

**THE RESOURCE BASED VIEW AND ENTREPRENEURIAL  
PERFORMANCE: AN INTEGRATION AND META-ANALYTICAL TEST**

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**ABSTRACT**

One of the stylized facts in entrepreneurship research is that resources available to firms can facilitate a competitive advantage and firm performance. However, little is known about the mechanisms by which resources affect firm performance. The present study uses meta-analysis and structural equation modeling to examine whether innovation mediates the relationship of social capital and human capital on firm performance. The analysis of 458 samples indicated that human capital, social capital and innovation are positively associated with firm performance.

Moreover, a mediation models revealed a better model fit as compared to a direct effect model. Thus, our results suggest that the relationship between resources and performance is mediated by innovation strategies.

### **Debating points:**

1. Are strategies deliberately selected and implemented? Probably not, available resources determine venture strategy.
2. When we look at the innovation-performance relationship we talk about implemented/realized innovations, otherwise they would not affect performance. Can we expect the same effects when evaluating the innovativeness of the entrepreneur?
3. The effect of resource on innovation is almost twice as high as compared to the effect of resources on performance. These differences in effect sizes probably reveal a problem inherent in many studies relying on a resource based framework. RBV: Most studies look at performance while they should look at competitive advantages.

## **INTRODUCTION**

The resource based view (RBV) has been a key approach explaining competitive advantage and organizational performance of firms (Barney, 1991). The RBV assumes that firms' competitive advantage and subsequent performance originates in the resources and capabilities the firm controls. A number of studies have used the RBV to explain the effects of social capital, human capital, and sources of finance on firm performance (Newbert, 2007). However, most of these studies analyzed single resources in isolation without integrating different types of resources. Moreover, little is known about the mechanisms through which resources lead to a competitive advantage and superior performance.

The aim of the present study is to investigate the effects of different types of resources on firm performance. More specifically, we look at human capital and social capital enabling us to compare the importance of different types of resources. Moreover, we argue that it is not enough to possess resources. Rather, firms need to make better use of the resources in order to achieve success. Therefore, we investigate whether innovations serve as an intermediate mechanism that explains how resources affect firm performance. Thus, we conjecture that innovations cannot be developed independently of resources being controlled. In order to generate innovations, firms generally require special resource endowments. Thus, we aim to depict which types of resources enable

innovations and, in the process, increase performance. Thereby, we can gather evidence about a phenomenon that has been previously remained a black box.

## **THEORY AND HYPOTHESES**

A significant amount of research in the domain of entrepreneurship addressed the role of resources in entrepreneurial firms. However, the majority of studies conceptualized resources as direct predictors of firm performance (Newbert, 2007). In this paper we theorize that resources affect the choice of venture strategies for example, whether or not and to what extent firms engage in innovation which subsequently enable successful competition in a market. Innovation is a strategy that requires huge resource commitments. Therefore, we assume that innovation is the mechanism through which resources affect performance. Based on such reasoning, we can illustrate how resources become firm specific capabilities that enable firms to achieve a competitive advantage and increased performance.

While a number of different resources may affect firm performance, such as financial resources, access to technology, human resources, and social capital resources some of them are not specific to a firm and easy to imitate. Therefore, financial resources and technological resources are less important than human capital resources and social capital resources (Neal & Hesketh, 2002). Following

resource based arguments, we are particularly interested in the role of human resources and social resources since these resources are firm specific and difficult to imitate.

However, we do not assume that these resources are directly related to venture performance, but they enable firms to adopt strategies that are successful. Thus our framework builds on approaches that recognize that the competitive advantage of resources depends on how these resources influence the strategies of a firm (Barney, 1991; Edelman, Brush, & Manolova, 2005; Penrose, 1995).

