Championship Behaviors and Innovations Success: An Empirical Investigation of University Spin-Offs*

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Championship Behaviors and Innovations Success: An Empirical Investigation of University Spin-Offs*

Achim Walter, K. Praveen Parboteeah, Felix Riesenhuber, and Martin Hoegl

Despite the flurry of scholarly research on champions, no prior article has explicitly addressed how different dimensions of championship behavior actually contribute to innovation success. In this article, based on an extensive literature review, the authors argue that champions display four behaviors, namely (1) pursuing innovative ideas, (2) network building, (3) persisting under adversity, and (4) taking responsibility for the idea.

The authors use data from 123 university spin-offs to test proposed linear and curvilinear relationships between the four behaviors and an objective measure of innovation success, namely a longitudinal measure of sales growth. The results indicate that network building has the desired positive relationship with sales performance. Surprisingly, pursuing the innovative idea is not related to sales growth. Furthermore, the present study also reveals some dysfunctional effects of champion behaviors. Persisting under adversity and taking responsibility have the hypothesized inverted-U relationship with sales growth.

The present study provides a more refined discussion of the benefits and dangers of championing behaviors. Our results show that linking technology to markets can be planned and controlled only to a very limited extent even if champions are working hard to sell the idea to potential customers. Moreover, any new idea is often competing with existing products and pursuing such ideas may result in opposition to the idea.

In contrast, network building has the desired positive relationship with innovation success. Effective championing behavior keeps an innovative idea alive by mobilizing support and building coalitions around the idea with critical individuals or important third parties.

Moreover, this study challenges the widespread “heroic” discussion of championing as fundamentally positive “across the board.” The results show that persisting under adversity and taking responsibility are desirable up to some levels. Beyond such critical levels, these two champion behaviors may actually become detrimental to the innovation process. Being too persistent in the face of adversity or taking too much responsibility for the innovative idea might undermine the power of the champion’s justifications for an innovation and thereby increase resistance to change. An “over-performing” champion may interpret opposing communications as an unwarranted and injurious response. By taking overmuch responsibility for the innovative undertaking, the champion is likely to discourage contributions from other team members who see no valuable opportunity to bring their expertise and knowledge to the idea.

Introduction

Innovation continues to get sustained interest from researchers. Such interest is not surprising given the important role played by innovation in any organization’s attempt at competitive advantage and survival. Innovation allows companies to introduce new products to successfully face global competition, rapidly changing customer needs, and increasing pressures for shortened life cycles (Brown and Eisenhardt, 1995). Innovation is therefore important for a company’s growth, renewal, and survival (e.g., Damanpour and Evan, 1984).

Critical to innovation are champions, those individuals who actively pursue new product ideas to apply such ideas to product innovation and bring them to market (Achilladelis, Jervis, and Roberston, 1971; Howell, Shea, and Higgins, 2005). Without champions, it is likely that new ideas for innovation would probably be neglected and “remain dormant for future development and implementation” (Frost and Egri, 1991, p. 270). Champions take up new ideas and aggressively fight bureaucratic as well as social and political barriers to turn such ideas into successful innovations (Schon, 1963).

However, despite the recent flurry of scholarly work on champions (e.g., Howell et al., 2005; Markham,
2000) starting with the seminal work of Schon (1963), there remain a few key unexplored issues that form the basis for our paper. First and most importantly, most previous work has assumed the existence of champions without proper specification of what constitutes championing behavior. Additionally, at the time of our first survey, there was no well-established multi-item scale to measure innovation championing behavior (ICB). Furthermore, such research also assumes a binary view of champions in that individuals can either be champions or non-champions (Howell and Higgins, 1990a; Markham, Green, and Basu, 1991; Hauschildt and Howells and Higgins, 1990a, 1990b). Given such situations, it is argued that for two championing behaviors ("persisting and Higgins, 1990a, 1990b). Given such situations, it is argued that for two championing behaviors ("persisting and adversities'', there exists a curvilinear relationship with innovation success. For instance, previous work has examined the correlation of the mere presence of a champion with new product development (NPD) performance and/or product innovativeness (e.g., Day, 1994; Jervis, 1975; Markham et al., 1991; Voss, 1985). More recently, Gemünden, Salomo, and Hölzle (2007), Hauschildt and Kirchmann (2001), and Howell et al. (2005) directly addressed the issue of performance, but at the project level. The study of Lichtenthaler and Ernst (2009) shows a significant effect of champions on external knowledge exploitation revenues. Furthermore, although case studies have shown that the presence of champions is closely linked to innovation success (as reviewed in Howell and Higgins, 1990a), large-scale (quantitative) sample data did not support this basic linear (direct) relationship (Markham and Griffin, 1998; Markham, 2000). Thus, absent is evidence that champions contribute positively to the success of innovation.

In this study, an objective measure of innovation success for the organization, namely a longitudinal measure of sales growth and its relationship with championing behaviors, is considered.

