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PERCEIVED VALUE, SATISFACTION, BRAND EQUITY AND BEHAVIORAL INTENTIONS: SCALE DEVELOPMENT FOR SPORTS SPECTATORSHIP IN US COLLEGE FOOTBALL

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ABSTRACT

Despite sporting events' popularity, concern is lacking in relation to maintaining relationships between fans and sports organizations. Just as companies rely on customers, sports organizations rely on their fans. The present study attempts to establish factor structure among constructs, including perceived value, satisfaction, brand equity, and behavioral intentions as related to a college football team in US. Data was obtained from 390 students at a Southeastern public university with a moderately successful football team. Exploratory factor analysis was performed to identify measurement scale's structure for sports spectatorship. Four factors were extracted, explaining 70.3% of the variance. Cronbach's alpha scores were meaningful statistically for all factors. For academic researchers and marketing executives of sports organizations, the research findings provide several implications about enhancing relationships with fans. Theoretical and practical considerations for the conceptual structure's advancement are discussed along with this study's limitations and suggestions for future studies.

INTRODUCTION

Sports organizations and their athletes compete not only within their respective leagues/sports arenas but also within entertainment alternatives such as television networks and social media. They are part of daily activities and talks within any community. In fact, when a couple of people come together in any community around the world, one of the first topics they discuss is the performance of their favorite athletes and teams. Furthermore, any comments or activities such as team owners' racist statements or players' off-the-field incidents affect the teams' and leagues' image. Apparently, teams and their fans are in special relationships. The image of a team, even the personalities of its athletes can influence these relationships. For example, the NBA has hired a new chief marketing officer in an effort to expand its popularity, repair its image, and match the NFL's high television ratings (Vranica, 2014). In some situations fans may lose interest and transfer to another team. Retaining spectators' interests is one of the most crucial responsibilities for sports marketers in a multi-billion-dollar industry (Tsiotsou, 2013).

In order to increase game awareness and attendance, teams laid out carefully planned marketing activities (Hansen & Gauthier, 1989). A professional sports organization's revenue results from not only venues' ticket sales, but also media rights, sponsorships, merchandise sales, and stadium seating arrangements (Mason, 1999). As the marketing of sporting events continues to expand, sports marketers must make wise decisions in terms of adding value to the service, and satisfying their target markets, this way they may retain and expand their fan base and convince them to attend sports events more frequently.

For example, the Sacramento Kings, an NBA team, is famous for new marketing ventures; thanks to collaborating with several business sponsors, this basketball team has created attractive offers for its fans including a mascot's eye view of events and a virtual reality tour of the arena. The team has also strengthened its relationship with fans through one-stop shopping in Northern California. These kinds of innovative attempts have increased ticket sales (Boudway, 2014). Senior executives are seeking other ways to sustain long-term relationships with fans. Amenities such as mobile apps, which stream instant video replays, notification about restroom lines, behind-the-scenes information, personalized engagement at the arena, forum discussions, and analyses of team performance, are ways of attracting more passionate fans. Sports organizations can be successful as long as they focus on making their fans more passionate (Hutchison, 2015). The rules of sports spectatorship are altering as activities of engaging fans before and after games have become more important than the game day activities.

In considering attendance growth in the sports industry, sports organizations concentrate on offering better brand equity and creating more satisfaction among their fans and sponsors (Beccarini & Ferrand, 2006). Sports organizations are sources of leisure-time activities for fans and brand building opportunities for sponsors, who recognize and share a mutually attractive team image. Based on this social reality, a sports organization's positive image contributes to fans' support and engagement (Ferrand & Pages, 1999). Game attendance is thought of as a process-related leisure- time activity; therefore, many factors influence the fans' experiences (Theodorakis, Alexandris, Tsigilis, & Karvounis, 2013). From higher ticket prices and ease of recalling the sports organization's brand name to attitudes of fans and image perceptions about mascots can contribute to assessing a sports organization's brand equity. Sports fans' continual engagement and commitment to sports organizations depends on perceived value, satisfaction, and brand equity. In order to better understand and predict behavioral intentions of sports fans, sports marketers must understand complex relationships among the above mentioned constructs. (Yoshida & Gordon, 2012).

This study aimed to contribute to sports marketing literature by developing scales to measure perceived value, satisfaction, brand equity and behavioral intentions related to sports spectatorships. Because long-term and uninterrupted fan attendance is regarded as a meaningful outcome for a sports organization, this paper focuses on how to develop that kind of structure. Relevant constructs such as perceived value, satisfaction, brand equity, and behavioral intentions are investigated here because these constructs within the context of college football have not been collectively explored in other sports marketing literature. However, marketing literature provided evidence that they may be relevant in sports spectatorship. Specifically, this study may provide researchers and practitioners valid and reliable measurement tools for making decisions leading to increased support of and higher attendance rate at sporting events, thus gaining a competitive advantage for sports teams.

LITERATURE REVIEW

The sports industry is characterized by intense competition among organizations within leagues, with other leagues, and with other leisure-time activities. Today, sports organizations recognize fans as customers. Thus, from a marketing perspective, the key issue is developing better relationships with these customers. Sports organizations' success depends on not only performance on the field, but also interaction with fans. Therefore, these organizations must consider multiple ways to increase the number of fans, thus reinforcing competitiveness.

Perceived Value

Zeithaml (1988) referred to the concept of perceived value as "the overall assessment of the utility of a product or service based on perception of what is received and what is given" (p.14). Perceived value can also be determined in other ways. Sheth, Newman, and Groos (1991) approached perceived value as consumption value dimensions that influence consumer choices. These dimensions consist of the following: emotional value, which is related to feelings that products and services arouse; social value, which is the social image of having particular products or services; functional value, which stems from specific products' or services' characteristics; epistemic value, which is concerned with choosing new alternatives of existing products or services; and conditional value, which corresponds to benefits from a product or service in a specific situation. Consumer choices may be based on any or all of these five consumption values. Sweeney, and Soutar (2001) suggests that rather than evaluating products and services according to expected performance or money, consumers pay attention to enjoyment and social opportunities stemming from products or services. Sports organizations are providers of entertainment and leisure-time activities in the service sector. When consumers can develop a pleasant relationship based on environment and entertainment, they are more willing to maintain that relationship with the provider. Sports organizations' perceived value may contribute to the probability of attendance and attraction (Lock & Filo, 2012). Unless customers have positive experiences, it will be difficult to maintain positive value perceptions about the sports brand or provider. (Athanasopoulou, Kalogeropoulou, & Douvis, 2013).

Jin, Lee, and Lee (2013) examined the significance of perceived value in conjunction with sporting mega events. Specifically, their study noted that perceived value played a central role in positively affecting these events' continuity. Nuviala, Grao-cruces, Pérez-Turpin, and Nuviala (2012) investigated professional sports services to analyze customers' perceptions. The results indicated that perceived value significantly influenced customers' perceptions of sports services.

Satisfaction

Satisfaction is one of the major constructs of interest in academic research. Churchill and Surprenant (2015) defined satisfaction conceptually as "outcome of purchase and use resulting from the buyer's comparison of the rewards and costs of the purchase in relation to the anticipated consequences" (p.493). If satisfied with a product or service, a customer may purchase again. Conversely, if a customer is unsatisfied, repurchase probability is less (Matsuoka, Chelladurai, & Harada, 2003).

Yoshida, James, and Cronin (2013) discussed the concept of satisfaction in terms of a theoretical model involving college football games. Data gathered from spectators` responses to questionnaires revealed that satisfaction has a strong positive effect on fans' experiences. Gray and Wert-Gray (2012) found that satisfaction level affects attendance at professional and collegiate sporting events. Eventually, it may affect the relationship between fans and sports organization. Researching soccer fans' satisfaction with sports organizations, Sarstedt, Ringle, Raithel, and Gudergan (2014) found that satisfaction helps develop long-term relationship with fans. Also assessing satisfaction in the context of sports, Biscaia, Correia, Yoshida, Rosado, and Moraco's (2013) study indicated that satisfaction plays an essential role in increasing customer retention.