### **The Relationship between Human Capital and Innovation**

Human capital is defined as the knowledge and skills which can be general or specific in nature (Becker, 1964). Originally, human capital theory has related investments in the development of knowledge and skills to income distributions of employees (Mincer, 1974). The theory has been transferred to the domain of entrepreneurship and attracted a substantial empirical effort (Unger, Rauch, Frese, & Rosenbusch, 2011). From a resource-based perspective, human capital can be viewed as a valuable resource which is often – depending on the specificity of knowledge and skills needed in a firm – rare, inimitable and non-substitutable (Barney, 1991). Hence, human capital often fulfills the criteria for resources which create competitive advantage.

Entrepreneurial human capital has been related to growth and financial performance (Unger et al., 2011), but the mechanisms via which human capital leads to increased performance in entrepreneurial firms, remain an under-researched topic (Marvel & Lumpkin, 2007). Human capital is of high relevance for knowledge-intensive processes such as innovation. In the discovery stage of the innovation process, entrepreneurial human capital should lead to higher outcomes in terms of opportunity recognition and creation (Ucbasaran, Westhead, & Wright, 2008). Marvel and Lumpkin (2007) found that both general and specific human capital were related to innovation radicalness. Innovation radicalness indicates the degree of newness and, thus, the potential in the market.

Yet, before inventions create financial benefits for firms they must be commercialized. The commercialization stage requires specific expertise (Wright, Hmieleski, Siegel, & Ensley, 2007), because technological features of the new invention need to be translated into customer benefits in order for the invention to be successfully launched to the market and, thus, become an innovation. Naturally, in this stage of the innovation processes the demand for market-related knowledge and skills is high. Entrepreneurs need to identify appropriate marketing measures, distribution channels and partners to bring the invention to market. Individuals with greater human capital can be expected to be more apt in carrying out these challenging tasks.

In addition to these direct effects of human capital on innovation, there may be indirect advantages. For example, human capital may serve as a positive signal to other stakeholders and resource providers such as employees, investors, or suppliers (Parker & van Praag, 2006). For instance, entrepreneurs with high human capital may attract employees with specific knowledge and skills needed for the different stages of the innovation process. Scrutinizing direct and indirect advantages of human capital for innovation, we posit that:

Hypothesis 1: There is a positive relationship between human capital and innovation.

### **The Relationship between Social Capital and Innovation**

Social capital has been defined as networks of relationships and resources that can be mobilized through these networks (Bourdieu, 1986; Nahapiet & Ghoshal, 1998). Unfortunately, on a conceptual level, there is little agreement about the construct of social capital in the literature. There seems to be some agreement that social capital is a multidimensional construct, consisting on structural and relational dimensions (Granovetter, 1985). Moreover, we focus on external social capital because external social capital is useful in attaining resources and, thereby, competitive advantages. Additionally, the social capital can be conceptualized at



the individual, the team and the firm level. On every level, having more social capital should help the firm innovating and improve firm performance.

Social capital is closely linked to a RBV framework, because it is socially constructed and, therefore, imperfectly imitable. Moreover, the development of social capital is path dependent and, therefore, it is rare. Finally, social capital is valuable, because it provides collectively owned capital and, thereby, specific resources (Nahapiet & Ghoshal, 1998). Thus, social capital is a prime candidate enabling firms to achieve a competitive advantage.

We assume that this competitive advantage is due to the social capital resources that allow firms to pursue innovations. This effect is predominantly due to two mechanisms. First, networks and social capital provide opportunities for acquiring and exploiting new knowledge required for innovation. For example, cooperation helps to combine external knowledge with existing knowledge in the firm (Yli-Renko, Autio, & Sapienza, 2001). Moreover, regular interfirm interactions support the transfer, recombination, and creation of specialized knowledge required for innovation (Dyer & Singh, 1998). Finally, cooperation also speeds up the exploitation of opportunities because the knowledge required for innovation implementation does not need to be developed internally. Second, social capital provides direct access to complementary resources required to pursue innovations. For example, cooperation reduces the risks inherent in innovation by sharing R&D investments or leveraging already existing resources.