Third, most previous work has assumed that the presence of champions is generally beneficial to the organization. Such scholarship takes a rather “heroic” view of champions. However, it is argued that champions are not necessarily always innovation heroes and that not all behaviors exhibited by champions are always beneficial to organizations. Although scholars have long recognized the potential disruptive role of champions (e.g., Fischer, Hamilton, McMago, and Zmud, 1986; Jervis, 1975; Markham et al., 1991), the fundamental question of how much championing is too much is still unanswered. In supporting innovative ideas, champions sometimes are renegades who violate explicit management directives and organizational rules (Howell and Higgins, 1990a, 1990b). Given such situations, it is argued that for two championing behaviors (“persisting under adversity” and “taking responsibility”), there exists a curvilinear relationship with innovation success.

Academic spin-offs present an important opportunity to assess the role played by innovation...
champions. University spin-offs are business ventures, which (1) are founded by one or more academics that choose to work in the private sector, and (2) which transfer a technology or technology-based ideas developed within a university. Unlike corporate ventures where performance may be dependent on other factors outside of the control of the champion (e.g., bureaucratic pressures inherent in the corporation, resistance from superiors, etc.), our study of academic spin-offs provides access to an objective sales growth measure that can be most directly attributable to the champions’ behaviors. The longitudinal character of our study allows solid inferences about the regression results.

Champion Behavior and Innovation Success

Champions are individuals who aggressively pursue ideas and make important contributions by persevering and overcoming barriers to enthusiastically promote the idea through organizational stages (Day, 1994; Howell et al., 2005; Schon, 1963). Schon’s (1963) study showed the critical roles played by champions in supporting and promoting technological innovation in the military.

However, despite increased understanding of champions, few studies define what constitutes “championing behaviors.” Prior to Howell and Higgins (1990a), most studies only reported anecdotal evidence of the presence of champions. Furthermore, while Howell and Higgins (1990a, 1990b) offer important personality and leadership characteristics that differentiate champions from non-champions, they do not explicitly specify what champions do in the organization. In a review piece, Markham et al. (1991) reviewed diverse definitions of championing and concluded that champions are engaged in two basic activities: (1) champions adopt an innovation during its development and (2) champions contribute to the development of that innovation by selling the idea to others and gaining resources. Table 1 shows further descriptions of championing behaviors.

While it would have been preferable to derive championing behaviors based on theoretical considerations, review of the extant literature shows that most studies determine champion behaviors based on actual championing behaviors in organizations. For instance, in the most recent study, Howell et al. (2005) derive their champion behaviors based on interviews with middle- and executive-level managers. After considering and refining the exhaustive list of behaviors, they use 102 items to derive three factors comprising 15 items to reflect three champion behaviors.

We use a similar empirical approach and derive our champion behaviors basing our article on the literature on champions (e.g., Chakrabarti and Hauschildt, 1989; Howell and Higgins, 1990a, 1990b; Keller and Holland, 1983; Maidique, 1980; Schon, 1963). Specifically, after reviewing the various champion behaviors as described in Table 1, a deductive approach is used to propose that champions display four critical behaviors. The seminal works on champions starting with Schon (1963) and more recent works by Howell and Higgins (1990a, 1990b), Howell et al. (2005), and Day (1994), among others, all provide converging evidence for the presence of these four behaviors. In the following each behavior and the relationship with innovation success is discussed. Figure 1 summarizes these hypothesized relationships.

Hypotheses

Pursuing Innovative Ideas

It is proposed that the first critical champion behavior is pursuing the innovative idea. As Table 1 shows, most, if not all, studies of champions suggest that successful champions are the ones that are willing to stay focused and to pursue their new innovative ideas (e.g., Markham et al., 1991; Roberts and Fusfeld, 1981; Schon, 1963). In his classic article on military innovations, Schon (1963) argues how important it is for champions to pursue their idea with conviction and to risk their position and reputation to ensure success. It is therefore undeniable that innovative ideas would surely perish if they don’t find champions who are willing to pursue such ideas.

We argue that there is a direct relationship between the degree to which champions pursue their innovative ideas and innovation success. As noted by Keller and Holland (1983), champions need to pursue their innovative ideas and exert social effort to get others to cooperate and buy into the idea. It is important to note that for a spin-off, the academic entrepreneur faces an uphill battle in pursuing the idea. The champion therefore needs to sell the idea with conviction to get others to buy into the idea.