Brand Equity

Brand equity may be defined in various ways. Keller (1993) described customer-based brand equity as "the differential effect of brand knowledge on consumer response to the marketing of the brand" (p. 8). Brady, Cronin Jr, Fox, and Roehm (2008) explored brand equity's role in recovering from performance failure. Participants of this study completed a questionnaire that presumed a performance-failure scenario for both high-equity and low-equity brands. Findings showed that behavioral intentions are stronger for high-equity versus low-equity brands in the failure incident.

Watkins (2014) reported that group experience and venue had the strongest influence on NBA fans' social identification with their teams, which was essential for brand equity building. Richelieu and Pons (2006) studied brand equity by comparing two professional sports organizations' primary and secondary datasets. Findings indicated that both organizations tried to create their own tradition dependent on positioning fan activities so that strong brand equity was regarded as the most important leverage able asset. Gladden, Irwin and Sutton (2001) explored brand equity based on enhancement of team-consumer relationships in professional major leagues, including the NBA, MLB, NHL, and NFL. These researchers contended that brand management practices might ensure long-term bonds by retaining brand equity in the fans' minds. Yoshida, James, and Cronin (2013) examined components relevant to sporting events. According to their data analysis, the role of brand equity measured by attendance at college football games was positively supported. Thus, based on several studies, brand equity might be considered one of the critical indicators of sports organizations' marketing success.

Behavioral Intentions

According to Zeithaml, Berry, and Parasuraman (1996)**,** "behavioral intentions are associated with a service provider's ability to get its customers to say positive things about them, recommend them to other consumers, remain loyal to them to exemplify repurchase from them, spend more with the company, and pay price premiums" (p.34). Based on this observation, Yoshida and James (2010) described customers' behavioral intentions to "recommend the team to others customers, attend the team's future sporting events, and remain loyal to the team" (p. 344).

Yu et al. (2014) explored behavioral intentions among several constructs by surveying fitness center members over 60 years old. These researchers determined that behavioral intentions are the most notable construct leading to repurchase intention for this age group. Examining marketing in professional baseball, Cheng, Chen, and Chen (2012) found that behavioral intentions might be considered a construct affected by several other constructs, such as attitudes, subjective norms, and perceived behavioral control. Theodorakis, Alexandris, Tsigilis, and Karvounis (2013) explored behavioral intentions in professional soccer and found that those intentions depended on level of satisfaction, team performance and game quality. All there research emphasizes the importance of behavioral intentions in sports marketing.

METHODOLOGY

This study's sample consisted of 390 undergraduate students at a major Southeastern public university. Surveys, which took approximately 15 minutes to complete, were distributed to students in multiple sections of a Principles of Marketing class during fall and spring semesters.

Extra credits were given as incentive to the students who completed the questionnaire. Students were also informed that they can stop responding taking the survey anytime they want. A total of 415 student surveys were distributed. 25 surveys were dropped because more than 50 percent of the responses were missing.

Majority (85 percent) of the students in the sample indicated they were aware of their university's football team and attended games. Table 1 includes demographics of the study's sample. The majority of the sample was men with the ratio of men to women being 67 percent to 33 percent, respectively. Regarding age, 78 percent of the respondents were between 18 and 22 years old. In terms of marital status, 92 percent of the respondents were single and 8 percent were married. In terms of household income, 24 percent of the sample had an annual income of over 15,000 US dollars.

Table 1
DEMOGRAPHIC STATISTICS OF THE SAMPLE

Age	18-22	77.4%
	23-27	17.4%
	28-32	2.6%
	33-37	.5%
	38-42	.5%
	43-47	.8%
	48-52	.3%
	53 +	.5%
Gender	Female	32.9%
	Male	67.1%
Marital Status	Single	91.5%
	Married	8.5%
Income	Less than $10,000	17.1%
	$10,000-15,000	6.9%
	$15,001-20,000	6.6%
	$20,001-30,000	6.9%
	$30,001-50,000	14.3%
	$50,001-75,000	18.7%
	$75,001-100,000	10.5%
	More than $100,000	19%

Items were developed based on literature and authors experiences. An initial pool of 45 items were created or adopted related to four constructs namely, perceived value, satisfaction, brand equity, and behavioral intentions. All items were 7-point Likert scale. Redundancy was introduced intentionally to find best description of fans terminology. An important objective of this research was to obtain clean items for each construct. The study of relationships among these constructs in sports spectatorship was beyond the scope of this paper.

IBM SPSS version 20, a statistical program, was used to conduct exploratory factor analysis, calculating descriptive statistics of demographic variables and Cronbach's alpha related to the study's conceptual framework. A Cronbach's alpha of 0.7 or greater was considered acceptable internal consistency (Tavakol & Dennick, 2011). For determining factors to exclude, Kaiser's criterion was used based on selecting eigenvalue of greater than one. Graphically, the screen test revealed a break between the steep slope of the first influential factors and the gentle slope of the following factors (Bryman & Cramer, 2005).

RESULTS AND DISCUSSION

Exploratory factor analysis (EFA) was employed in this study to uncover valid factors underpinning the model for understanding sports spectatorship. Descriptive and reliability statistics were also reported within the scope of data analysis.

All 45 items were included in the initial EFA accounted for 65.947% of variance. Six factors were observed, and factors with eigenvalues above 1 were considered for further analysis. Varimax rotation was used to clarify factor loadings. As a cut off criteria, factor loadings above 0.40 were used and items below this number were removed after checking face validity and redundancy. Any items that cross-loaded to more than one factor were checked and removed to ensure validity.

Twenty-six clean items were generated for confirmatory factor analysis (CFA). Four factors were identified accounting for 70.320% of the observed variance. The CFA indicated that all items loaded together substantially and significantly on their related primary factor (Table 1). This pattern of loadings provided evidence of convergent and discriminant validity. Content validity was deemed adequate given that the construct included items similar to those used in other studies. Descriptive statistics, including mean and standard deviation, were also shown in conjunction with the data set (Table 3).

Cronbach's alpha values for each of the factors were also shown in Table 4. All alpha values were above 0.85 showing good reliability and internal consistency for all factors.

Table 2
ROTATED COMPONENT MATRIX

	Component			
	Satisfaction	**Perceived Value**	**Brand Equity**	**Behavioral Intentions**
I won't mind paying a higher ticket price for the TTU Golden Eagles' games.			.699	
If the catalog of the TTU Golden Eagles is not sent to me free, I am willing to pay to get one.			.678	
The TTU Golden Eagles is the most popular team in the category.			.679	
When I need to watch football, I will think of the TTU Golden Eagles immediately.			.866	
When I am asked about football, the TTU Golden Eagles will come to mind immediately.			.827	
The TTU Golden Eagles reflect my lifestyle.			.706	
The TTU Golden Eagles provide a satisfactory level of performance for the money.		.741		
The TTU Golden Eagles provides the best value compared to competitors.		.757		

Table 2
ROTATED COMPONENT MATRIX (Continued)

