

Chapter 21

Introduction to Machine Learning as a New Methodological Framework for Performance Assessment

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ABSTRACT

Machine learning enables organizations to leverage data strategically to improve employee performance, promote continuous improvement, and better fulfill the mission. Opportunities for leveraging machine learning within organizations exist throughout the employee lifecycle but should be pursued with a clear understanding of the strengths and limitations of the methodology. This chapter will review traditional performance management processes, introduce machine learning as a methodology, highlight how machine learning methods could be used in new performance assessment models, and note future research directions to improve the use of machine learning within organizations.

INTRODUCTION

According to a 2020 report from Paycor (2020), a human resources software and payroll service provider, labor costs account for as much as 70% of all business costs. If human capital is one of the costliest aspects of businesses and organizations, it follows that they would create processes and structures to ensure a strong return on investment of employee labor. Traditionally, this has been pursued via a regular performance planning and review process. Additionally, the influence of quality metrics used within manufacturing, supply chain management, and other industrialized sectors provoked the application of key performance indicators to human resource evaluation. The emergence of big data, data science, and business analytics has opened a new opportunity that organizations can consider as yet another means of improving employee productivity. This chapter will introduce machine learning as a new methodological framework for performance assessment. It will briefly review traditional performance management

DOI: 10.4018/978-1-7998-7665-6.ch021

processes, introduce machine learning as a methodology, highlight how machine learning methods could be used in new performance assessment models, discuss threats associated with machine learning approaches, and conclude with future research directions.

TRADITIONAL PERFORMANCE MANAGEMENT

One of the most common approaches to employee performance assessment is an annual planning and review model. Unsurprisingly, this approach follows from a common organizational financial approach in which the annual budget drives much of the decision-making over the subsequent year. As Hope and Fraser (2003) describe in *Beyond Budgeting: How Managers Can Break Free from the Annual Performance Trap*:

For most participants, the budgeting process is an annual ritual that is deeply embedded in the corporate calendar.... It typically begins at least four months prior to the year to which it relates...it starts with a mission statement that sets out some of the aims of the business. This is followed by a group strategic plan that sets the direction and high-level goals of the firm. These form the framework for a budgeting process that grinds its way through countless meetings at which points are traded as targets are negotiated and resources agreed upon. (p. 3)

They note that these targets then form the basis of “budget packs” that are distributed to various departments and units which subsequently define how success will be measured in the coming year. With such metrics in mind, departments can then incorporate such priorities and direction in determining employee priorities and ultimately how they would contribute to the organizational success.

The process for employees often follows analogously to the aforementioned budgetary one. Similar to how the budget process first involves an evaluation of how the organization did compared to the fiscal year plan, employee prior performance plans or goals are unearthed and they’re typically tasked to document specific achievements, deliverables, and activities as they relate to the plan. Supervisors then combine those materials with their own internal assessments, to determine how employees performed in year passed. Then, either individually or collaboratively, new goals are established for the upcoming year and documented in a manner to be revisited in the next annum. This too follows the budget planning cycle in that the planning is intended to flow from the organizational mission, down to the departmental level, and ultimately to the individual employee, thus providing a framework to ensure that every employee is proverbially rowing in the same direction and contributing to the overall effectiveness of the organization.

In concept, it would appear to be an elegant and constructive means of not only evaluating employee performance for promotions, raises, and constructive placement. Ideally it would also provide a regular means of reinforcing the inherent value of employees to the success of the institution and provide structure to determine how to reward, support, and equip employees in the year to come to make an even greater impact. Such activities should increase employee effectiveness and satisfaction, while also strengthening the human capital contribution to the mission and make the organization stronger and more capable of fulfilling its mission. As Pulakos (2004) noted in a review of performance management systems, “In fact, if developed and implemented properly, performance management systems drive employees to engage in behaviors and achieve results that facilitate meeting organizational objectives” (p. 5).

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