move beyond isolated performance appraisals to strategically measure, manage, and develop human performance within the context of organizational strategy and goals (Aguinis, 2007). Human performance technology (HPT) is an analogous area of research and practice that also takes a systems approach to strategic assessment and alignment, evaluation, and management of human and organizational performance, and its external impact on clients and society (Guerra-López, 2007; Kaufman & Guerra-López, 2013). Performance measurement is a central mechanism in both assessment and evaluation, which provides the required data for identifying the most appropriate interventions to measurably improve performance (Guerra-López, 2008, 2010). Brethower (2009) references Geary Rummler's work as being the quintessential example of HPT and states that it is guided by two key questions: "What are the variables that measure the results desired? What variables must we manage to achieve those results?" (p. 18).

Moreover, many scholars in HRM and allied fields have asserted that performance management research is disconnected from practice as well as theory and has failed to generate meaningful improvements in applied performance management. Furthermore, similar research in HPT generated by researchers and practitioners in the performance improvement field is rarely incorporated into research activities originating in human resource (HR)–related departments. These disciplines share a common interest in human performance measurement and evaluation, as well as similar concepts and research agendas, but dialogue between HPT and HR scholars appears to be lacking in light of these mutual concerns. Recent academic discourse within HPT reveals similar calls to action for more effective theories, models, research, and evidence-based practices, consistent with the concerns originating in HRM as described above (Cho & Yoon, 2010; Guerra-López & Leigh, 2009; Kaufman & Bernardez, 2012; Klein, 2010; Langdon, 2012; Pershing, Lee, & Cheng, 2008; Rowland, 2007).

A common concern across disciplines is the requirement for a flexible yet powerful model of performance measurement and management, one that is grounded in theory, supported by research, and able to communicate complex relationships while maintaining simplicity. Yet despite shared interests in human performance management as well as complementary agendas for research and practice, dialogue between academics in HPT and HRM appears to be lacking (Cho & Yoon, 2010).

The goal of this article is to provide an overview of existing literature in performance management drawing from HRM, HPT, and other associated disciplines, such as applied psychology and organizational behavior, to provide a summary of the current state of discourse and emerging

trends in theory and research. We will then draw on this overview to develop a systemic model for performance measurement and management that is sensitive to transactional relationships across performance levels (i.e., individual, group, organizational, and external impact) and contexts.

Review of the Literature

The current state of performance management research in aggregated HR fields has raised criticisms from many academics. While Cho & Yoon (2010) found a strong, interdisciplinary theoretical core in their analysis of aggregated HR research, some have asserted that performance management research in particular suffers from a weak theoretical foundation (Buchner, 2007; Claus & Briscoe, 2009; Hantula, 2011). Others argue that performance management research is too limited to positivist frames that investigate on a particular tool or approach (McKenna, Richardson, & Manroop, 2011; Thorpe & Beasley, 2004).

Yet, despite this reliance on prescription, HR research findings are not being adequately integrated into the work of practitioners, which may be due to differences in goals, interests, or access (Aguinis & Pierce, 2007; Deadrick & Gibson, 2009; Rynes, Giluk, & Brown, 2007). The resulting disconnection between research and practice also underscores the necessity for a meaningful model of performance management that is both theoretically sound and attendant to the needs of practitioners.

Amidst these discussions, interesting trends have emerged from recent HR work on performance management. One theme has centered on organizational factors that foster effective performance management. Rather than focusing on aspects of the performance management system itself, this line of inquiry investigates contextual circumstances that may be associated with successful implementation of performance management programs. Biron and colleagues (2011) drew on signaling theory to examine organizational practices that influence performance management in 16 high-performing global firms, and found that strategically and tactically focused goals, senior management involvement, and robust organizational communication were conditions that appear to support performance management efforts. Pulakos & O'Leary (2011) argue that the manager–employee relationship is a primary facilitator of effective performance management; thus, organizations should focus on strengthening this connection rather than continuing to fruitlessly tinker with formal performance management system features. This is echoed by Den Hartog, Boselie, & Paauwe (2004), who assert that managers and supervisors play a key role in the enactment of performance management. As such, "their consistency, fairness, and skill in using tools . . . will to a large degree determine whether such tools indeed generate positive effects on commitment and employee performance" (p. 563).