	Component			
	Satisfaction	**Perceived Value**	**Brand Equity**	**Behavioral Intentions**
The TTU Golden Eagles' games are worth the money I paid.		.793		
The TTU Golden Eagles' home games are generally a good value.		.758		
The services I purchase while at the stadium provide excellent value.		.618		
I get perfect value in going to the TTU Golden Eagles' football games.		.654		
Overall, I am satisfied with my experiences at games.	.748			
I truly enjoy going to games.	.779			
I am happy with the experiences I have in the TTU stadium.	.791			
Going to games has been delightful.	.811			
I have had many unique or special moments with the TTU Golden Eagles.	.657			
The TT Golden Eagles have special meaning to me.	.722			
Being a TTU Golden Eagles' fan is satisfying to me.	.730			
Part of the reason I go out of my way to support the TTU Golden Eagles is because of their social programs.				.725
One of the reasons I speak positively about the TTU Golden Eagles is because of what they do for the community.				.676
I buy merchandise from the TTU Golden Eagles partly because I believe they are a socially responsible organization.				.727
Part of the reason I make sure other people know how I feel about the TTU Golden Eagles is because of the good things they do for the community.				.759
I recommend going to the TTU Golden Eagles' games to someone who seeks my advice.				.642
I encourage friends and relatives to go to the TTU Golden Eagles' games.				.598

Table 3
DESCRIPTIVE STATISTICS

(N=390)	Mean	Std. Deviation
I won't mind paying a higher ticket price for the TTU Golden Eagles.	2.30	1.545
If the catalog of the TTU Golden Eagles is not sent to me free, I am willing to pay to get one.	2.41	1.660
The TTU Golden Eagles is the most popular team in the category.	3.17	1.554
When I need to watch football, I will think of the TTU Golden Eagles immediately.	2.64	1.686
When I am asked about football, the TTU Golden Eagles will come to mind immediately.	2.81	1.767
The TTU Golden Eagles reflect my lifestyle.	2.85	1.736
The TTU Golden Eagles provide a satisfactory level of performance for the money.	4.03	1.510
The TTU Golden Eagles provide the best value compared to competitors.	3.94	1.449
The TTU Golden Eagles' games are worth the money I paid.	3.93	1.540
The TTU Golden Eagles' home games are generally a good value.	4.34	1.490
The services I purchase while at the stadium provide excellent value.	4.15	1.371
I get perfect value in going to the TTU Golden Eagles' football games.	4.07	1.425
Overall, I am satisfied with my experiences at games.	4.48	1.322
I truly enjoy going to games.	4.39	1.471
I am happy with the experiences I have in the TTU stadium.	4.47	1.354
Going to games has been delightful.	4.44	1.377
I have had many unique or special moments with the TTU Golden Eagles.	3.98	1.568
The TTU Golden Eagles have special meaning to me.	4.10	1.526
Being a TTU Golden Eagles fan is satisfying to me.	4.18	1.513
Part of the reason I go out of my way to support the TTU Golden Eagles is because of their social programs.	3.35	1.524
One of the reasons I speak positively about the TTU Golden Eagles is because of what they do for the community.	3.84	1.386
I buy merchandise from the TTU Golden Eagles partly because I believe they are a socially responsible organization.	3.70	1.521
Part of the reason I make sure other people know how I feel about the TTU Golden Eagles is because of the good things they do for the community.	3.87	1.431
I recommend going to the TTU Golden Eagles' games to someone who seeks my advice.	3.99	1.519
I encourage friends and relatives to go to the TTU Golden Eagles' games.	4.01	1.622
I am doing the right thing when I attend.	4.46	1.376

Table 4
RELIABILITY STATISTICS

Factor	Cronbach's Alpha	Number of Items
Satisfaction	.940	8
Perceived Value	.880	6
Brand Equity	.904	6
Behavioral Intentions	.902	6

This study developed items of important constructs related to the model of understanding behavioral intentions for sports spectatorship. It also explored sports marketing's core concepts to identify factors that spectators consider in evaluating a sports team. Reliable and valid items were developed for measuring satisfaction, perceived value, brand equity, and behavioral intentions in sports spectatorship context. As indicated above, the framework consists of four factors. Factor 1 is satisfaction, involving seven items indicating spectators' evaluations are part of the sporting event. Factor 2 is perceived value, involving six items indicating the fans' perceptions of value provided by the sports team. Factor 3, is brand equity, involving six items related to the team's image. Factor 4 is behavioral intentions, involving six items indicating the fans' support of the sports team.

FUTURE RESEARCH AVENUES

This study's findings have limitations, pointing to the need for future research. These findings are limited to providing insight into undergraduate students' behavioral intentions for spectatorship in terms of a Southeastern university's college football team. While these findings cannot be used to generalize about all types of spectatorship, they might be used to explore other sports, regions, countries, or spectator groups.

Furthermore, this study's dataset was used primarily to develop constructs for sports teams. As students' evaluations of the team may vary depending on success in another collegiate football season, a second dataset will be gathered for replication to examine reliability and validity of constructs further. Therefore, this study is a pre-test phase and a comparative study could be conducted to test for differentiation among constructs.

Finally, to the best of the authors' knowledge, there is a gap in the sports marketing literature regarding perceived value, satisfaction, brand equity, and behavioral intentions. Thus, the next step could be to investigate the relationships among these constructs via structural equation modeling. Such an investigation would be an opportunity to examine what makes sports fans to attend events and engage with their teams more. Thus, further study could expand empirical knowledge by yielding insight into these sports marketing constructs.

REFERENCES

Athanasopoulou, P., Kalogeropoulou, D., and Douvis, J. (2013). Relationship Quality in Sports: A Study in Football Teams and Fitness Centres. *Sport, Business and Management: An International Journal, 3*(2), 100–117.

Beccarini, C., and Ferrand, A. (2006). Factors Affecting Soccer Club Season Ticket Holders' Satisfaction: The Influence of Club Image and Fans' Motives. *European Sport Management Quarterly*, *6*(1), 1–22.

Biscaia, R., Correia, A., Yoshida, M., Rosado, A., and Moraco, J. (2013). The Role of Service Quality and Ticket Pricing on Satisfaction and Behavioural Intention within Professional Football. *International Journal of Spoerts Marketing and Sponsorship*, *1*(July), 301–326.

Boudway, I. (2014). Sacramento Kings Open a Sports Marketing Shop. *Bloomberg*. Retrieved from http://www.bloomberg.com/bw/articles/2014-09-04/crown-sports-sacramento-kings-new-sportsmarketing on 12-10-2014.

Brady, M., Cronin Jr, J., Fox, G., and Roehm, M. (2008). Strategies to Offset Performance Failures: The Role of Brand Equity. *Journal of Retailing*, *84*(2), 151–164.

Bryman, A., and Cramer, D. (2005). *Quantitative Data Analysis with SPSS 12 and 13 - A Guide for Social Scientists* (pp. 1–394). New York: Routledge.

Cheng, C.-F., Chen, L. H., and Chen, M.-Y. (2012). Fan Participation Behaviour in Baseball : an Application of the Theory of Planned Behaviour. *International Journal of Sports Marketing and*, *14*(1), 757–768.

Churchill, G. A., and Surprenant, C. (2015). An investigation into Customer the Determinants of Satisfaction. *Journal of Marketing Research*, *19*(4), 491–504.

Ferrand, A., and Pages, M. (1999). Image Management in Sport Organisations : The Creation of Value. *European Journal of Marketingpean*, *33*(3/4), 387–401.

Gladden, J. M., Irwin, R. L., and Sutton, W. A. (2001). Managing North American Major Professional Sport Teams in the New Millenium: A Focus on Building Brand Equity. *Journal of Sport Management*, *15*(1), 297–317.

Gray, G. T., and Wert-Gray, S. (2012). Customer Retention in Sports Organization Marketing: Examining the Impact of Team Identification and Satisfaction with Team Performance. *International Journal of Consumer Studies*, *36*(3), 275–281.

H. Tsiotsou, R. (2013). Sport Team Loyalty: Integrating Relationship Marketing and a Hierarchy of Effects. *Journal of Services Marketing*, *27*(6), 458–471.

Hansen, H., and Gauthier, R. (1989). Factors Affecting Attendance at Professional Sport Events. *Journal of Sports Marketing*, (3), 15–32.