Furthermore, as noted by Howell et al. (2005), pursuing the idea is critical to ensure new product success. For instance, champions may aggressively need to pursue a new product idea to mobilize resources in order to show the feasibility of the idea (Burgelman, 1983). Additionally, by selling the idea, a champion can also exert the critical social and
Table 1. Descriptions of Championing Behavior

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schon (1963)</td>
<td>“Essentially, the champion must be a man willing to put himself on the line for an idea of doubtful success. He is willing to fail. But he is capable of using any and every means of informal sales and pressure in order to succeed. . . . It is characteristic of champions of new development that they identify with the idea as their own, and with its promotion as a cause . . . many display persistence and courage of heroic quality.” (pp. 84-85)</td>
</tr>
<tr>
<td>Jervis (1975)</td>
<td>“Any individual who made a decisive contribution to the innovation by actively and enthusiastically promoting its progress through critical stages, whether he had management responsibility for all or part of the project or not.” (p. 22)</td>
</tr>
<tr>
<td>Maidique (1980)</td>
<td>“A member of an organization [product champion] who creates, defines, or adopts an idea for a new technological innovation and who is willing to risk his or her position and prestige to make possible the innovation’s successful implementation. . . . An executive in a technological firm [executive champion] who has direct or indirect influence over the resource allocation process and who uses this power to channel resources to a new technological innovation, thereby absorbing most, but usually not all, the risk of the project.” (p. 64)</td>
</tr>
<tr>
<td>Burgelman (1983)</td>
<td>“Product championing was required to turn a new idea into a concrete new project in which technical and marketing development could begin to take shape. These activities required the ability to mobilize the resources necessary to demonstrate that what conventional corporate wisdom had classified as impossible was, in fact, possible. To overcome difficulties in resource procurement resulting from this conventional wisdom, product champions acted as scavengers, reaching for hidden or forgotten resources to demonstrate feasibility.” (p. 232)</td>
</tr>
<tr>
<td>Tushman and Nadler (1986)</td>
<td>“Champions or internal entrepreneurs take creative ideas (which they may or may not have generated) and bring the ideas to life.” (p. 89)</td>
</tr>
<tr>
<td>Chakrabarti and Hauschildt (1989)</td>
<td>“The champion (process promoter) acts as a linkage. . . . By becoming a salesman of the new idea, the champion is able to develop a plan of action.” (p. 166) “He is an integral part of the information flow in the innovation team. His communication is not only with the sponsor and the expert, but also with market partners, consultants, functional managers, and opponents.” (p. 168) “The champion is the navigator of the innovation process. . . . The champion ‘sells’ the innovation to all members of the firm who are likely to be affected by it. He explains, teaches, and motivates. He deals with opponents by getting his activities legitimized by power centres.” (pp. 168-69)</td>
</tr>
<tr>
<td>Howell and Higgins (1990a)</td>
<td>“Project champions. . . distill creative ideas from information sources and they enthusiastically promote them within the organization. . . . [C]hampions seek out creative ideas from information sources and they enthusiastically sell them.” (p. 318) “Champions serve as informal leaders, inspiring others with their vision of an innovation potential. [C]hampions act as influence agents to promote their ideas.” (p. 320)</td>
</tr>
<tr>
<td>Shane, Venkataraman, and MacMillan (1995)</td>
<td>“People who take personal risks to overcome resistance to innovative ideas in established organizations.” (p. 931) “Need for champions to bring together organization members with different backgrounds and knowledge for innovation to take place. Champions provide or acquire the necessary resources and support for the innovation to be developed or implemented.” (p. 934) “A champion emerges to do what is necessary to get the job done whether or not these ways are consistent with organizational norms and routines.” (p. 935)</td>
</tr>
<tr>
<td>Markham and Griffin (1998)</td>
<td>Refer to the champion definition in the PDMA Handbook of Product Development (1996, p. 519): “A person who takes an inordinate interest in seeing that a particular process or product is fully developed and marketed. The role varies from situations calling for little more than stimulating awareness of the opportunity to extreme cases where the champion tries to force a project past the strongly entrenched internal resistance of company policy or that of objecting parties.”</td>
</tr>
<tr>
<td>Markham (2000)</td>
<td>“Defines a championing role as one in which an individual strongly advocates a research and development (R&amp;D) project and generates positive behavioural support for it or work on its behalf.” (pp. 429-30)</td>
</tr>
<tr>
<td>Howell and Shea (2001)</td>
<td>“By initiating frequent and varied influence attempts, obtaining critical management support and resources, and displaying persistence in achieving project goals, champions are able to overcome the inertia and resistance that radical change provokes to bring product innovation attempts to successful fruition.” (p. 15)</td>
</tr>
</tbody>
</table>
political effort to garner the necessary support internally for the idea (Venkataraman, MacMillan, and McGrath, 1992). Given the above, it is expected that the higher the effort to pursue the new idea, the more likely others will buy into the idea and the better the chance of success (Van de Ven, 1986). Hence,

H1: Pursuing the innovative idea has a positive relationship with innovation success.

Network Building

A second important behavior displayed by champions is network building. It is well recognized that networks are generally critical to innovation and entrepreneurship (Chung and Gibbons, 1997; Young, Charns, and Shortell, 2001). Most champion behavior studies identify network building as an important behavior to ensure success (Burgelman, 1983; Howell et al., 2005; Schon, 1963). Having access to the appropriate network provides the champion with expertise and the ability to get others to buy into the idea (Chakrabarti and Hauschildt, 1989).