Thereby, alliance partners reduce the financial costs associated with innovation processes. Thus, we argue that:

Hypothesis 2: There is a positive relationship between social capital and innovation

### **Innovation as a Mediator in the Relationship between Resources and Performance**

Innovation is concerned with the introduction of new combinations (products, services, markets, processes, organizations and processes of production) (Schumpeter, 1935). Resources enable firms to implement strategies that improve firms' effectiveness and success (Barney, 1991). Thus, resources do not affect performance directly, but through mediating processes. Innovation is a prime candidate for a mediator variable, because innovations involve substantial resource commitments. Social capital and human capital provide such resources. In turn, innovation is related to performance for several reasons. First, by offering innovations, firms can avoid competition. Second, innovations create new demand and, therefore, facilitates growth. Third, innovations create barriers for the competitors and, thereby, defend a firm's market position. There are additionally different types of innovations that affect performance differently. For example,

process innovations produce price advantages, while product innovations produce first-mover advantages. Empirically, a positive relationship between innovation and performance is well established (Rosenbusch, Brinckmann, & Bausch, 2011). Therefore, we expect that innovation is the mechanism by which human and social capital resources affect performance.

Hypothesis 3: The relationship of social capital and human capital with success is mediated by innovation.

## **METHOD**

We aimed to address the proposed relationship at the level of independent business ventures. To test our theoretical framework, we used a combination of previously published meta-analytical data, updated previously published meta-analyses and new meta-analyses. More specifically, we could rely on the meta-analysis by Unger et al., (2011) to test the relationship between human capital and performance. Another published meta-analysis included in our meta-analysis addressed the relationship between innovation and performance (Rosenbusch et al., 2011). Given the research context, the underlying studies synthesized in this meta-analysis are on firms of up to 500 employees. This criterion made it necessary to update the meta-analysis by companies with more than 500 employees. Finally,

we conducted four new meta-analyses to examine the relationship between social capital and performance, between social capital and innovation, between social capital and human capital, and between human capital and innovation.

### **Literature Search**

We relied on Frese, Bausch, Schmidt, Rauch, and Kabst (2012) to identify the meta-analyses relevant for the scope of our study. We performed an additional literature search for the bivariate relationships where no meta-analytical estimates were available. More specifically, we conducted a key word search using Econlit, JSTOR, Business Source Complete and Web of Science. We used combinations of keywords including Entrepre\*, venture, firm, human capital, knowledge, experience\*, skill\*, social capital, network, ties, innovation, R&D, new products, performance, growth, profit\*, success. Our search resulted in 458 samples included in our meta-analysis.

### **Coding and Meta-analytical Procedure**

We divided the studies among the authors in order to code study effect sizes. Each study was included once in the bivariate meta-analysis. Whenever a study reported multiple effect sizes we coded an average effect. We coded performance

as financial performance which included measures assessing growth, profitability, stock market performance and subjective financial performance. Social capital was coded along the dimensions of relational networks (tie strength) and structural networks (network size, sparse networks, and network diversity). Human capital and innovation was coded along the criteria developed by Unger et al. (2011) and Rosenbusch et al. (2011).

We used the methods suggested by Hunter and Schmidt (2004) in order to generate the bivariate meta-analyses. More specifically, we calculated the sample size weighted effect size and the 95% confidence interval around the effect size. The effect size was statistically significant, if the confidence interval did not include zero. Next, we created a meta-analytical intercorrelation matrix (Table 1). We used this intercorrelation matrix as an input for calculating a meta-analytic structural equation model (MASEM) to test the proposed relationships.

## **RESULTS**

Table 1 displays the correction matrix of the bivariate meta-analyses included in our study. Some of the results displayed here replicated results published by Unger et al. (2011) and, moreover, the additional studies included for the analysis of the relationship between innovation and performance revealed results consistent with those reported by Rosenbusch et al. (2011). The third meta-

analysis revealed a positive correlation between social capital and venture performance ( $r=.131$ ). Interestingly all these relationships with performance are small by statistical standards (Cohen, 1977). Thus, it is evident that resources alone are weak predictors of company performance. Interestingly, both human capital ( $r = .177$ ) and social capital ( $r = .185$ ) showed higher relationships with innovation. This result is consistent with the assumption that innovations require substantial resource endowments. The last meta-analysis revealed that human capital is significantly correlated with social capital ( $r = .104$ ).