Hutchison, D. (2015). In The Customer Engagement Arena , Sports Teams Lead the Way. *Forbes*. Retrieved from http://www.forbes.com/sites/sap/2015/02/03/in-the-customer-engagement-arena-sports-teams-lead-the-way on 5-1-2015.

Jin, N. (Paul), Lee, H., and Lee, S. (2013). Event Quality, Perceived Value, Destination Image, and Behavioral Intention of Sports Events: The Case of the IAAF World Championship, Daegu, 2011. *Asia Pacific Journal of Tourism Research*, *18*(8), 849–864.

Keller, K. L. (1993). Managing Customer-Based Brand Equity. *Journal of Marketing*, *57*(January), 1–22.

Lock, D., and Filo, K. (2012). The Downside of Being Irrelevant and Aloof: Exploring Why Individuals do not Attend Sport. *Sport Management Review*, *15*(2), 187–199.

Mason, D. S. (1999). What is the Sports Product and Who Buys it ? The Marketing of Professional Sports Leagues. *European Journal of Marketing*, *33*(3/4), 402–418.

Matsuoa, H., Chelladurai, P., and Harada, M. (2003). Direct and Interaction Effects of Team Identification and Satisfaction. *Sport Marketing Quarterly*, *12*(4), 244–253.

Nuviala, A., Grao-cruces, A., Pérez-turpin, J. A., and Nuviala, R. (2012). Percieved Service Quality, Percieved Value and Satisfaction in Groups of Users of Sports Organizations in Spain. *Kinesiology*, *44*, 94–103.

Richelieu, A., and Pons, F. (2006). Toronto Maple Leafs vs Football Club Barcelona : How Two Legendary Sports Teams Built Their Brand Equity. *International Journal of Sports Marketing and Sponsorship*, (May), 231–251.

Sarstedt, M., Ringle, C. M., Raithel, S., and Gudergan, S. P. (2014). In Pursuit of Understanding What Drives Fan Satisfaction. *Journal of Leisure Research*, *46*(4), 419–447.

Sheth, J. N., Newman, B. I., and Groos, B. L. (1991). Why We Buy What We Buy: A Theory of Consumption Values. *Journal of Business Research*, *22*, 159–170.

Sweeney, J. C., and Soutar, G. N. (2001). Consumer Perceived Value: The Development of a Multiple Item Scale. *Journal of Ret*, *77*, 203–220.

Tavakol, M., and Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, *2*, 53–55.

Theodorakis, N. D., Alexandris, K., Tsigilis, N., and Karvounis, S. (2013b). Predicting Spectators' Behavioural Intentions in Professional Football: The Role of Satisfaction and Service Quality. *Sport Management Review*, *16*(1), 85–96.

Vranica, S. (2014). The NBA's Plan to Win More Fans. *The World Street Journal*. Retrieved from http://www.wsj.com/articles/the-nbas-plan-to-win-more-1413751312 on 4-10-2015.

Watkins, B. A. (2014). Revisiting the Social Identity-Brand Equity Model : An Application to Professional Sports. *Journal of Sport Management*, 28 (4), 471–480.

Yoshida, M., and Gordon, B. (2012). Who is More Influenced by Customer Equity Drivers? A Moderator Analysis in a Professional Soccer Context. *Sport Management Review*, *15*(4), 389–403.

Yoshida, M., and James, J. D. (2010). Customer Satisfaction with Game and Service Experiences : Antecedents and Consequences. *Journal of Sport Management*, *24*, 338–361.

Yoshida, M., James, J. D., and Cronin, J. J. (2013). Sport Event Innovativeness: Conceptualization, Measurement, and its Impact on Consumer Behavior. *Sport Management Review*, *16*(1), 68–84.

Yu, H. S., Zhang, J. J., Kim, D. H., Chen, K. K., Henderson, Min, S. D., and Huang, H. (2014). Service Quality , Perceived Value , Customer Satisfaction , and Behavioral Intention Among Fitness Center Members Aged 60 Years and Over. *Social Behavior and Personailty*, *42*(5), 757–768.

Zeithaml, V. A. (1988). of Consumer Perceptions A Means-End Value : Quality , and Model Synthesis of Evidence. *Journal of Marketing*, *52*(3), 2–22.

Zeithaml, V. A., Berry, L. L., and Parasuraman, A. (1996). The Behavioral Consequences of Service. *Journal of Marketing*, *60*(2), 31–46.

THE IMPACT OF VENTURE CAPITAL ON FUNDING AMOUNTS PROMISED IN ALLIANCE CONTRACTS

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ABSTRACT

In this work, we examined the impact of venture capital involvement in the alliance markets by exploring two questions: does venture capital involvement tend to improve access to the alliance market and does venture capital increase the amount of remuneration those alliances provide firms developing innovative products? We test our theory on firms developing innovative products turning public in the biotech industry. Our findings indicate venture capital backed firms tend to form alliances more quickly, form more alliances, and bring more money into the firms developing innovative products through alliances compared to firms lacking venture capital backing in the year prior to the initial public offering (IPO) and in a five-year period following the IPO. This work directly extends the existing literature about venture capital involvement into the alliance formation process. Our paper also addresses the need for more research on the benefits firms developing innovative products receive from the alliances they form and the need for more research on the alliance formation process in general.

Key words: Alliances, Alliance Formation, Innovation, and Funding Innovation

INTRODUCTION

Venture capital, debt financing, and the capital markets do not provide enough money to develop new technologies fully and typically, corporate financing, provides the remaining monies to develop new innovations (Teece, 1992). One, and the most likely, source of corporate financing for firms developing innovative products since Teece's (1992) work has been alliances. Recent research indicates firms tend to choose between capital market funding and the alliance market for funding depending on the availability of funding in the capital markets (Lerner, Shane, & Tsai, 2003). Thus, the funding necessary for firms developing innovative products potentially comes from both the capital markets and from alliances.

Previous work shows venture capital involvement increases initial public offering (IPO) values (Stuart, Hoang & Hybels, 1999), improves the survive rate of IPO firms (Fisher, & Pollock, 2004; Jain, & Kini, 2000), and improves the number of alliances formed (Colombo, 2006; Gans et al., 2002; Hsu, 2006; Lindsey, 2008). Previous work on the number of alliances formed seems to assume that more alliances are better. To our knowledge, no one has investigated the impact venture capital firms have on the amount of money firms developing innovative products generate from the alliances they form. In addition, one would expect venture capital backed firms to be more efficient in forming alliances assuming venture capital provide valuable assistance in the alliance formation process. Thus, this research combines tests of efficiency and benefits to the target firm by testing how quickly firms form alliances and the remuneration those firms receive from the alliances they form.

This work directly addresses the impact of venture capital on money obtained through alliance contracts, and in doing so, also addresses the need for additional research on the impact

venture capital has in the alliance markets (Gans et al., 2002). We also address the need to better understand the benefits small innovative firms receive from the alliances they form (Alvarez et al., 2005; Coombs et al, 2006) and on the alliance formation process in general (Ahuja, 2000).

This study is unique because we investigate how quickly firms developing innovative products form alliances and the financial benefits they receive from those alliances in the same study. The first hypothesis parallels previous work on venture capital impact in the capital and alliance markets that indicates venture capital involvement has a positive impact on firms developing innovative products (i.e. Colombo, 2006; Finkle, 1998; Gans et al., 2002; Hsu, 2006; Lerner, 1994). Hypothesis 1 tests whether firms developing innovative products using venture capitalists will form alliances more quickly than firms that turn public without venture capital backing during the time period in this study. Second, we examine the remuneration firms developing innovative products receive as a result of the alliances they form. Hypothesis 2 tests if venture capital involvement will increase the remuneration promised firms developing innovative products in the alliance contract(s) around the IPO period.