Den Hartog and colleagues (2004) also emphasize the role of employee perceptions and resulting behaviors in successful performance management. A recent study examining the relationship between employee perceptions of organizational support and employee performance in a large retail company provides some support for this view. The use of performance management processes, as perceived by employees, was associated with high performance and organizational citizenship (Gavino, Wayne, & Erdogan, 2012). This highlights the importance of considering employee perspectives when designing, implementing, and maintaining performance management systems. Other researchers have approached the issue from this vantage point by drawing on psychological theories of motivation and behavior to shape employee behavior within the performance management system. For example, Buchner (2007) constructs an approach to performance management that incorporates motivational theories relating to goal setting, control, and social cognition as a way to influence pertinent processes and performance outcomes. DeNisi and Pritchard (2006) also draw on motivation theory, specifically related to how expectancies govern energy expenditure, as the basis for their performance appraisal and improvement model. Finally, Hantula (2011) calls for a return to behavioral theory as the foundation for performance management, an avenue for "systematically changing the work environment, including altering consequences at the individual and group level, in order to positively influence behavior, learning, and performance" (p. 195).

While these two trends approach the problem from different vantage points (organizational context is concerned with "top-down" factors while employee perspectives are concerned with "bottom-up" elements), they both call attention to crucial contextual variables that may be more relevant for the success of human performance measurement and management than formal features of performance management systems. They also underscore the imperative of taking a system approach to performance measurement to incorporate factors from all levels and contexts that influence human and organizational performance, for better or worse.

Performance measurement is at the heart of managing and improvement performance (Rummler, 2004), yet according to the research, it is often overlooked (Clark & Estes, 2000; Guerra-López & Leigh, 2009). Clark and Estes (2000) noted that highly regarded research groups who surveyed performance improvement solutions found "a huge gap between what we think we accomplish and what scientific analyses say we accomplished" (p. 48). These authors cite a number of findings from the National Academy of Science, the National Research Council, and other independent groups, including that (a) the majority of organizational change initiatives are quickly abandoned; (b) transfer of performance solutions shows that even though they may work once, they almost never work in other organizational contexts, because we do not evaluate them; (c) one-third of performance feedback strategies fail, and another third

make performance worse; and (d) successful performance improvement interventions do exist, but we rarely integrate them into our commonly used performance solutions.

Beyond implementing research findings to improve performance, there is a critical requirement to implement evidence-gathering practices into performance management. Nutt (2007) cites a variety of studies that indicate intelligence gathering is the most overlooked step of the decision-making process. In a different study, Nutt (2008) compared the success of organizational decisions among three groups, and found that those who made decisions based on the use of quantified performance data were significantly more successful than those who made decisions on the basis of personal "hunches" or feelings, or on the basis of consensus of opinions of others. This does not suggest that the two latter perspectives do not have their utility, rather, it suggests that they must be triangulated with independently verificable performance data.

From a related perspective, the feedback literature provides significant insight into the role of performance data on performance management and improvement. Kluger and DeNisi (1996), in their meta-analysis study of feedback intervention studies, found that the success of feedback interventions is quite mixed, due in part to moderating effects of other variables. The authors go on to clarify that feedback interventions must provide data about the effectiveness of one's performance, as opposed to feedback about the way in which performance was delivered. Moreover, these authors draw from many psychological principals and theories to propose five basic arguments that characterize their feedback intervention theory.

First, they argue that behavior is moderated by comparing the obtained result (the feedback itself) to a goal or standard. From the perspective of control theory, this discrepancy can trigger various reactions, including (a) increased effort to reduce or eliminate the gap to alter future feedback; (b) efforts to change the standard; and (c) rejection of the standard, among others. From a goal theory perspective, one can change strategies to attain the goal, change the goal, or abandon the goal, among other possibilities.

The other principles they propose are heavily rooted in control theory. For example, they argue that goals or standards are organized hierarchically; attention is limited, and therefore, only feedback on the gaps between goals or standards and actual performance results that receives attention actively contributes to behavior regulation; attention is normally directed to a moderate level of hierarchy; and finally, feedback interventions change the locus of attention and therefore affect behavior. This last principal in particular is unique to feedback intervention theory and is the key to understanding the relationship between feedback and performance. Kluger and DeNisi (1996) argue that the question is not whether feedback interventions affect learning or motivation, but rather, what they do to attention.

Similarly, Pritchard, Harrell, DiazGranados, and Guzman (2008) explain that Pritchard's Productivity Measurement and Enhancement System (ProMES) is heavily rooted in motivation theory, specifically, expectancy theory, where people are "motivated by the anticipation of how their efforts will lead to satisfying their needs" (p. 540). The authors further explain that people have a limited amount of attention resources for task performance, and motivation plays a key role in how those resources are spent. In studying the effectiveness of the ProMES, Pritchard and colleagues (2008) found that "It is clear that overall effectiveness scores improved after the start of ProMES feedback . . . , whereas productivity for the comparison groups showed no change" (p. 558).

