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Driving innovation: Public policy and human capital

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Abstract

Human capital, the set of skills, knowledge, capabilities and attributes embodied in people, is crucial to firms' capacity to absorb and organize knowledge and to innovate. Research on human capital has traditionally focused on education and training. A concern with the motivationally-relevant elements of human capital such as employees' job satisfaction, organizational commitment, and willingness to change in the workplace (all of which have been shown to drive innovation), has often been overlooked in economic research and by public policy interventions to date. The paper addresses this gap in two ways: First, by studying firms' human resource systems that can enhance these elements of human capital, and second, using the results of this research as a springboard for a public policy program targeted at elements of human capital that have been ignored by traditional education and training interventions. Using a sample of 1070 employee-managers in Ireland, we apply a series of probit regressions to understand how different human resources systems influence the probability of employee-managers reporting the motivationally-relevant elements of human capital. The research: (1) Finds that respondents in organizations with certain human

resource systems are more likely to report motivationally-relevant elements of human capital. Specifically, employee-managers in organizations with proactive work practices and that consult with their employee-managers increase the predicted probability of reporting that they are satisfied with their job, willing to change, and are committed to the organization; (2) Highlights the need to consider the role of policy interventions to support the motivationally-relevant elements of human capital; (3) Proposes a new policy program offer to support the motivationally-relevant elements of human capital in order to increase firms' innovation activity.

Keywords: Innovation, Human capital, Human resource systems, Innovation policy, Policy program

Introduction

Innovation is a well-recognized determinant of growth, and it is a challenge for both academics and practitioners to understand why and how firms innovate (Montalvo et al., 2006). Human capital, the set of skills, knowledge, capabilities, and other attributes embodied in people that can be translated into productivity (Abel and Gabe, 2011; Fulmer and Ployhart, 2014), is crucial to firms' capacity to absorb and organize knowledge and to innovate (Protogerou et al., 2017; Teixeira and Tavares-Lehmann, 2014; Subramaniam and Youndt, 2005).

Traditionally, economists have defined human capital largely in

terms of knowledge and intellectual capital. It is now widely recognized that this focus on knowledge does not fully capture the domain of human capital (Arvanitis and Stucki, 2012; Bell, 2009). In the last 20 years, the human capital concept has evolved significantly, and current conceptions of human capital include a wide range of human attributes that are relevant to job performance and productivity, ranging from personality traits, work attitudes and values (Ployhart and Moliterno, 2011) to characteristics such as creativity, wellbeing, self-efficacy and resilience (Grimaldi et al., 2012, 2013; Madrid et al., 2017; Newman et al., 2014; OECD, 2007; Tan, 2014).

The expansion of the domain of human attributes that define human capital can be usefully understood with a taxonomy highlighting the distinction between can do and will do attributes (Ployhart and Moliterno, 2011; see also Chiaburu and Lindsay, 2008; Gibbons and Weingart, 2001; Zhao and Chadwick, 2014). According to this taxonomy, some attributes contribute to employees' ability to execute essential job tasks. Classic exemplars of can do attributes include cognitive ability, general knowledge, job knowledge and problem-solving skills. Other human attributes influence willingness to exert effort, to contribute ideas and to assist fellow colleagues. Classic exemplars of will do attributes include job-related personality traits, work attitudes and beliefs.

This can do/will do taxonomy is highly consistent with almost a

century of research on the determinants of human performance, research that recognizes both ability and motivation as independent determinants of job performance; for the most recent meta-analytic review of the roles of motivation and ability, see Van Iddekinge et al. (2018). There is considerable evidence that innovation and the success of organizations, require behaviors that go beyond the usual role requirements of jobs and depend substantially on employees' motivation and willingness to engage in these behaviors (Chiu, 2018; McGuirk et al., 2015; Shalley, 1995; Menold et al., 2014). In particular, employees' attitudes regarding both their jobs and their organizations appear to be important determinants of their willingness to engage in the work behaviors needed to support innovation (Allen et al., 2011; Bateman and Organ, 1983; Cetin et al., 2015; Moorman, 1993; Zhao and Chadwick, 2014; Coad et al., 2014; Kato et al., 2015). These perceptions and attitudes about jobs and organizations comprise a critically important component of human capital that can be brought to bear in fostering innovation in organizations.

Knowledge and job-related skills represent can do attributes; tangible proxies for these attributes (e.g., level of education, amount of job training) have been the traditional focus of public policy aimed at enhancing human capital (Becker, 1964; Cohen and Soto, 2007; Marshall et al., 1993; Nistor, 2007). Despite growing evidence regarding the

importance of will do human capital attributes in business, there has been an almost complete absence of public policy initiatives to address these aspects of human capital. This is in large part because the targets for public policy are less obvious when attempting to build will do attributes. Policy interventions addressing the will do aspects of human capital are a prime focus of the current paper.