We use the biotech-pharmaceutical industry to test our hypotheses, and we find support for both of our hypothesis. In addition, the data in this sample also indicates many innovative firms in the biotech industry turn public and form alliances simultaneously with, or very shortly after the IPO process. Our findings extend the knowledge related to venture capital involvement during the alliance formation process, and the funding of firms developing innovative products. We fully discuss the implications of our hypotheses, and the finding that firms developing innovative products seem to be forming alliances and turning public simultaneously.

THEORY AND HYPOTHESES

Funding Innovations

Firms developing innovative products that are often years away from releasing a product have limited financing options. The tradition understanding of the financing options is as follows: typically, firms developing innovative products start with investments by the entrepreneurs starting the company. Angel funding if it's available sometimes follows the initial funding. Later, venture capital firms provide meaningful amounts of additional funding to continue firm development and prepare the firms developing innovative products for an IPO (Lerner, 1994; Lerner, 1995). The IPO potentially provides the firms developing innovative products with the single largest influx of money it will have to continue development of the product. Secondary offerings (selling more shares of stock on a public market) can also provide additional revenue for continued growth after an IPO. At some point, the firms developing innovative products will release the product to the consumer market or sell the product to another firm, and to generate income.

In some industries, established firms choose to invest in innovation through alliances rather than, or in addition to, developing innovations internally. Previous research suggests alliances provide a means to share complementary resources, benefits, and risk, among firms (Hitt, Dacin, Levitas, Arregle, & Borza, 2000; Ireland, Hitt, & Vaidyanath, 2002). Established firms choose to finance innovations in other firms to reduce risks (see: Bowman & Hurry, 1993; Folta & Miller, 2002; McGrath, 1997; McGrath & Nerkar, 2004; Reuer & Tong, 2005; Vassolo, Anand, & Folta, 2004 for a complete explanation); they lack the ability or desire to develop and utilize new technologies (e.g., Tushman & Anderson, 1986) or both. Similarly, firms developing innovative products have several reasons to choose an alliance over capital market funding.

Firms developing innovative products often lack complementary resources like commercialization expertise, specialized manufacturing expertise, or specialized marketing expertise in addition to needing funding and therefore, seek partners who can provide funding in combination with other complementary resources (Rothaermel & Boeker, 2008; Teece, 1986). An alliance can be a desirable alternative to capital market funding for firms developing innovative products when capital market funding is scare, expensive, or when the firms developing innovative products also needs complementary resources in addition to funding (Lerner, Shane & Tsai, 2003; Teece 1986).

The Information Asymmetry problem in alliances formation

Theory suggests that alliances provide some protection to firms developing innovative products from appropriation when those firms pass private and valuable knowledge about an innovation directly to another firm (Arrow, 1962; Bhattacharya & Ritter, 1983; Hennart, 1988; Leland & Pyle, 1977). Legal agreements typically define the parameters of an alliance (Anand & Khanna, 2000; Gulati, 1998; Kogut, 1988; Oxley & Sampson, 2004; Reuer & Ariño, 2002; Reuer & Ariño, 2007; Ring & Van de Ven, 1992). Thus, knowledge can pass safely among the partners as long as both partners are mutually dependent on each other for continued development of the innovation (Hamel, 1991), and the alliance contract includes the appropriate protections for the firms involved (Liebeskind, 1996).

However, we contend the alliance formation process in most cases has high information asymmetry among potential partners and more closely resembles an open-market exchange of valuable knowledge described by Arrow (1962) rather than an exchange of knowledge protected by an alliance agreement described above. Forming an alliance takes place before the alliance contract is signed and the collaboration formally begins. Protecting valuable knowledge is generally difficult without a carefully constructed contract (Liebeskind, 1996). Predatory, or opportunistic behavior is often a meaningful threat to firms developing innovative products that rely on alliances to provide outside financing (Lerner, Shane & Tsai, 2003). Therefore, the alliance formation process leaves firms developing innovative products seeking alliances with the decision to risk appropriation of valuable knowledge and pass as much information as possible to the potential alliance partner to encourage alliance formation; or conversely, the firms developing innovative products can withhold valuable information to reduce the probability of appropriation but then, the firms developing innovative products potentially jeopardizes the alliance because the potential partner will not recognize the value of the innovation. In sum, the alliance formation process closely resembles Arrow's (1962) description of selling knowledge on open markets.

Signaling

Signaling improves transactions among firms with inherently high information asymmetries by providing a differentiating equilibrium among firms without transferring valuable knowledge that could be appropriated. There are two kinds of market signals: direct signals and indirect signals. Direct signals are observable characteristics or attributes of a firm that provide clues about an unobservable characteristic or attribute of that firm. Indirect signaling, the type provided by venture capital, is based on the idea that a firm can be certified as a high-quality firm by third party (Brau & Fawcett, 2006). Indirect signals are trustworthy when the third party would suffer a meaningful loss by falsely representing the target firm (Megginson

&Weis, 1990). Economists have long recognized the activities of intermediaries improve market efficiency by enabling investments in environments with otherwise prohibitive levels of information asymmetry (Lerner, Shane & Tsai, 2003). Venture capital firms along with underwriters and analysts are recognized as intermediaries for investors in the capital markets (e.g. Barron, Byard, Kile, & Riedl, 2002; Carter & Dark, 1993; Carter, Dark, & Singh, 1998; Carter & Manaster, 1990; Kimbrough, 2007; Lerner, Shane, & Tsai, 2003; Lindsey, 2008; Logue, Rogalski, James, Seward, & Foster-Johnson, 2002).

Venture Capital Influence in the Alliance Market

Intermediaries in the capital markets potentially influence decisions in the competitive markets when information flows through managers who are familiar with the capital market intermediaries to decision makers within a given company (Brau & Fawcett, 2006). Many of the same activities venture capital typically engage in that directly improves the value of the firms developing innovative products at the IPO should also provide a signal of quality to firms in the competitive market. Venture capital firms back only a few firms from the hundreds of candidates who seek their investment (Lerner, 1994). Once a venture capital firm is working with a selected group of firms, those venture capital firms tend to advance about one-third of their portfolio of firms to a public offering liquidating the other two-thirds through acquisitions or bankruptcy (Lerner, 1994). In addition to simply vetting firms, venture capitalists improve the quality of the firm as they prepare for the IPO (Colombo, 2006; Fisher, & Pollock, 2004; Gans et al., 2002; Hsu, 2006; Jain, & Kini, 2000; Lindsey, 2008; Stuart, Hoang & Hybels, 1999).

Venture capitalists also have an incentive to facilitate the alliance formation process directly in addition to any benefits derived from signaling. Young firms generally lack critical resources (Stinchcombe, 1965), and firms developing innovative products almost always lack complementary resources (Finkle, 1998; Rothaermel & Boeker, 2008). An alliance provides needed resources, facilitates continued growth and improves the value of firms developing innovative products (Arend, 2006; Das, Sen, & Sengupta, 1998; Hagedoorn & Schakenraad, 1994; Hitt, Dacin, Levitas, Arregle, & Borza, 2000; Ireland, Hitt, & Vaidyanath, 2002; Koh & Venkatraman, 1991; Stuart, 2000). Venture capital firms ultimately make their money when they sell of their holdings in the firms sometime after the IPO. Thus, venture capital firms would potentially benefit from alliances formed shortly before or shortly after the IPO because an alliance in most cases will increase the value of any stock the venture capitalist still owns.

Venture capitalists also potentially have the means to facilitate alliances. Venture capital firms grow and develop firms in a technological area of expertise by drawing on a network of people to help firms developing innovative products succeed at critical junctures (Jain & Kini, 2000). Direct action combined with the venture capitalist's ability to signal high quality to potential alliance partners should improve the probability firms developing innovative products will form alliances. The desire to cash out should also encourage venture capitalist to pursue alliances sooner rather than later assuming all other considerations in the alliance are equal and thus, we expect firms with venture capital backing will tend to form alliances more quickly.