It is proposed that there is a positive relationship between network building and innovation success. If the champion can get people involved in the project, it is more likely that they will get the necessary support to translate the idea into commercial success (Hauschildt and Kirchmann, 2001). As a boundary spanner, an innovation champion is active in bridging innovation subsystems to the larger organization or external partners (e.g., Keller and Holland, 1983; Tushman and Scanlan, 1981; Walter and Gemünden, 2000). Furthermore, networks can also provide the champion with crucial resources and expertise to translate the idea into successful innovation (Burgelman, 1983; Tsai and Ghoshal, 1998). In some cases, getting people such as top managers involved is more likely to ensure that there is support and enthusiasm for the idea (Howell and Higgins, 1990b).

Furthermore, as in the case of “pursuing the innovative idea,” it seems more likely that the champion achieves innovation success by aggressively getting the right people involved. By seeking the input of others (including top management, even on the side of innovation partners), the champion is more likely to overcome pockets of doubt and build commitment and support for the idea. Previous research on champion behaviors provides strong support for this assertion (Burgelman, 1983; Howell et al., 2005; Venkataraman et al., 1992). Furthermore, network building capability thus allows the champion to have access to critical knowledge and expertise while also providing opportunities to learn from others. Thus,

H2: Network building has a positive relationship with innovation success.

Taking Responsibility

As Table 1 shows, another critical champion behavior that many champion studies identify is taking responsibility for the idea. An idea cannot become successful unless the champion commits to making the idea a success. For instance, as argued by Maidique (1980), a champion needs to take responsibility for the idea to ensure success. Similarly, other important champion behavior scholarship suggests that taking responsibility for the idea is a key aspect of success (Chakrabarti and Hauschildt, 1989; Jervis, 1975).

However, in contrast to the other two previous champion behaviors, it is argued that taking responsibility for the idea has an inverted U-shaped relationship with innovation success. The realization of an innovation is associated with significant uncertainties, which keep innovation partners from investing in the idea. In the context of uncertainty, the personal commitment of the champion sends a credible signal to stakeholders about the quality of the innovation project. At low levels of taking responsibility, an idea is therefore likely to fail as it cannot garner the necessary management attention and commitment (Van de Ven, 1986). Most research supports the notion that a champion can only translate an idea into successful innovation if he or she is committed to the idea and takes responsibility for the idea. As mentioned by Frost and Egri (1991, p. 270): “without dedicated champions, ideas for product innovations may remain dormant.” Maidique (1980) and
Schon (1963) also echo this perspective that successful champions take personal responsibility for their ideas while willingly risking their position.

However, beyond a certain point, if the champion takes too much responsibility for the idea, the idea is less likely to have commercial success. The development of innovative products is necessarily a collaborative effort as it requires input from diverse knowledge domains. By taking over too much responsibility for the innovation, the champion is likely to discourage contributions from other team members who see no opportunity or incentive to bring their expertise and knowledge to the idea (Kessler and Chakrabarti, 1999). As noted by numerous studies, champions need solidarity around the idea (e.g., Howell and Higgins, 1990a, 1990b; Markham and Griffin, 1998; Shane, 1994) in order to translate the idea into innovation success.

Additionally, by taking too much responsibility for the innovative idea, champions may be seen as resistant or unreceptive to the ideas and counteroffers submitted by others. As a consequence, stakeholders and partners may refuse cooperation or allegiance. Moreover, champions feeling highly responsible for the innovation may engage in a failing course of action considering the project as a “one-man show.” They may emphasize conversations for understanding over conversations for participation, which is not sufficient to solicit commitment and to produce action (Ford, Ford, and D’Amelio, 2008; Schmidt and Calantone, 2002). As a result, champions may become bottlenecks hampering cooperation among other stakeholders and the flow of information. Thus, persistence is necessary as the champion fights the many challenges and hurdles (e.g., bureaucratic hurdles, resistance to change from others, “justified ambivalence”) to garner the necessary support (resource, expertise, etc.) to make the idea a commercial success.

However, beyond a certain degree of persistence, innovation success likely suffers. The escalation of commitment literature (Staw and Ross, 1987), suggesting that individuals become locked into failing courses of action, provides the basis for our arguments. It seems likely that champions, in their zeal to bring ideas to success, may ignore important negative information and persist in their belief that their ideas will become successful. Research has actually shown that individuals are prone to escalation of commitment when launching new products (Biyalogorsky, Boulding, and Staelin, 2006; Schmidt and Calantone, 2002). Similarly, we believe that for new ideas, champions may aggressively pursue the idea despite negative information that may mitigate success. This may occur because the champion is afraid of “losing face” (Brockner, Rubin, and Lang, 1981) or may truly believe that he or she has a chance of succeeding. As such, if champions are overcommitted to their ideas, it seems more likely to expect extreme levels of commitment to result in significant resource losses, thus relating to lower organizational performance. In the case of academic spin-offs, extreme persistence under adversity may cause the academic entrepreneur to waste time on convincing unresponsive customers. This will take time away from pursuing more rewarding opportunities in the market.

