The use of discrete computer simulation modeling to estimate return on leadership development investment

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Abstract

Organizational leaders seek monetary returns on their investments (ROI). Thus, making decisions to invest in human capital, such as in leadership development interventions, are often difficult due to the lack of research demonstrating monetary returns on leadership development investment (RODI). This study introduces an innovative approach to estimating leadership development investments and expands on previous research conducted by Avolio, Avey, and Quisenberry (2010), which was the first attempt to estimate leadership development RODI using utility analysis. Further, it is a unique study in that it uses computer simulation modeling to generate random distributions of each utility analysis variable to estimate RODI. Computer simulation modeling enables organizations to better estimate RODI for both current and future leadership development programs. Comparisons of RODI methods are conducted. Results demonstrate that potential gains from effective leadership development are greater than previously estimated but potential losses from poorly executed leadership development are also larger than previously estimated.

Introduction

Evaluating leadership development outcomes and their impact on follower and organizational performance in terms of return on investment (ROI) is challenging (Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009; Avolio, Avey, & Quisenberry, 2010; Cascio & Boudreau, 2011). Challenges include evaluating and gathering data for leadership development outcomes while ensuring adequate quantity of high-quality data, dependency on how well the program is introduced, and the adequate use of indicators to measure performance in action plans (Lemay & Ellis, 2007). Research suggests, however, that amidst the challenges, development and implementation of leadership development programs remain an important and recognized reality (Doo, 2005).

CEOs and other leading executives are becoming more convinced that leadership development is a worthy investment and, therefore, investing dollars in the development of their human capital appears to be an important goal (ASTD, 2009, 2010). The American Society for Training and Development (ASTD) estimated that organizations across the United States spent about $171.5 billion on employee learning and development in 2010 (ASTD, 2011). Although this seems promising for the future of leadership development, Csoka (1997) reported that 90% of senior managers stated that leadership is a critical component of their company’s growth but only 8% described their company as having excellent leadership. Thus, a central question is whether money spent on leadership development is well spent or a poor investment?
One problem in closing this gap in leadership development is the difficulty of translating the value of leadership development into common business jargon and financial metrics. Unfortunately, due to a lack of research demonstrating the ROI of leadership development interventions, many organizational leaders have limited ability to understand the financial impact of leadership development. In a recent study conducted by the ASTD, only 17.9% of organizations actually measured ROI (ASTD, 2010). Other researchers report only 24% of evaluators use ROI as a method of evaluation, with as many as 66% rarely or never using ROI as a means to evaluate program success (ASTD, 2009; Saslow, 2006). This lack of ROI focus has likely inhibited organizational leaders from investing in the development of their human capital because they cannot quantitatively see how leadership development can provide sufficient value and return on their investment (ASTD, 2009; Avolio et al., 2009, 2010; Saslow, 2006).

Status of leadership development

In a review of leadership literature from 1981 to 2008, 32 meta-analyses were identified evaluating leadership theories including effectiveness and impact on leadership outcomes (Avolio et al., 2009). However, although these meta-analyses provide positive evidence of leadership styles and their impact on leadership interventions, they lacked a comprehensive (multi-theory) approach to evaluating the impact of leadership development. Each meta-analysis examined only one theory of leadership and had limited independent and dependent variables or outcomes (Avolio et al., 2009).

Burke and Day (1986) conducted the first meta-analysis, which studied the impact of managerial intervention training from multiple leadership theories and development interventions. Their research reviewed 70 studies spanning from 1952 to 1980 and reported moderately positive effects. However, Burke and Day (1986) concluded that more empirical research was needed before reaching any firm conclusions.

Expanding on Burke and Day’s (1986) study, Collins and Holton (2004) conducted a meta-analysis of 83 studies spanning 1982 to 2001. Their study comprehensively reviewed newer forms of leadership development intervention and replicated earlier findings of positive effects from managerial training found in Burke and Day’s (1986) meta-analysis. However, Collins and Holton (2004) expressed concern that more clarity was needed to validate the impact of training on organizational performance outcomes. They stated that little research existed determining which theories among the many studied produced the most positive effects (Avolio et al., 2009; Collins & Holton, 2004).

In an effort to address some of these concerns as well as provide an even more comprehensive meta-analysis, Avolio et al. (2009) further expanded research on the impact of leadership development outcomes. Their meta-analysis covered both periods of the previous two meta-analyses. They identified over 500 leadership development intervention studies spanning from post-World War II (after 1945) to 2008, leading to a quantitative review comparing traditional leadership theories with newer theories, including analysis of intervention effects. These studies resulted in 200 usable experimental and quasi-experimental studies to determine average effect sizes. Then, using effect size results in a separate section of their study, they made a first attempt in leadership development research to use effect sizes and other data to estimate ROI.

The Avolio et al. (2009) study provided a valuable foundation toward further understanding ROI of leadership development interventions and its theoretical underpinnings. Further, building on this first known ROI estimation (Avolio et al., 2009), Avolio et al. (2010) expanded this research to provide the first dedicated study to estimate the ROI from leadership development intervention. They termed this ROI approach the return on leadership development investment (RODI), which estimated a dollar value associated with making leadership development investments in human capital. The Avolio et al. (2010) RODI study demonstrated substantial returns from investing in the development of upper- and mid-level leaders. Their research was important because it provided a clear financial RODI through use of a popular utility analysis method (Avolio et al., 2010).

In the current study, we further expand on the research of Avolio et al. (2010) by suggesting a means to better predict RODI. Specifically, we suggest that the use of discrete-event computer simulation modeling can more accurately predict RODI since it allows us to address the relevant assumptions and limitations of the Avolio et al.’s (2010) methodology. Before describing in more detail the limitations and assumptions of the Avolio et al. (2010) study, a brief discussion of utility analysis is necessary.

Utility analysis

Utility analysis is defined as “a quantitative method that estimates the monetary value of benefits generated by any intervention based on the improvement it produces in worker productivity. It provides managers information they can use to evaluate the financial impact of any intervention, including a return on their investment in implementing it” (Bernstein, 1966). Introduced as early as the 1940s (Brogden, 1946, 1949), Brogden and Taylor (1950) further expanded utility analysis research, which was later refined by Lee Cronbach who developed the Cronbach’s alpha correlation coefficient (Cronbach & Gleser, 1965). This research eventually led to the Brogden–Cronbach–Gleser model as we know of it today.

Some of the original purposes of utility analysis were to provide mathematical models to evaluate the organizational benefits from improving personnel selection (Bobko, Karren, & Parkington, 1983; Schmidt, Hunter, McKenzie, & Muldrow, 1979). Recognizing the focus on the use of psychological variables to evaluate human factors (Schmidt & Hunter, 1983), utility analysis was further researched and extended over the years (Cascio, 1982, 1991; Cascio & Boudreau, 2011; Hunter, Schmidt, & Judiesch, 1990; Reilly & Smither, 1985; Schmidt, Hunter, & Pearlman, 1982; Schmidt et al., 1979). Over time, its use evolved to a means to evaluate most any intervention that attempted to improve human performance, providing a type of counter-balancing to the overuse of more subjective methods. Therefore, utility analysis is a means to provide more empirically based, economic valuation
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