H1: Firms turning public with venture capital backing will form alliances more quickly in the year leading up to and during a 5-year period following the IPO compared to firms lacking venture capital backing.

Forming alliances more quickly implies more alliances in a given time period. More alliance in a given period of time could mean more money for the firms developing innovative products; however, it is unknown if series of small alliances provide more remuneration than a single alliance providing a large amount of money and covering a longer time frame. Thus, we continue by examining the remuneration promised firms developing innovative products in the alliances announcements recorded in the RDNA database.

Firms developing innovative products form alliances to access many different resources. We assume in the biotech industry that the alliance agreement will reflect joint value maximization efforts on the part of the firms involved (Zajac & Olsen, 1993). We argue it is in the best interest of a venture capitalist, and certainly the firm they represent, to maximize the amount of money the firms developing innovative products receives even if the primary motivation for an alliance is to gain access to a complementary resource. Previous research in the biotech industry shows firms developing innovative products form alliances to gain access to specialized manufacturing, marketing networks, established distribution channels, and expertise in managing the clinical trials process (Baum, Calabrese, & Silverman, 2000; Pisano, 1990; Teece, 1986) in addition to funding. Finding funding and gaining access to complementary resources are not mutually exclusive and thus, we expect venture capitalist to make every effort to maximize the amount of money they bring into the target firm.

Consistent with the argument in the previous section, improving the financial stability of the firms developing innovative products should improve the stock market value of the firms developing innovative products. Higher stock market values would provide venture capital firms with higher returns as they cash out of the firms developing innovative products in the future. Therefore, it is in the best interest of venture capitalist to try to maximize the amount of remuneration promised to the firms developing innovative products as part of a collaborative agreement. Thus, we expect venture capital involvement to have a positive impact on the remuneration promised to firms developing innovative products in the 7-year period surrounding the IPO.

H2: Firms turning public with venture capital backing will acquire more money through alliances in the year preceding the IPO through a 5-year period following the IPO compared to firms lacking venture capital backing.

METHODS

Industry Setting

The biotechnology industry is an ideal setting for this study because established firms routinely form alliances with firms developing innovative products, the innovative nature of the industry in general, and prior research in the biotech sector. First, the biotech industry accounts for more alliances than any other industry and twice as many alliances as the next largest industry during the time period of this study (Rothaermel, 2001b). The development time required to bring a new drug to market generally takes about 15 years and costs over $500 million (Rothaermel & Deeds, 2004). The IPO firms, in most cases, need money and other complementary resources for an extended period of time in the biotech industry because the products they develop will take years or decades before they are released to the public (Rothaermel & Boeker, 2008; Teece, 1986). The pharmaceutical companies have increasingly focused on getting products through clinical trials, manufacturing, and marketing while the

biotech firms tended to focus on the discovery and early development of new innovative products during the time period of this research. Finally, there is a considerable history of using the biotech industry to study alliances in the existing literature that can be brought to this project.

Data and Sample

The sample for this study consists of US-based biotech companies and pharmaceutical companies traded on US exchanges that entered research and development alliances between January 1, 1994, and December 31, 2004. We limited the biotech companies to firms listed under the Standard Industrial Classification (SIC) codes 2834 pharmaceutical preparations, 2835 in vitro and in vivo diagnostic substances, 2836 biological products except diagnostics, and 8731 commercial physical and biological research. We use publicly traded companies to gain access to financial data and to improve the ability to screen spin-off firms from the sample. We limited alliance to dyads since we do not have a means to track the flow of money among alliances with multiple partners.

We construct a unique data set for this study from multiple data sets. The IPOdata.com data set provides the IPO date, venture capital involvement and other IPO information for biotech firms. IPO information is supplemented by reading SEC prospectus filings announcing the IPO (S1 and SB2 filings). S1 filings are the prospectus filings usually associated with an IPO, and SB2 filings are an alternative small business filing. Compustat provides the financial data. The RDNA data set provides the alliance data, and the IMS Life Cycle data set provides product data. Details about the data sets used in this study are available upon request.

The two central questions asked in this study require two different dependent variables. We employ two different statistical techniques to test the two different dependent variables (Greene, 2008). We use a hazard /event analysis to answer the question "do firms developing innovative products form alliances more quickly, and construct a panel data set to test "do they receive more money from the alliances they form."

We begin with the event analysis. The data set for the event analysis has 104 firms and 353 observations. We construct a second data set from the data these 353 observations. Many firms do not report the remuneration promised in the alliance contract, our dependent variable for the second analysis. We test for selection bias using a Heckman model (1979). The test for independent equations was not significant: $Chi^2_{(9)}=10.64$, $p>.05$. Thus, selection bias between the two different samples is not indicated. Therefore, we simply drop alliances failing to report remuneration for the panel data. A five-year period after the IPO is consistent with past literature studying the effects of venture capital on IPO outcomes (Fisher & Pollock, 2004; Lerner, 1994; Jain & Kini, 1999; Jain & Kini, 2000); however, firms can, form alliances prior to the IPO. In some cases, it may even be preferable to form alliances prior to the IPO since alliances tend to improve the value of the firms developing innovative products (Das, Sen, & Sengupta, 1998; Stuart, 2000). Improving the value of the firm could in turn increase the amount of money raised in the IPO. Therefore, the panel data tracks the firm beginning one full year before the IPO date, the year of the IPO, and then, for five full years after the IPO. The resulting data follows 70 firms over a seven-year period.

Event Analysis Variables

The dependent variable in a Cox Regression is the hazard function associated with the event of interest: forming an alliance. The time variable in this analysis is measured in months,

and is the time to the first alliance or the time between alliances for firms forming more than one alliance within the seven-year period. The independent variable in this research is *VC* Involvement (VC stands for Venture Capital). VC Involvement is code one when venture capitalists are involved with the firms developing innovative products during the IPO process and zero when venture capitalists are not involved with the firms developing innovative products.

The ability to signal the possession valuable resources should affect firms developing innovative products' ability to form alliances (Ahuja, 2000). Therefore, we also include several variables that potentially signal the possession of valuable resources to potential alliance partners and, thus influence the ability to form alliances. We include the age of the firms developing innovative products. Age is a proxy for having resources that develop over time (Stinchcombe, 1965) and financial stability (Lerner, Shane, & Tsai, 2003). *Age* is the age of the firms developing innovative products in years. We use dummy variables to control for different market segments by SIC. We code each dummy variable one when the firms developing innovative products operates in a given SIC and zero when it does note. We have four dummy variables 2834, 2835, 2836, and 8731. Previous research indicates that a firm's experience in forming alliances potentially impacts future alliances (Kale, Dyer, & Singh, 2002; Rothaermel & Deeds, 2006). Therefore, we record the number of recent alliances the firms developing innovative products may have finalized to account for recent experience in the alliance market. Prior Alliance is the sum of alliances (if any) over a ten-year period prior to the time frame of this research.

We had two variables that violated the assumption of proportionality in our pre-analysis: a variable to capture patent data and a variable to capture the value of the initial public offering. We stratified these variables to improve our Cox Model. The amount of money raised with the IPO reflects the inherent value of the IPO firm. The offer amount is a proxy for the potential performance of the firm representing investor's belief the firm has sufficient resources to perform well after the IPO (Jain, & Kini, 2000). The variable Amount Stratified is the total value of the IPO rounded into increments of 10 million. All monetary amounts are converted to 2009 dollars.