In this study, we aim to address the following key questions: (1) What human resource systems, policies, and practices of firms are linked to motivationally-relevant (will do) human capital attributes, such as employee-managers' job satisfaction, commitment to their organization, and willingness to change? (2) What are the implications for public policy in terms of policy instruments that can effectively promote the development and support of these human capital attributes? As we describe below, both of these represent distinct contributions to the empirical and policy-oriented literatures. This is achieved by demonstrating the empirical links between several organizational policies and practices and will do elements of human capital that are relevant to innovation. We then use this information as a springboard for a public policy program intervention designed to help organizations assess and tailor their policies and practices in ways that can facilitate the growth of human capital to support the firm's innovative capacity.

We focus on employee-managers, a cohort used in several

innovation studies (e.g., Leiva et al. (2011) and seen as key to innovation (Fitjar et al., 2013). We argue for the importance of creating a firm-level culture that hones human resource systems, thus promoting innovation. In this context, managers are key. Following Becker's (1964) and Oketch's (2006) studies of the determinants of human capital as measured by education, we seek to examine the determinants of motivationally-relevant elements of human capital. Understanding the factors that underpin these human capital attributes is significant for innovation theory development and is of practical value to policy makers and firms seeking to increase innovation activity.

The remainder of this paper is organized as follows: In section 2, we set out the theoretical context of the research. In section 3, we explain the data and methodology. In section 4, we present the empirical results of the regression analyses. In section 5, we discuss policy supports and implications for policy regarding the development of the motivationally-relevant elements of human capital. We propose a new policy program offer, with the ultimate aim of driving firm-level innovation. Section 6 concludes and explores both the implications and the limitations of our research.

Theoretical context of human capital and human resource systems

Interest is growing in measuring human capital beyond education and training (e.g., Perdreau et al., 2015; Arvanitis and Stucki, 2012).

However, there are challenges to measuring human capital's motivationally-relevant elements, such as work attitudes or motivation (Coronado et al., 2008); measuring these elements is an attempt to make visible what is invisible (Kramer, 2008). These challenges may explain why, in economic research and public policy, researchers frequently overlook these elements of human capital.

Our analysis focuses on three elements of human capital that appear to be the most directly relevant to understanding employee-managers' willingness and motivation to contribute to innovation in work organizations. These elements are employee-managers' job satisfaction, commitment to their organization, and willingness to change in the workplace.

How motivationally-relevant elements of human capital provide a foundation for innovation

The first element of human capital we focus on, job satisfaction, is defined as individuals' wellbeing or level of contentment in relation to their job (Judge and Kammeyer-Mueller, 2012). Job satisfaction supports a number of firm-level functions, including formulation of knowledge and problem-solving strategies (Judge and Kammeyer-Mueller, 2012; Whitman et al., 2010). Individuals who are highly satisfied with their jobs are more likely to engage in behaviors necessary for successful motivation, for example, they are motivated to exert extra effort, take

risks, learn new skills, and contribute unique ideas to their organization (Bowling, 2010; Organ and Ryan, 1995; Weikamp and Göritz, 2016). In contrast, individuals who are less satisfied by their jobs (e.g., because they find their job stressful) are less likely to engage in behaviors necessary for successful innovation (Eatough et al., 2011; LePine et al., 2002).

The second element of human capital we focus on is employee-managers' identification with and commitment to their organization (Mowday et al., 1981; Williams and Anderson, 1991). A wide range of work attitudes can contribute to firms' performance (Melesse, 2016).

Constructs such as organizational identification and commitment are particularly relevant to understanding innovation because innovative behavior is often risky; these risks are more readily undertaken by individuals who both trust and care for the success of their organization (Dalal, 2005; George and Bettenhausen, 1990; LePine et al., 2002; O'Reilly and Chatman, 1986; Organ, 1988; Organ and Ryan, 1995).

Finally, the third element of human capital we focus on is willingness to change. A number of studies examine the role of employees' willingness to change (e.g., to change the level of technology, skills and responsibility required to improve how work is done) in determining organizational success (Pulakos et al., 2000, 2002; van den Berg and van der Velde, 2006) and employees' orientation toward

(Montalvo et al., 2006). Willingness to change is found to influence the adoption or rejection of innovations (Agarwal and Prasad, 1998).