In summary, performance management that drives measurable performance improvement is a set of integrated activities that moves beyond mere performance appraisal to strategically manage employee and organizational performance within a hierarchy of goals. Gaps between these goals and actual performance results should be continuously monitored and used as feedback for decision makers and performers in order to exert appropriate influence over their performance (Aguinis, 2007; Den Hartog et al., 2004; DeNisi, 2000; Guerra-López, 2010; Kluger & DeNisi, 1996; Pritchard et al., 2008; Rummler, 2004). Below, we propose a systemic model of performance management that relies on performance measurement as a central mechanism for decision making, improvement, and accountability.

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The Performance Measurement, Management, and Improvement System

Figure 1 provides a visual representation of the Performance Measurement, Management, and Improvement System.

Systems theory is the foundation of our approach to this performance measurement and management model. Any attempts to measure and manage performance must take into account a wide range of variables and context, as well as the transactional relationships that exist between these variables. Systems theory (Von Bertalanffy, 1968) provides a framework for describing these elements and modeling their interrelationships, and results in a holistic approach that integrates all factors that may affect or influence performance.

Performance measurement systems provide the information that drives performance management processes and are therefore of critical importance to an effective and efficient performance management system

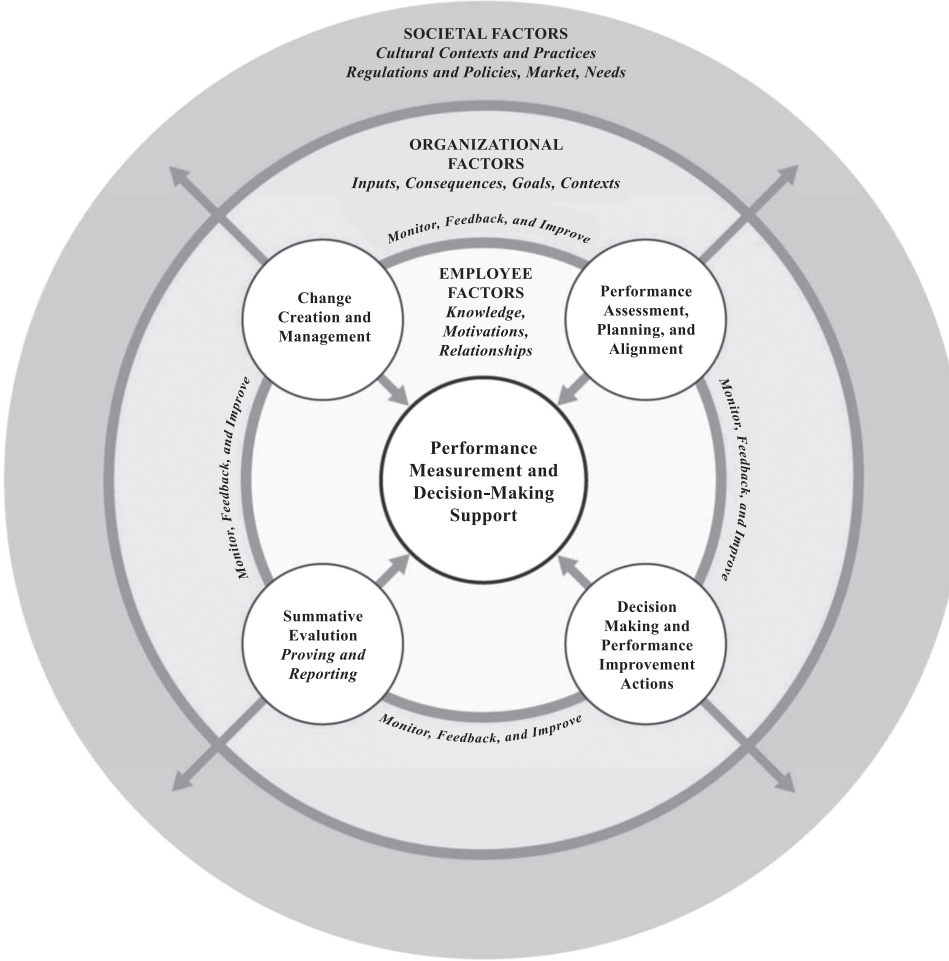

FIGURE 1. THE PERFORMANCE MEASUREMENT, MANAGEMENT, AND IMPROVEMENT SYSTEM

(Bititci, Carrie, & McDevitt, 1997). Therefore, performance measurement is at the heart of this model and provides feedback for all aspects of performance management through leading indicators that are continuously monitored to provide feedback to performers and decision makers about what variables of performance to improve and how, and lagging indicators for proving the ultimate value of decisions taken through formal documentation and reporting. The data obtained from performance measurement, whether in the context of assessment, monitoring, or evaluation, is the first and most fundamental aspect of *decision making*.

