



Human capital and entrepreneurial success: A meta-analytical review

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ABSTRACT

The study meta-analytically integrates results from three decades of human capital research in entrepreneurship. Based on 70 independent samples ($N = 24,733$), we found a significant but small relationship between human capital and success ($r_c = .098$). We examined theoretically derived moderators of this relationship referring to conceptualizations of human capital, to context, and to measurement of success. The relationship was higher for outcomes of human capital investments (knowledge/skills) than for human capital investments (education/experience), for human capital with high task-relatedness compared to low task-relatedness, for young businesses compared to old businesses, and for the dependent variable size compared to growth or profitability. Findings are relevant for practitioners (lenders, policy makers, educators) and for future research. Our findings show that future research should pursue moderator approaches to study the effects of human capital on success. Further, human capital is most important if it is task-related and if it consists of outcomes of human capital investments rather than human capital investments; this suggests that research should overcome a static view of human capital and should rather investigate the processes of learning, knowledge acquisition, and the transfer of knowledge to entrepreneurial tasks.

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1. Executive summary

For more than three decades entrepreneurship researchers have been interested in the relationship between human capital – including education, experience, knowledge, and skills – and success. A number of arguments suggest a positive relationship between human capital and success. Human capital increases owners' capabilities of discovering and exploiting business opportunities. Human capital helps owners to acquire other utilitarian resources such as financial and physical capital, and it assists in the accumulation of new knowledge and skills. Although a positive relationship between human capital variables and success is well established, uncertainty remains over the magnitude of this relationship as well as the circumstances under which human capital is more or less strongly associated with success. To date, the literature remains fragmented with studies differing in the conceptualization of human capital, the choice of success indicators, and the study contexts such as industry, country, and age of the business. We address the human capital – success relationship by systematically reviewing the literature and meta-analytically estimating the overall relationship between human capital variables and success. Moreover, we look at specific conceptualizations of human capital attributes to test whether or not they differently relate to business success. We propose that human capital is most important for success if it consists of current task-related knowledge and skills. Finally, we analyze

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moderators of the human capital – success relationship by, investigating contextual conditions under which human capital is particularly important, and analyzing the relationship between human capital and different success indicators.

We use meta-analysis to estimate the effects of human capital on success. Meta-analysis provides a quantitative estimate of a variable relationship on a population level. It allows for the correction of statistical artifacts such as sampling error, and allows for the identification of moderator variables. Our computer-based literature search in specialized databases, manual searches in relevant journals, and the examination of reference lists of studies and theoretical articles yielded 70 independent samples ($N = 24,733$) that met our selection criteria.

Our findings showed a significant and small overall relationship between human capital and success ($r_c = .098$). Moderator analyses indicated that the magnitude of the success relationship depends on conceptualizations of human capital, the context of the firm, and the choice of success measures. The human capital–success relationship was higher for knowledge/skills which are outcomes of human capital investments compared to experience/schooling which are direct human capital investments; the relationships were also higher for human capital that was directly related to entrepreneurial tasks compared to human capital with low task-relatedness, for young compared to old businesses, and for success measured as size compared to growth and profitability. The correlation between human capital and success can be as high as, for example, $r_c = .204$ (for outcomes of human capital investments) and $r_c = .140$ (for young businesses).

These relationships are strong enough to draw theoretical and practical implications. Our results may guide practitioners in their evaluation of small businesses and may resolve some of the controversies surrounding investment decisions and human capital criteria. In order to maximize predictive validities, decision making should focus on task-specific human capital and outcomes of human capital investments. Moreover, entrepreneurs should invest in the acquisition of task-related knowledge, because knowledge is more important than past experiences. Finally, human capital criteria appear to be especially useful for predicting success of businesses that are still young.

In addition to the practical implications, the variation of effect size magnitudes reported in our study also demonstrates the theoretical usefulness to redirect human capital research in two ways. First, future research could shift the focus to investigating the processes inherent in human capital theory. Given the dynamics in entrepreneurship and the constant need to learn and to adapt, it may prove useful to look beyond the static concept of human capital and to examine outcomes of actual learning activities and current learning. Second, in addition to focusing on the variance in the individual entrepreneurs, future research needs to address circumstances that affect the size of the relationship between human capital and success. Thus, future researchers should address contingencies in the relationship between human capital and entrepreneurial success. Such efforts may also help in identifying stronger human capital relationships than the ones reported in this study.

2. Introduction

Human capital attributes – including education, experience, knowledge, and skills – have long been argued to be a critical resource for success in entrepreneurial firms (e.g., Florin et al., 2003; Pfeffer, 1994; Sexton and Upton, 1985). Researchers' interest in human capital is reflected in the numerous studies that have applied the concept to entrepreneurship (e.g., Chandler and Hanks, 1998; Davidsson and Honig, 2003; Rauch et al., 2005a). In practice, investors have traditionally attached a high importance to the experiences of entrepreneurs in their evaluation of firm potential (Stuart and Abetti, 1990). In fact, management skills and experience are the most frequently used selection criteria of venture capitalists (Zacharakis and Meyer, 2000). Moreover, researchers have argued that human capital may play an even larger role in the future because of the constantly increasing knowledge-intensive activities in most work environments (e.g., Bosma et al., 2004; Honig, 2001; Pennings et al., 1998; Sonnentag and Frese, 2002).

To date, the interest in human capital continues, and most authors conclude that human capital is related to success (e.g., Bosma et al., 2004; Bruederl et al., 1992; Cassar, 2006; Cooper et al., 1994; Dyke et al., 1992; Van der Sluis et al., 2005). The magnitude of this relationship, however, remains unknown. While some authors argue that the relationship between human capital and entrepreneurial success is commonly overemphasized (Baum and Silverman, 2004), others argue that human capital constitutes one of the core factors in the entrepreneurial process (Haber and Reichel, 2007). Thus, there is disagreement about the relative importance of human capital in entrepreneurship research.

Moreover, the magnitude of the relationship between human capital and success seems to vary considerably across studies. While some studies reported moderate or even high relationships ($r > .40$, Duchesneau and Gartner, 1990; $r > .20$, Frese et al., 2007) other studies reported low relationships (e.g., $r < .06$, Davidsson and Honig, 2003; $r < .10$, Gimeno et al., 1997). One reason for the variance of reported effects may be the presence of moderator variables. For example, an inspection of the literature shows that studies differ in their conceptualizations of human capital, their choices of success indicators, and their study contexts such as industry, country, and age of the business. Thus it remains unclear what kind of human capital should be related to success and under what circumstances. Surprisingly, to our knowledge, no study has systematically investigated moderators influencing the human capital–success relationship.

In this study, we address the human capital–success relationship by meta-analytically integrating the results of more than three decades of human capital research. Meta-analysis provides a quantitative estimate of the population effects, allows for the correction of statistical artifacts, and for the identification of moderator variables (Hunter and Schmidt, 1990). Meta-analysis represents an important step toward evidence-based entrepreneurship (Rauch and Frese, 2006) and is a practical tool for theory development.

The study contributes to the literature in at least three important ways. First, we determine the magnitude of the overall effect of human capital on entrepreneurial success. Second, we test the effects of different human capital attributes, such as task-

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