However, in addition to the pursuit of blind alleys, persistence under adversity beyond a certain point may also attract disproportionate opposition. This can be the case when superiors will use hierarchical power to abandon innovation projects that they believe are championed by stubborn employees that seem immune to rational argumentation. Highly motivated champions may engage in intentional misrepresentations of the innovative idea (e.g., with respect to the costs, benefits, or the likelihood of success) to induce or preserve stakeholders’ participation. In doing so, champions run the risk of undermining their credibility, adding to the stakeholders’ anticipation of future inconsistencies in the course of the innovation process. As a consequence, even in competitive situations where the allocation of resources is a central subject, stakeholders will respond with resistant behaviors or communications (Ford et al., 2008).

H3: There is an inverted-U relationship between taking responsibility for the idea and innovation success.

Persisting under Adversity

Most champion behavior studies identify persisting under adversity as a critical champion behavior (Howell et al., 2005). As Maidique (1980) noted, champions need to promote an idea with conviction and persistence and be willing to risk their positions and reputations to ensure success. Chakrabarti and Hauschildt (1989) also discussed the need for the champion to be personally committed to the idea to be successful.

Similar to taking responsibility for the idea, it is argued that there is an inverted U-shaped relationship between persisting under adversity and organizational performance. Up to some point, higher levels of persistence are beneficial to the innovation idea. Such
There is an inverted-U relationship between persisting under adversity and innovation success.

Empirical Analysis

Sample and Data Collection

The data for this study comes from a larger research project investigating the establishment and development of academic spin-offs. The German Steinbeis Association of Technology Transfer (TT) provided the mailing list for the survey. Between 1998 and 1999, 227 founders of academic spin-offs were contacted and asked to complete a research questionnaire. Persons not responding after three weeks were phoned and mailed a follow-up reminder; 198 of the spin-offs returned the questionnaire. Another survey was done in 2004, where information on total sales for the business period 2000–2003 was gathered directly from the spin-offs’ accounting departments.

The data set for our hypothesis test consists of spin-offs that are not older than 15 years and provided sales revenues for the four business periods. We checked and corrected for outliers and inconsistencies. Thus, 123 questionnaires were usable. In 2000, the average number of employees and sales revenue were 8.6 employees and $357,422 respectively.

Operationalizations and Measure Validation

The scale development followed the guidelines of Gerbing and Anderson (1988). All scales were pre-tested in four successive rounds. In each round, two to three interviewees (spin-off founders/TT experts) were asked to complete the questionnaires. While completing the questionnaires, academic entrepreneurs and TT experts verbalized any thoughts that came to mind. The items were revised following each interview round. At the end of round four, the feedback indicated that the scale items were clear, meaningful, and relevant.

Independent variables. The innovation championing behavior (ICB) construct comprises four core domains: pursuing innovative ideas (PII), network building (NWB), persisting under adversity (PUA), and taking responsibility (TR). Each construct was derived from published work that advocates it as appropriate in the conceptualization and assessment of ICB. Multi-item scales were used to collect data on the four constructs. The academic entrepreneurs, the driving forces behind the spin-off process, were asked to indicate the extent to which they agreed or disagreed with the statement, such that 1 = statement does not apply at all, 7 = statement applies fully and completely. The appendix lists each item and associates it with published work on innovation championing.

The ICB measures were refined and their construct validity assessed. First, an exploratory factor analysis of 198 responses of academic founders revealed the expected four factors. With a few exceptions all items loaded on their respective factors with loadings above the threshold of .50. Second, confirmatory factor analysis (LISREL 8) was used to estimate the measurement model. After some items with low factor loadings were dropped, the confirmatory model fits the data satisfactorily.

The generated goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and comparative fit index (CFI) (GFI = .94, AGFI = .90, CFI = .97, RMSEA = .06) indicate a good fit with the hypothesized measurement model (Bagozzi and Yi, 1988). The ratio of the chi square statistic (\(\chi^2_{(48)} = 85, p = .00\)) is satisfactory as the measure was 1.77 (Medsker, Williams, and Holahan, 1994). All the factor loadings are in acceptable ranges and significant at \(p = .01\).

The PII factor embraces three items that capture the academic entrepreneur’s selling of innovative ideas and confidence in innovations (\(\alpha = .73\)). The NWB factor assesses the extent to which an entrepreneur develops close relationships in order to gather resources held by other important actors (\(\alpha = .83\)). The three PUA items indicate the academic entrepreneur’s persistence in pursuing desired goals (\(\alpha = .74\)). The TR construct measures the extent to which an entrepreneur takes responsibility for the business venture (\(\alpha = .80\)). For the subsequent analyses the indicators for each ICB construct were averaged.