Human resource systems connected to the motivationally-relevant elements of human capital

Although organizations cannot directly control the perceptions and attitudes of workers (Colarelli and Arvey, 2015), they can decisively influence these perceptions and attitudes by how they interact with their workforce. In particular, there is clear evidence (summarized below) that well-managed human resource systems have a strong effect on the probability of employees being satisfied, committed, and willing to make the changes, take the risks, and exert the extra effort that innovation requires.

Human resource systems in organizations deal with recruiting, hiring, training, evaluating, rewarding, and sometimes sanctioning workers (e.g., through redundancies, disciplinary processes, and terminations). These systems provide important information to employees, ranging from orientation and organizational socialization to performance feedback (Cascio, 2012). This information, together with other outcomes of these human resource processes (e.g., rewards), influence the perceptions and attitudes of employees.

A substantial body of research links the quality of human resource

there is evidence that human resource systems that provide timely feedback enhance employees' a) success at adapting to changing conditions and b) their willingness to adapt and change their workplace behavior to create new products and processes (Pulakos et al., 2000, 2002). Piening et al. (2013) note that when organizations provide incentives to employees (e.g., training, opportunities for salary increase and advancement), they are likely to respond with favourable perceptions and behaviors. If implemented effectively, well-constructed human resource programs and practices are likely to cause employees to view themselves as operating a social exchange relationship characterized by mutual trust, respect, and support (Evans and Davis, 2005; Kehoe and Wright, 2013). In turn, this positive relationship is likely to motivate employees to engage in a range of behaviors that encourage and support innovation.

Human resource practices that provide information and support to employees appear to contribute especially to the encouragement of innovation. Cohen and Levinthal (1990) refer to the importance of absorptive capacity, which includes the contributions made by individuals and also an organization's capacity to exploit these contributions. Such high-involvement practice is of growing interest in the organizational performance and human resource management literatures (Böckerman et

2012). There is evidence linking aspects of high-quality human resource systems to specific work attitudes, including job satisfaction (Gould-Williams, 2003), organizational commitment (Allen et al., 2003; Meyer and Smith, 2000; Whitener, 2001), and willingness to change (Pulakos et al., 2000, 2002).

Conclusions

In this paper, we examined empirically-supported public policy interventions that can help firms develop and enhance motivationally-relevant (will do) elements of human capital, elements that are required to support firm-level innovation. Public policy targeted at increasing human capital traditionally concerns itself with the can do attributes of human capital (usually knowledge and skills), resulting in interventions that involve education and training. The development of will do attributes, as attitudes and perceptions influencing employees' willingness to innovate, require different public policy interventions.

Our analysis, based on information retrieved from the Irish National Centre for Partnership and Performance Workplace Survey (NCPP, 2009), reports that firms providing human resource systems, such as greater use of proactive work practices and greater levels of consultation with employee-managers are associated with an increased probability of job satisfaction, organizational commitment, and willingness to change of such managers. We also report that bonus schemes (as part of pay and

are linked to motivationally-relevant human capital, as measured by job satisfaction and willingness to change. It would be remiss however, not to acknowledge that some of the human resource systems variables reveal mixed results. For example, we report that greater frequency of information, job share and flexitime (part of work arrangements) have no significant relationship to the majority of the will do elements of human capital. In some cases, human resource systems variables such as the receipt of share options as part of pay and conditions have a negative impact.

By boundary-spanning the economics, innovation, and organizational science literatures, our research provides valuable contributions to theory, practice, and policy. From a theoretical perspective, our research makes two key contributions. First, our research extends the understanding of human capital and its supports, with the ultimate objective being that of driving firm-level innovation. Our findings concur with Cowling (2016) on the importance of building firm-level capabilities in support of innovation activity. Our findings help to bring some specificity to this literature by highlighting specific human resource management policies and practices that can be empirically linked to the motivational components of innovation.

Second, our research highlights the need to consider the role of public investment in supporting the will do, motivationally-relevant

of human capital as a driver of firm-level innovation. In particular, we outline a program for developing and implementing interventions that give organizations the tools and knowledge needed to

p.50) call for greater focus on “broad magnitudes and trends of the more important non-R&D components of innovative activity”, and policy discussion “about the kind of innovation capability that is created and accumulated”.

From the perspective of practice at the level of the organization, our research suggests that firms’ innovation activity may benefit from human resource systems such as proactive work practices, consultation and bonus schemes (part of pay and conditions). These systems motivate employees and support positive work attitudes such as job satisfaction, organizational commitment and willingness to change in the workplace. Interestingly, one of the human resource systems we measure, frequency of information, does not appear to have much impact on the probability of will do traits. This may suggest that among potentially useful human resource systems, some appear to be more closely linked to will do traits than others.

From the perspective of policy implication, our research suggests that public policy can support the development of elements of human capital that have heretofore been largely ignored in debates about how to