In the biotechnology related industries, patent statistics can provide an effective measure of a firm's intellectual property (e.g., Sorenson & Stuart, 2000): a very valuable resource for biotech firms (Baum, Calabrese, & Silverman, 2000). New patents based on previous work must cite the prior patents. Citing a patent is similar to the practice of academics citing previous research in current work. The number of citations a patent receives over time is an indication of the importance, the inherent value of those patents, and provides more information compared to simple patent counts (Podolny & Stuart, 1995; Trajtenberg, 1990). The NBER data set includes an adjustment to account for the tendency of older patents to acquire more citations and certain technical categories to be more valuable than others (Hall, Jaffe, & Trajtenberg, 2001). Thus, we weight the patents by the number of citations it receives, and adjust these weights with NBER adjustment factors to account for differences in technology class and patent age. We then sum firms developing innovative products' weighted patent citations for the life of a patent (up to 20 years). Finally, we stratified the raw data by rounding citation into increments of 1000 to create the variable Patents Stratified for this analysis.

There are two variables previous research indicated could impact our results that we removed from the final model in the pre-analysis process. Past research indicates firms developing innovative products turn more often to alliances as a source of funding when money

in capital markets constricts (Lerner, Shane & Tsai, 2003). A variable to account for the amount of money available in the IPO market, and a variable to account for the amount of money in the alliance markets tested at p>.8. Therefore, we removed these variables from our final model in the event analysis.

Panel Data Set Variables

The dependent variable in the panel data set is a running sum of remunerations promised in the alliance agreement covering a seven-year period. The monthly time variable is converted into years to give us seven periods in panel data. The dependent variable, Total Value, includes all the upfront money promised to the firms developing innovative products. Total Value is adjusted to 2009 dollars (in millions). When more than one alliance occurs in a given time period, the multiple values are added together. The independent variable remains VC Involvement in this analysis. As before, VC Involvement is code one when venture capitalists are involved with the firms developing innovative products during the IPO process and zero when venture capitalists are not involved with the firms developing innovative products.

We use several of the same variables used in the event analysis as control variables in this analysis, and we add additional variables previous research indicates should impact the amount of remuneration. The variable Offer Amount is used in this analysis as well. Offer Amount is the value of the IPO in 2009 dollars. Stratification is not required in this analysis. The age of the firms developing innovative products is retained. The variable Patent Portfolio is retained, but stratification is not required in this analysis. The variable Previous Alliances is the sum of alliances formed in preceding years. We use two measures of market receptivity in this analysis (see: Brown, 1970 for discussion on market receptivity). IPO Market Sum is the sum of the money available in the biotech IPO market over the target years. We calculate this amount by summing the amounts of the successful Biotech IPOs by year. Alliance Market Sum is the sum of the money available in the alliance market by year. We calculate this variable by summing the total alliance amounts reported in alliance contracts in the biotech industry by year. The variables 2834, 2835, 2836, and 8731 are dummy variables for the SIC codes (coded the same as before). The variable Private/Public is a dummy variable coded one if the firm is public at the time or zero if the firm is still a private firm at the focal time period. Research indicates underwriter prestige is highly correlated with venture capital reputation and impacts IPO amounts (Carter, Dark, & Singh, 1998; Carter & Manaster, 1990; Logue, Rogalski, Seward & Foster-Johnson, 2002). The variable Underwriter Prestige is the Carter-Manaster ranking of the underwriters in this data set (Carter, Dark, & Singh, 1998). A local cluster of similar firms provides a competitive advantage to firms developing innovative products (Porter, 2000), and previous research links geographic location to the value of an IPO (Deeds, DeCarolis and Coombs, 1997). Consistent with Deeds, DeCarolis and Coombs, (1997), we use known concentrations of biotech firms in this analysis (see Table 1 for the number of firms in each area). The dummy variables Location: Boston, Location: NY TriState, Location: Philadelphia and so on account for the location of the firms developing innovative products. We code each dummy variable 1 when the firm's operating address is in the target location and 0 when it is not.

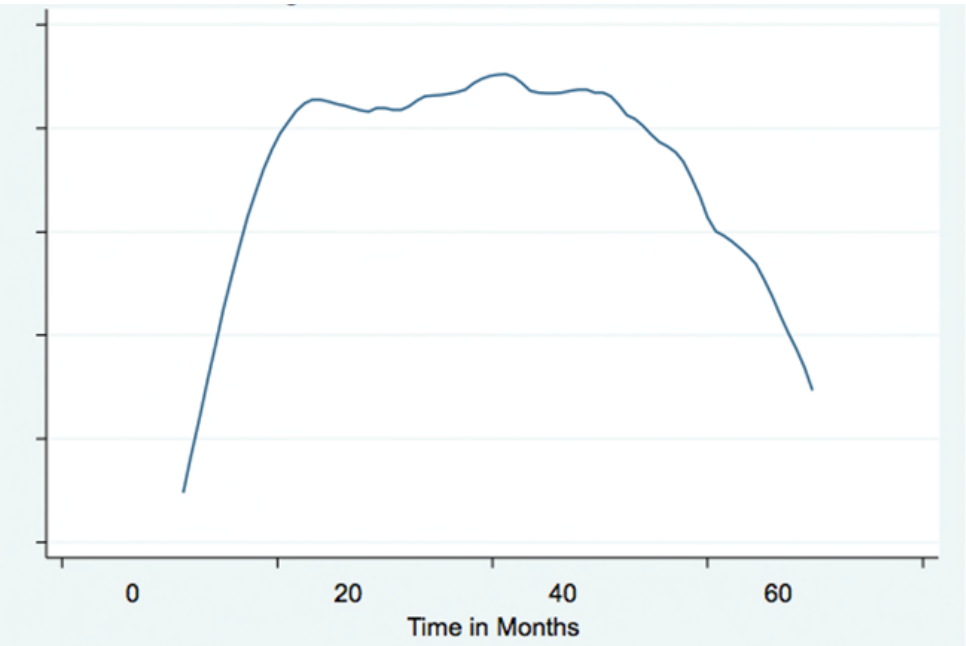
Table 1 FIRM LOCATIONS		
	Frequency	**Percentage**
Boston	63	12.86
NY Tri-state	42	8.57
Philadelphia	21	4.29
San Diego	56	11.43
Philadelphia	133	27.14
Seattle	21	4.29
Other	154	31.43

RESULTS

Event Analysis

Table 2 contains the descriptive statistics and the correlation matrix. The data indicates 69% of the firms in this sample use venture capital backing in the biotech field. The average firm is 7 ¾ years old when it forms its alliance. Most of the firms developing innovative products are equally distributed among SIC code as 2834, 2836 and 8731 (30-35% in each) with 2835 accounting for about .01%.