As a further validity check, the four ICB facets were correlated with the founders’ working time spent on marketing activities and project management. As assumed, the correlations were all positive and significant (two-tailed test).

Dependent variable. As recommended in the entrepreneurship literature, sales growth is used as a traditional accounting measure of innovation success. Sales growth is an indication of the extent to which customers value products a technology-based venture is pursuing (Yli-Renko, Autio, and Sapienza, 2001) and is therefore a measure of success.
Information regarding the performance measure total sales for the business periods 2000, 2001, 2002, and 2003 was gathered. The spin-offs’ accounting offices released the exact figures for the respective years. Therefore, we were able to build a longitudinal performance measure for the spin-offs under consideration by averaging the annual growth rate for 2001–2003. We used the logarithm of the averaged growth rate.

Control variables. Knowledge of industry problems and networks might impact the effectiveness of championing activities (Howell and Higgins, 1990a). Industry experience of the academic entrepreneur prior to founding the spin-off was therefore controlled. The construct was measured as years of industry experience the academic founder had gained before the spin-off.

To capture an academic entrepreneur’s general experience with various social situations, the founders’ age was controlled. For instance, individuals fostering innovations should be able to articulate compelling visions about their values to get people to appreciate new ideas and opportunities (Howell and Higgins, 1990a, 1990b).

Because it is widely accepted that innovation championship needs a certain political astuteness and credibility in effectively managing risky projects (e.g., Chakrabarti and Hauschildt, 1989; Day, 1994; Fischer et al., 1986), organizational tenure of the spin-off founders in years was also controlled.

Moreover, organizational size was controlled, to capture the social complexity within the spin-off. Bureaucratic effects of size could undermine the individual effects of champions on innovation outcomes (Day, 1994). The size was measured using a spin-off’s number of full-time employees and freelancers (four freelancers were considered as one full-time employee).

Mansfield (1995) found that different scientific disciplines vary in their impact on industrial innovation. Therefore, the technology field the spin-off’s core technology falls into (dummies) was controlled. In a similar notion, Klevorick, Levin, Nelson, and Winter (1995) demonstrated that different technological fields are differently connected with a range of industries.

See the Appendix for a list of all measures and corresponding items.

Results

Ordinary least-squares regressions were used to test our hypotheses. To reduce possible problems of multicollinearity resulting from squared terms, main effect variables were centered prior to the computation of squared terms (Aiken and West, 1991). Table 2 shows the descriptive statistics.

The results of the regression analyses are summarized in Table 3. Typically, correlations over .80, VIFs over 10, and CNs over 30 indicate serious multicollinearity problems. However, variance inflations factors (max VIF = 2.79) and condition numbers (max CN = 4.98) indicate that collinearity was not an issue in this study.

In the first regression step, the control variables industry experience, founder’s age, organizational size, spin-off age, and the dummy variables were entered into the regression. Entering the main effects of the ICBs in step 2 yielded a significant equation for NWB (b = .23, p < .05, H2 supported). However, the impact of PII on sales growth is not significant and offers no support for Hypothesis 1 (b = .08).

In step 3 the quadratic terms of the two ICB facets PUA and TR were entered. The quadratic terms of PUA and TR show the predicted negative effect on sales growth (H3 supported, b = -.30, p < .01; H4 supported, b = -.28, p < .05). Figure 2 depicts the PUA and TR curves based on model 3. Thus, we found support for our assumed curvilinear relationships

Table 2. Descriptive Statistics and Correlations

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>sd</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sales growth (logarithm)</td>
<td>-.03</td>
<td>.28</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Pursuing innovative ideas</td>
<td>5.74</td>
<td>.94</td>
<td>.02</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. Network building</td>
<td>5.81</td>
<td>.93</td>
<td>.23</td>
<td>.34</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Persisting under adversity</td>
<td>5.65</td>
<td>.93</td>
<td>.17</td>
<td>.31</td>
<td>.38</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. Taking responsibility</td>
<td>5.75</td>
<td>1.00</td>
<td>.13</td>
<td>.17</td>
<td>.16</td>
<td>.32</td>
<td>1</td>
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</tr>
<tr>
<td>6. Industry experience</td>
<td>5.63</td>
<td>4.75</td>
<td>.11</td>
<td>.07</td>
<td>.18</td>
<td>.05</td>
<td>-.01</td>
<td>1</td>
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<td></td>
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<tr>
<td>7. Founder’s age</td>
<td>50.17</td>
<td>8.22</td>
<td>.04</td>
<td>.13</td>
<td>.21</td>
<td>.20</td>
<td>.00</td>
<td>.20</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8. Organizational tenure</td>
<td>5.93</td>
<td>3.71</td>
<td>-.06</td>
<td>.18</td>
<td>.18</td>
<td>.14</td>
<td>.09</td>
<td>.14</td>
<td>.52</td>
<td>1</td>
</tr>
<tr>
<td>9. Organizational size</td>
<td>8.58</td>
<td>15.70</td>
<td>.01</td>
<td>.16</td>
<td>.27</td>
<td>.16</td>
<td>.14</td>
<td>.07</td>
<td>.25</td>
<td>.19</td>
</tr>
</tbody>
</table>