Performance measurement begins with planning, assessment, and alignment, where we set objectives at the strategic (societal impact), tactical (organizational success), and operational (internal accomplishments)

levels. Kaufman (2006) defines the strategic level as the external results and consequences on clients and society (for example, quality of life, self-sufficiency, and self-reliance); the tactical level as the results that benefit the organization itself (for example, financial returns); and the operational level as the building-block results for which individuals and groups of performers are accountable. A needs assessment is conducted to identify leading and lagging indicators that are valid measures of desired results at all levels (hierarchically organized around societal, organizational, and team or individual levels), and used as the basis for identifying performance gaps (discrepancies between desired targets and current levels for each performance indicator; Kaufman, 2006; Kluger and DeNisi, 1996).

These performance gaps and the factors affecting them (that is, societal, organizational, and employee factors) drive decisions about performance improvement initiatives and actions. Decisions must be directly supported by the performance evidence gathered, and the performance improvement actions and interventions must have a direct relationship to the type of causal factors triggering the performance gaps. For example, changes in government policy, such as universal health care, have the power to significantly influence strategic objectives and, in turn, lead to performance gaps and required performance improvement actions. Similarly, management practices have significant influence over how well inputs and consequences support desired performance. Therefore, solution criteria should be derived from the causal factors to ensure that various alternatives that meet the criteria are considered, as opposed to preferred or familiar interventions.

Leading indicators across all levels of performance are continuously monitored to ensure that the chosen performance improvement initiatives and actions are having the intended impact on them. An ongoing feedback mechanism should be in place, such as a dashboard or similar performance support system, that provides relevant performance data to those accountable for those performance results. This will in great part positively influence employees' perceptions of the performance environment and their ability to exert influence over their own performance results and environment. Of course, monitoring the data alone will not result in any improvement if it is not continuously communicated to those who are accountable for the performance results in question, and used to measurably and continuously improve performance. This notion of continuous improvement has been extensively documented by the work quality guru W. Edwards Deming (1986) and widely applied in a variety of sectors worldwide.

Ultimate performance results are then confirmed and documented through a more traditional summative evaluation that is used for reporting and proving the value of decisions and performance improvement initiatives and actions. Data from lagging indicators play a major role, as they tend to focus primarily on the strategic and tactical levels of performance results. These reports are typically used to establish accountability and credibility for future plans, proposals, and requests. Thus, these reports

significantly influence future decisions and actions for future plans and initiatives.

Change creation and management as a discrete and purposeful set of actions is then triggered by formal summative evaluation findings. Although the monitor, feedback, and improve links are reiterative (and the necessary change support mechanisms that go along with that reiterative process), formal change creation and management initiatives would essentially stem from the recommendations of the summative evaluation and relate to issues such as new organizational objectives, realignment with the organizational vision, and policy changes for the organization and perhaps at the community or societal level. The effective creation of change comes from evidence-based decisions, while the change efforts must address employee and other affected stakeholder perceptions of change, their assessments of the likely impact of change, and the resulting responses to change (Coghlan, 2000).

All of this occurs, of course, in the context of individual, organizational, and societal factors that influence and shape performance at every level in a multidirectional relationship. The role of these factors in enabling or impeding performance can be greatly understood by drawing on behaviorism and its emphasis on the stimulus-response-stimulus chain described by Skinner (1965) and adapted to performance systems by Gilbert (1978) in his behavioral engineering model and the work of Rummler and Brache (1994). This approach calls attention to the fact that environmental supports interact with an individual's behavioral repertoire to produce performance. Thus, contextual variables relating to the organizational and societal settings must be taken into account along with individual variables to fully understand and accurately measure performance.

Table 1 summarizes the research support for the Performance Measurement, Management, and Improvement System.