Our MASEM model proposed that the effect of human capital and social capital on performances is mediated by innovation. We compared two different SEM models to test our hypotheses (Table 2). The first model displayed in Table 2 included only direct paths from human capital, social capital, and innovation to performance, respectively. The model had a poor model fit. Model two (Table 2) displays the hypothesized moderator model. Compared to model one, model two was substantially better with a moderately good model fit according to statistical standards (Frazier, Tix, & Barron, 2004). The path coefficients of model two indicated that human capital is positively associated with innovation ( $B = .17, p < .01$ ). This result indicates support for Hypothesis 1. Moreover, the results indicated support for Hypothesis 2 as the path between social capital and performance is positive and significant ( $B = .16, p < .01$ ). Finally, we calculate the direct effects, indirect effects, and total effects in order to test the mediator

hypothesis (Brown, 1997). In support for Hypothesis 3, we found that the indirect effects of human capital and of social capital on performance is positive and significant ( $B = .03, p < .01$  and  $B = .03, p < .01$ , respectively).

## DISCUSSION

This paper aimed to extend an RBV framework by including innovation as a mechanism explaining how resources affect performance. We used a combination of meta-analysis and structural equation modeling to test the proposed mediator model. In general, our results support the proposition that social capital and human capital affect innovation and, in consequence, firm performance.

Previous research has conceptualized innovation predominantly as an independent variable or as an outcome variable. This study contributes to the innovation literature by examining both the antecedents and the consequences of innovation strategy. Thereby, we could show that resources provide necessary conditions that facilitate the implementation of innovative strategies. Thus, there are conditions that must be met in order to facilitate innovation and success. This result contributes to a better understanding of the role of resources and the resource deployment mechanisms that lead to enhanced performance.

Additionally, our results revealed that both human capital and social capital likewise affect innovation and success. This result indicates that firms need to

align multiple resources to their firm strategy in order to achieve a competitive advantage. We believe that the unique exploitation of multiple resources through innovation leads to firm performance (Penrose, 1995).

Our results need to be interpreted with regard to some limitations. First, we recognize that previous research has conceptualized the innovation performance relationship in a contingency framework. We limited our analyses to mediator effects but we recognize that mediator and moderators might be present at the same time. For example, the environment might determine strategies (Porter, 1991) and, at the same time, affect the relationship between strategy and performance (Covin & Slevin, 1989). Future research should expand our model in order to test such moderated mediations. Moreover, we restricted our analysis to social capital and human capital because these are related to resources that can provide competitive advantages. However, there are other resources available and, therefore, future studies should include additional resource categories. Finally, RBV focusses on resources that are more specific than e.g., general human capital. Therefore, it would be useful to compare general and specific human capital and social capital resources.

Our results allow to draw some practical recommendations. For example, information about the mechanisms how resources affect performance enable entrepreneurs to make decisions regarding resource investments required given venture strategies. If SMEs intend to pursue innovations they need to acquire the



resources that will prompt innovation such as social and human capital identified in this study. Moreover, investors may try to secure a sufficient resource base enabling firms to innovate and become successful. Thus, the co-alignment of resources and strategies is a key to firm performance.

## REFERENCES

- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Becker, G. (1964). *Human capital*. New York: Columbia Univ. Press.
- Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and practice for the sociology of education* (pp. 241-258). New York: Greenwood.
- Brown, R. L. (1997). Assessing specific mediational effects in complex theoretical models. *Structural Equation Modeling*, 4(2), 142–156.
- Cohen, J. (1977). *Statistical power analysis for the behavioral science*. New York: Academic Press.
- Covin, J., & Slevin, D. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10, 75–87.
- Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *The Academy of Management Review*, 23(4), 660–679. Retrieved from <http://www.jstor.org/stable/259056>