*a Correlations greater than .18 (.15) are significant at p < .05 (.10) (two-tailed).
Discussion

The main purpose of this article was to investigate the role of championing behaviors for the success of academic spin-offs. Using data from 123 university spin-offs in Germany, the results provide a number of new insights to further the champion literature. Basing our arguments on the appropriate literature, what constitutes the champion behavior is described. By studying academic spin-offs, we conceptualize and empirically test how these four behaviors are linked to an objective indicator of innovation success.

Overall, this study provides a more refined discussion of the benefits and dangers of some championing behaviors. Specifically, our findings of a quadratic relationship between taking responsibility and persisting under adversity with the spin-offs’ sales growth is important. These findings extend previous literature arguing for a linear relationship between championing behaviors and innovation success (e.g., Day, 1994; Howell and Shea, 2001; Markham and Griffin, 1998). Moreover, this is, to our knowledge, the first quantitative empirical study linking championing behaviors to a longitudinal indicator of innovation success.

Theoretical Implications

It was surprising to find that pursuing innovative ideas had no relationship with organizational performance, given that the literature overwhelmingly supports the notion that this behavior is critical for championing success (Howell and Higgins, 1990a;...
Schon, 1963). However, several arguments may be used to support this surprising finding.

Linking technology to market opportunities is associated with great uncertainty and competition-related barriers (Bond and Houston, 2003). It can, therefore, only be planned and controlled to a very limited extent, and thus may require many failures before a design is found (Lynn, Morone, and Paulson, 1996). During this process of probe and learning, decisive contributions of customers with real-world experience are often needed (von Hippel, 1986). However, not all customers can provide such a contribution. Most customers are steeped in the present and are thus unlikely to generate novel product concepts. Thus, even if the champion works hard to sell the idea to customers, there may often not be any benefit to such actions.

Additionally, in the case of many established companies, highly innovative and less innovative projects (e.g., line extensions) often compete internally for the same resources. However, less innovative projects can often provide sound return on investment scenarios due to the lower uncertainties involved in their development. As such they are advantaged in internal investment decision-making processes (Christensen and Bower, 1996). An internal sales pitch of a highly innovative project against a line extension may therefore mobilize employees that can easily kill the project to protect their own products.

Consistent with the predictions from the literature (Burgelman, 1983; Howell and Shea, 2006; Howell et al., 2005), results show that network building has the desired positive relationship with organizational success. Such results are consistent with the notion that support from others is critical to keep an idea alive. Champions need to consistently maintain rapport with critical individuals on the side of the business partners (e.g., top managers, project managers) or important third parties (e.g., customers, suppliers) in order to overcome doubt and mobilize both support and resources for the idea.

As expected, persisting under adversity and taking responsibility had inverted U relationships with sales growth. Such results challenge the widespread “heroic” discussion of championing as fundamentally positive “across the board.” From Schon’s (1963) initial work on champions until today, most studies of championing is seen as “the more the better.” However, our study reveals some dysfunctional effects of that behavior. Our results show that some behaviors are desirable up to some level. Beyond such critical levels, these two champion behaviors may actually become detrimental to the organization. Figure 2 provides a visual depicting these relationships.

A champion, as an agent of change, has to provide justifications that legitimize the change and investments that correspond with an innovative idea (Ford et al., 2008). However, as was argued before, this wholehearted commitment to an innovative idea might cause a bias toward optimism. As a result of their professional optimism, champions may oversell the positive and undersell the negative aspects of an innovative idea. However, in doing so, they run the risk of creating perceptions of misrepresentation, injustice, and violations of trust that actually result in increased resistance towards the intended innovation (Ford et al., 2008). “Over-performing” champions who interpret resistant communications as an unwarranted and injurious response add to the persistence of resistance and its escalation (Powell and Posner, 1978). As such, being too persistent in the face of adversity or taking too much responsibility for the innovative undertaking might undermine the power of the champion’s justifications for an innovation and thereby increase resistance to change.

Managerial Implications

This research offers several implications for setting up and managing new ventures such as university spin-offs. First, rather than aiming for maximally high levels of championing behaviors, this research calls for a more refined approach to championing. While some dimensions may be ineffective or detrimental beyond certain levels (e.g., “persistence under adversity”) others need to be executed at high levels to contribute positively to innovation success (e.g., “network building”). The entrepreneurs (or champions), along with public and private funding agencies, are well-advised to engage in or support championing behaviors, while at the same time understanding that eventually some of these behaviors will have diminishing and even negative returns.