Discussion and Recommendations

This article has presented a model of performance measurement and management that aligns meaningful measurement practices with organizational and societal impacts and is driven by relevant theories and research findings. It was developed in response to concerns among academics and practitioners that current systems and approaches are not delivering the desired results in terms of providing a simple yet powerful method for measuring and managing employee performance in relation to organizational goals and societal impact. Because the model is still at the theoretical stage, empirical validation will be an important next step in its development and implementation. Because performance management is both an area of research and practice, it will be important to investigate its relevance and utility in the field to demonstrate its value to organizations as an avenue for managing the relationships

TABLE 1 THEORETICAL SUPPORT FOR THE PERFORMANCE MEASUREMENT, MANAGEMENT, AND IMPROVEMENT SYSTEM (PMMIS)

PMMIS FEATURES	LITERATURE	RELEVANT FACTORS FROM THE LITERATURE
Performance System (societal, organizational, employee)	Deming (1986) Gilbert (1978) Hantula (2011) Kaufman (2006) Rummler (2004) Skinner (1965) Von Bertalanffy (1968)	Systems theory Monitor environment variables that affect learning, behavior, and performance and use data to improve performance system
Continuous Measurement	Bititci et al. (1997) Guerra-López (2010) Kennerly & Neely (2002) Nutt (2007) Pritchard et al. (2008) Scriven (1967)	Intelligence gathering Formative and summative evaluation to improve and prove Managing with metrics
Planning, Assessment, and Alignment	Biron, Farndale, & Paauwe (2011) Buchner (2007) DeNisi & Pritchard (2006) Harless (1970) Kaufman (2006) Kaufman & Guerra-López (2013)	Strategic, tactical, and operational alignment Strategically and tactically focused goals Goal setting Expectancies
Continuous Feedback and Improvement	Biron, Farndale, & Paauwe (2011) Deming (1986) Den Hartog et al. (2004) Gavino et al. (2012) Kluger & DeNisi (1996) Rummler (2004)	Constancy of purpose toward improving performance Performance systems rely on feedback Robust organizational communication Employee perceptions
Decision Making	Biron, Farndale, & Paauwe (2011) Den Hartog et al. (2004) Nutt (2007)	Intelligence gathering as the first step in decision making Senior management involvement
Change Creation and Management	Coghlan (2000) Drucker (1995) Kaufman (2006)	Distinction between change creation versus change management Understanding perceptions of change and implications Respect for employees and their perceptions

between human performance and organizational results and external impact.

Because human performance is a complex variable, research will have to occur at several levels and across contexts to fully develop the potential of this model. For example, how will the model perform when measuring and managing individual performance versus performance at the levels of team or department? Furthermore, how does the model respond to differences in employee responsibilities and accomplishments? In other words, the duties and contributions of call center operators are quite different than the expectations of a research and development engineer, therefore further research will be required to understand how this model performs across job contexts. Analytic network processing (ANP), a statistical technique developed to model complex systems that include both quantitative and qualitative approaches, may provide a useful tool for implementing this model as a means to manage performance variable interdependencies and differing weights for variables in varying contexts (Meade & Sarkis, 1999). Some preliminary research has investigated the use of ANP in personnel selection, performance evaluation, and competency architectures with positive results (Boran, Goztepe, & Yavuz, 2008; Chen, Wang, & Lee, 2012; Erensal, Gürbüz, & Albayrak, 2010). We see this as a potentially important technique for incorporating transactional relationships across contexts, which could significantly amplify the value of our model (and performance measurement and management in general) to practitioners and academics alike.

Organizations increasingly employ globally distributed staffs, yet current performance management approaches are not always able to generate meaningful data and performance improvement recommendations across cultural contexts (Cascio, 2011). Thus, an important research area will be to determine how differing cultural values and practices can be incorporated into our performance measurement and management model to ensure locally relevant assessment and alignment. Because our model is sensitive to cultural contexts, we believe that it will be capable of capturing and responding to local differences in geographically distributed organizations. This research activity is particularly necessary given the findings of Claus and Briscoe (2009), whose analysis of existing research on global performance management found significant weaknesses related to theory, research design, and substance.

As mentioned in the literature review, there is an emerging body of research that focuses on how organizational factors influence performance management systems, which suggests the need to pay close attention to how our model can (and should) be implemented to maximize its impact. Further research will shed light on how factors such as organizational communication, goal alignment, executive-level commitment, access to relevant information (via dashboards or other data representation and communication systems), and manager–employee relationships can either drive or impede the successful adoption of this model in the field.

Finally, one of the most important benefits that performance measurement and management can deliver is quality data that can be used as feedback, and designed to drive decision making about proper interventions that measurably improve organizational performance. This is why we have placed measurement as the driving force of our model, and further research will be required to demonstrate the validity and reliability of measurement processes within this framework.

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