- Edelman, L. F., Brush, C. G., & Manolova, T. (2005). Co-alignment in the resource–performance relationship: strategy as mediator. *Journal of Business Venturing*, 20(3), 359–383. doi:10.1016/j.jbusvent.2004.01.004
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Research*, 51(1), 115–134.
- Frese, M., Bausch, A., Schmidt, P., Rauch, A., & Kabst, R. (2012). Evidence-based Entrepreneurship (EBE): Cumulative science, action principles, and bridging the gap between science and practice. *Foundations and Trends in Entrepreneurship*, 8(1), 1–62. doi:10.1561/03000000044
- Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, 91(3), 481–510. Retrieved from <http://www.jstor.org/stable/2780199>
- Hunter, J. E., & Schmidt, F. L. (2004). *Methods for meta-analysis: Correcting error and bias in research findings*. Newbury Park, CA: Sage.
- Marvel, M. R., & Lumpkin, G. T. (2007). Technology entrepreneurs' human capital and its effects on innovation radicalness. *Entrepreneurship Theory & Practice*, 31(6), 807–828.
- Mincer, J. (1974). *Schooling, experience and earnings*. New York: Columbia University Press.

- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *The Academy of Management Review*, 23(2), 242–266. Retrieved from <http://www.jstor.org/stable/259373>
- Neal, A., & Hesketh, B. (2002). Productivity in organizations. In N. Anderson, D. S. Ones, H. K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of Industrial, Work, and Organizational Psychology* (pp. 7–24). Thousand Oaks, CA: Sage.
- Newbert, S. L. (2007). Empirical research on the resource-based view of the firm: an assessment and suggestions for future research. *Strategic Management Journal*, 28(2), 121–146.
- Parker, S., & van Praag, M. (2006). Schooling, Capital Constraints, and Entrepreneurial Performance: The Endogenous Triangle. *Journal of Business & Economic Statistics*, 24(4), 416–431.
- Penrose, E. (1995). *The theory of the growth of the firm* (3rd ed.). Oxford: Oxford University Press.
- Porter, M. E. (1991). Towards a dynamic theory of strategy. *Strategic Management Journal*, pp. 95–117.
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441–457.  
doi:10.1016/j.jbusvent.2009.12.002

- Schumpeter, J. (1935). *Theorie der wirtschaftlichen Entwicklung* (Theory of economic growth). München: Von Duncker und Humbolt.
- Ucbasaran, D., Westhead, P., & Wright, M. (2008). Opportunity identification and pursuit: Does an entrepreneur's human capital matter? *Small Business Economics*, 30(2), 153–173. doi:10.1007/s11187-006-9020-3
- Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26(3), 341–358. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0883902609000998>
- Wright, M., Hmieleski, K. M., Siegel, D., & Ensley, M. D. (2007). The role of human capital in technological entrepreneurship. *Entrepreneurship Theory & Practice*, 31(6), 791–806.
- Yli-Renko, H., Autio, E., & Sapienza, H. J. (2001). Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. *Strategic Management Journal*, 22(6-7), 587–613. doi:10.1002/smj.183

Table 1.

Meta-analytical correlation matrix

	1	2	3
1. Performance			
2. Innovation	r = .164 K: 96 N: 35.225		
3. Human capital	r = .076 K: 70 N: 24.733	r = .177 K: 64 N: 35.267	
4. Social capital	r = .131 K: 100 N: 24.022	r = .185 K: 64 N: 23.406	r = .104 K: 64 N: 32.406

Table 2

The effect of human capital and social capital on innovation and growth

	1 Direct effects			2 Full mediation		
	PC	Sd	t-value	PC	Sd	t-value
Social capital – innovation				.16	.01	27.51**
Human capital – innovation				.17	.01	29.05**
Social capital – performance	.04	.01	7.00**			
Human capital – performance	.10	.01	17.27**			
Innovation – performance	.14	.01	23.58**	.16	.01	27.96**
Chi (df)	1680.31 (2)			352.26 (2)		
Sig Chi	.00			.00		
RMSEA (p of RMSEA)	.17 (.00)			.079 (.00)		
CFI	.51			.90		
AGIF	.86			.97		

