Utilizing the Rasch Model to Develop and Evaluate Items for the Tacit Knowledge Inventory for Superintendents (TKIS)

Christian E. Mueller, University of Memphis, USA
Kelly D. Bradley, University of Kentucky, USA

ABSTRACT

Tacit knowledge was originally introduced into the professional literature by Michael Polanyi and later made popular by researchers in a variety of domains. Measuring this implicit form of procedural knowledge requires multiple approaches to adequately “capture” what is often known, but not easily articulated. The present study combines use of Sternberg et al.’s framework for capturing domain-specific tacit knowledge with that of Rasch modeling to develop and validate items for use on a newly developed tacit knowledge inventory. Development of the Tacit Knowledge Inventory for Superintendents (TKIS) occurred in three phases, including two phases of piloting and Rasch analysis. For illustrative purposes, presentation of results is limited to the Rasch analyses conducted on interpersonal tacit knowledge items. However, the methodology extends its usefulness to researchers and practitioners to guide the development process of similar assessments. [Article copies are available for purchase from InfoSci-on-Demand.com]

Keywords: Rasch; Scale Development; Superintendent; Tacit Knowledge

INTRODUCTION

Understanding leadership effectiveness has long been an interest for researchers in both psychology and leadership. Leithwood (1995) has suggested that it is necessary to understand the cognition of the leader to measure leadership effectiveness, because of the important role that cognitive processes play in overall leadership judgment and decision making (Leithwood & Steinbach, 1995). One such cognitive construct that is receiving growing interest from researchers in numerous domains is that of tacit knowledge. Originally introduced into the professional literature by Michael Polanyi (1946, 1966, 1976), it was not until the later work of
others in psychology (e.g., Insch, McIntyre, & Dawley, 2008; Sternberg et al., 2000; Wagner & Sternberg, 1985), leadership (e.g., Hedlund et al., 2003; Rowe & Christie, 2008) and organizational management (e.g., Coff, Coff, & Eastvold, 2006; Nonaka, 1994; Nonaka & Konno, 1998) that researchers gained a better understanding of how tacit knowledge is acquired and utilized as a tangible resource. Despite the ubiquity of tacit knowledge research, however, Taylor (2007) and others (e.g., Ambrosini & Bowman, 2001) have noted that confusion and debate still exist in most research circles regarding the exact nature of tacit knowledge, and more importantly, how to elicit and study tacit knowledge in a useful manner.

Polanyi (1966) originally proposed, “I shall reconsider human knowledge by starting from the fact that we can know more than we can tell” (p. 4). Polanyi certainly could not envision the difficulty and challenges that researchers would encounter in attempting to capture a type of knowledge that was, by some accounts, inarticulatable. In an earlier study linking tacit knowledge with practical intelligence, Wagner and Sternberg (1985) suggested that some forms of tacit knowledge may be inaccessible at the conscious level, and thus, may remain unmeasured using common research methods. In this conception, however, they note, “by our use of tacit in the present context we do not wish to imply that this knowledge is inaccessible to conscious awareness, unspeakable, or unteachable, but merely that it is not taught directly to most of us” (p. 439). Thus, in Wagner and Sternberg’s view, an individual’s tacit knowledge could be articulated, and as their substantial body of empirical research has shown, could also be measured and used to predict numerous outcomes (e.g., Colonia-Wilner, 1999; Hedlund et al., 2003). Other researchers (e.g., Ambrosini & Bowman, 2001; Castillo, 2002; Tsoukas, 2003) have also written about the inherent difficulty in measuring or capturing tacit knowledge. For example, Ambrosini and Bowman (2001) have suggested that there are varying degrees of tacit knowledge ranging from “explicit skills” to “deeply ingrained tacit skills” (p. 816). In their estimation, the deeply ingrained tacit skills (which would be of most interest to researchers and practitioners) are inaccessible at the individual conscious level. They further suggest that empirical research already conducted on tacit knowledge has probably tapped only the middle to upper levels, that is, “tacit skills that can be imperfectly articulated” (p. 816).

One reason that researchers continue to show heightened interest in tacit knowledge is the strong predictive validity it has demonstrated in a variety of contexts, including managerial performance (e.g., Sternberg, Wagner, Williams, & Horvath, 1995), leadership effectiveness (Hedlund et al., 2003) and when effectively retained and utilized by organizations, in providing a strategic advantage in business operations (Ambrosini, 2003; Coff et al. 2006). Sternberg et al. (1995), for example, found that tacit knowledge accounted for up to 32% of unique variance in managerial performance, even after controlling for predictors such as IQ and other personality and cognitive constructs. And, Castillo (2002) has noted, “this ubiquitous concept appears across a broad spectrum of writing as either an explanatory construct to numerous psychosocial issues, an intervening variable to a myriad of managerial concerns, or a catalytic element to more complex, organizational-level phenomena” (p.46). Despite the apparent consistency in empirical findings, two issues that remain salient for tacit knowledge researchers are that of operationalization and measurement (Taylor 2005, 2007). It is to these two issues that we turn our attention next.

The Tacit Knowledge Framework

Although most tacit knowledge research can be traced back to the original work of Polanyi, Taylor (2005) notes, there is some confusion in the literature over the exact definition of tacit knowledge and its relationship to similar concepts, such as implicit learning, procedural knowledge and practical intelligence. In applied management studies, there has been a lack of consistency in the operationalization
Information Technology and Hegelian Inquiring Organizations