In the start-up phase of a research-based spin-off the academic entrepreneurs in the champion role evolve as formal leaders of the venture by arranging the physical infrastructure, operational matters, agreements, and communication structure (Burgelman, 1983). Even Clarysse and Moray (2004) found in their case study some evidence of an automatic evolution of the champion role into that of the business manager of the new venture. Our study points to the dangerous situation for a research-based spin-off
where champions do not function adequately as business managers. Sticking far too long to a commercially nonviable business idea and monopolizing decision processes, the champion may serve as a bottleneck for business development and growth. An “over-performing” champion may undermine the enthusiasm of team members and social control mechanisms (e.g., constructive criticism, feedback loops) that are necessary to initiate follow-up project planning and execution.

**Limitations and Outlook**

A few limitations of this study are worth noting. First, while longitudinally measured sales growth, as this study’s dependent variable, assesses the acceptance and development of a new company and its innovation in its markets, it does not provide any indication regarding the levels of profitability achieved. Indicators such as return on investment or return on assets would be desirable. However, such information is (1) very difficult to obtain due to sensitivity issues, and (2) regularly difficult to compare across companies due to differences in accounting and valuation.

Second, the present study was conducted in Germany, raising the question of transferability of results to other national contexts such as those of North America or Asia. While this study is not internationally comparative in nature and therefore cannot offer any answers to this question, the theoretical considerations presented in this article are not country-specific, but rather based on international scholarly work and empirical findings. Further research in other countries is encouraged to increase our understanding of the possible influences of country contexts on the variables and relationships investigated here; e.g., Shane (1995) and Shane et al. (1995) have found in their cross-national studies that cultural values may account for championing roles.

Third, given that this article’s objective was to investigate the link between championing behaviors and organizational success of university spin-offs, our conceptual and empirical analyses do not offer any insights regarding possible determinants of such behaviors in other start-up organizations. As such, further inquiries to identify and validate key drivers of appropriate, rather than maximally intense, championing behaviors are encouraged. The conceptual considerations and empirical evidence from this research may serve as a useful starting point to such necessary further investigation to explain entrepreneurial success, rather than deferring to a mystically heroic champion.

Beyond the above limitations, our study makes an important methodological contribution to the study of champion behaviors. This manuscript was conducted almost concurrently with Howell et al.’s (2005) study of champion behaviors. Our findings show that at least one champion behavior is similar to those found by Howell and colleagues (e.g., persisting under adversity). However, some unique champion behaviors were also found (e.g., network building, pursuing the idea, and taking responsibility). When combined with Howell et al.’s (2005) study, five champion behaviors emerge. It is hoped that future studies will investigate these five behaviors to validate the existence of such behaviors.

**References**


Sales revenues were directly gathered from the spin-off accounting office.

Sales growth = \( \lg_{10}\left(\frac{\text{sales2001/sales2000} + \text{sales2002/sales2001} + \text{sales2003/sales2002}}{3}\right) \).

Innovation championing behavior (ICB)
The following questions concern your engagement for the spin-off.
To what extent do the following statements apply to your person? (1 = statement does not apply at all, 7 = statement applies fully and completely)

Pursuing innovative ideas (PII)
I always seek ideas for innovations.
I push change with innovative ideas.
I take innovative ideas directly to potential customers.

Network building (NWB)
I make use of my personal relationships.
I continually improve my network of personal relationships.
I cultivate my relationships with customers and other partners.

Persisting under adversity (PUA)
I create potentials to realize my goals.
I make use of all available means to solve arising problems.
I pursue my goals despite setbacks and obstacles.

Taking responsibility (TR)
I'm prepared to deal with the consequences of failures.
I take responsibility for costs.
I take responsibility for products or services.


Supported by: Chakrabarti, 1974, p. 61; Hutt et al., 1988, p. 8; Maidique, 1980, p. 65; Markham, 2000, p. 435, Van de Ven, 1986, p. 596


Supported by: Chakrabarti, 1974, p. 61; Chakrabarti and Hauschildt, 1989, p. 168; Keller and Holland, 1983, p. 68; Shane, 1994, p. 401

Supported by: Keller and Holland, 1983, p. 68; Markham, 2000, p. 435; Tushman and Scanlan, 1981, p. 85


Supported by: Chakrabarti, 1974, p. 61; Howell and Higgins, 1990b, p. 50; Schon, 1963, p. 84; Shane et al., 1995, p. 934


Supported by: Burgelman, 1983, p. 234; Howell and Higgins, 1990b, p. 50; Shane, 1994, p. 401


Gathered from the spin-off founders’ CV:
Industry experience of the academic entrepreneur ________ years
Age of the academic entrepreneur ________ years
Organizational tenure of the academic entrepreneur ________ years
Age of the academic spin-off ________ years
Number of employees ________ full time/______ part time (freelancer)