Figure 1
SMOOTHED HAZARD ESTIMATE

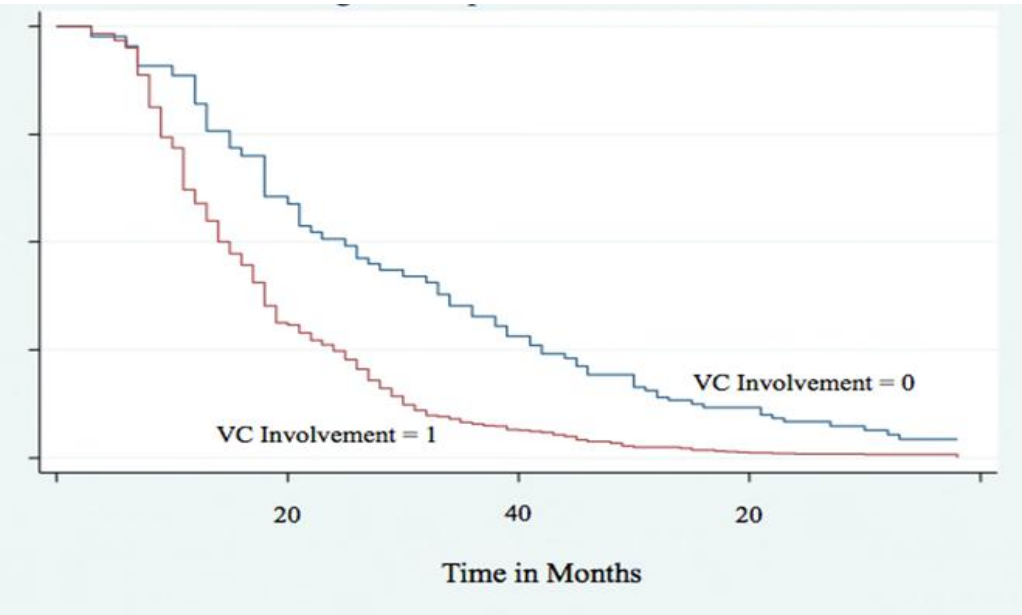


There are a couple of advantages to using a Cox model over other possible choices. A Cox model calculates the conditional probability of an event at any point in time. It is a very robust model when data is right censored. In addition, the hazard and survival functions provide interpretable information about the overall effects of the variables. Therefore, we begin our analysis by graphing the smoothed hazard function (Figure 1). Figure 1 clearly shows an inverted "U" shape. The graph rises quickly from the starting point at about 11-13 months into the study,

continues steeply upward until about 20-22 months just after the IPO (the IPO is at 18 months), levels off, and begins to drop quickly at about 50 months (about 2.5 years after the IPO). The curve would indicate the odds a biotech firm in this sample will form their alliances within a relatively short 3-3 ½ year period around the IPO and then, the odds these firms will form subsequent alliances diminish fairly quickly. This curve supports the expectation that venture capital will encourage alliance formation shortly before or shortly after the IPO, so they can maximize the value of the target firm and begin cashing out after it turns public.

Next we look at the Kaplan-Meier survival curve for venture capital involvement (Figure 2). The univariate survival estimates for firms using venture capital backing and firms lacking venture capital backing are significantly different: Chi^2 22.71, $p< 0.05$. The two lines are approximately parallel with firms using venture capital having a consistently higher incident rate after the initial couple of months in this sample. This sample indicates a venture capital backed firm tends to form at least one alliance in a little over a 60-month period. The odds of a firm lacking venture capital forming an alliance are consistently lower. The Kaplan-Meir test provides some limited support for Hypothesis 1: Firms turning public with venture capital backing will form alliances more quickly in the year leading up to and a five-year period following the IPO compared to firms lacking venture capital backing.

Figure 2
KAPLAN-MEIER SURVIVAL ESTIMATES



We use a conditional risk approach that assumes sequential events for the Cox Regression Model (Cleves, 2009). Simply, a conditional risk model assumes the second alliance must follow the first; the third alliance must follow the second and so on, when firms form more than one alliance. Specifically, we use a Cox model, with efron ties and a robust option to test our hypotheses (Cleves, 2009). This model adjusts the standard error by clustering the 104 firms in this data set. We have to force the likelihood-ratio (LR) test once we choose to cluster standard error by firm. Therefore, there is no guarantee of validity for likelihood ratio tests.

Table 2
DESCRIPTIVE STATISTICS AND CORRELATIONS FOR THE EVENT ANALYSIS

	Variable name	Mean	Std. Dev.	1	2	3
1	VC Involvement	0.69	0.46	1		
2	Amount Stratified	46.88	31.92	-0.0351	1	
3	Patents Stratified	722.38	1967.63	-0.2134*	0.4128*	1
4	Age	7.76	8.90	-0.1190*	-0.0885	0.07
5	2834	0.31	0.46	-0.0931	-0.0674	-0.0242
6	2835	0.01	0.11	0.0142	0.0525	0.0015
7	2836	0.35	0.48	0.0427	-0.3650*	-0.2053*
8	8731	0.33	0.47	0.0449	0.4238*	0.2312*
9	Prior Alliance	0.95	1.97	-0.0477	0.3798*	0.4710*

	Variable name	4	5	6	7	8	9
4	Age	1					
5	2834	-0.0127	1				
6	2835	-0.0178	-0.0716	1			
7	2836	-0.1297*	-0.4888*	-0.0783	1		
8	8731	0.1477*	-0.4706*	-0.0754	-0.5149*	1	
9	Prior Alliance	0.3452*	0.0414	-0.0246	-0.1608*	0.1276*	1

n=353 * = p<.05

Table 3 shows the results of our Cox Regressions. Model 1 is significant Wald $Chi^2_{(7)}$ 63.73, p< 0.05. Several of the control variables reach a significant level in Model 1, p<.05: Age, Prior Alliance and two SIC dummies. Model 2 includes VC Involvement. Model 2 is significant Wald $Chi^2_{(8)}$ 64.19, p< 0.05, and the (LR) test is also significant $Chi^2_{(1)}$ 20.68, p< 0.05. The variable VC Involvement is significant in Model 2, p<.05. Thus, Hypothesis 1, firms turning public with venture capital backing will form alliances more quickly, is supported in Model 2. These results indicate the rate of alliance formation is 95% quicker for firms using venture capital backing (all other variables in Model 2 held constant). However, as mentioned earlier, the raw patent data and the raw offer amount data violated the assumption of proportionality and were therefore stratified. We included these of the variables in the full model with Log (time). The variable OffAmtStrata (in various forms) still violates the assumption of proportionality, p<0.05. OffAmtStrata failed to reach a significant level in model 2, p=.646. Therefore, we removed OffAmtStrata in Model 3. Model 3 is significant Wald $Chi^2_{(7)}$ 62.06, p< 0.05 and the (LR) test is also significant $Chi^2_{(1)}$ 20.68, p< 0.05. The variable VC Involvement is significant in Model 3, p<0.05. Thus, Hypothesis 1, Firms turning public with venture capital backing will form alliances more quickly, is also supported in Model 3. These results indicate rate of alliances is 93.5% quicker for firms using venture capital backing form alliances (all other variables in Model 3 held constant).

Table 3
COX REGRESSIONS

	Model 1	Model 2	Model 3
Amount Stratified	0.999351	0.9982792	
	(0.0040)	(0.0037)	
Patents Stratified	1.000005	1.000059	1.000054
	(0.0001)	(0.0001)	(0.0001)
Age	0.9714106*	0.973555*	0.9757164*
	(0.0118)	(0.0112)	(0.0094)
2834	0.2505608**	0.2613755***	0.2720105***
	(0.0671)	(0.0649)	(0.0617)
2835	0.109858***	0.1054778***	0.1062293***
	(0.0763)	(0.0649)	(0.0657)
2836	0.5882825	0.5768132	0.6102002
	(0.1431)	(0.1639)	(0.1617)
Prior Alliance	1.201515*	1.180985*	1.165053*
	(0.1016)	(0.0837)	(0.0714)
VC Involvement		1.95022*	1.935512*
		(0.5656)	(0.5569)
Wald Chi 2	63.73***	64.19***	62.06***
LR Chi2		20.68***	20.30***

Hazard Ratios shown
Standard error in parenthesis
Standard error adjusted for 104 clusters
Likelihood-ratio (LR) test is forced
Number of observations = 353
p<0.05, ** p<0.01, *** p<0.001

The hazard function for our independent variable, VC Involvement, doesn't change much from Model 2 to Model 3. Therefore, we can assume OffAmtStrata's violation of the assumption of proportionality does not have undue effect in these models. The LR test is significant from Model 2 to Model 3. The standard errors tend to decrease in Model 3. Therefore, Model 3 is probably a better fit than Model 2. More importantly, the same control variables are significant in both Model 2 and Model 3, $p<0.05$. Thus, we can be fairly confident that venture capital involvement improves the rate of alliance formation during the seven years we tracked the firms in this research although one could argue about the amount of that affect (i.e., 93.5% versus 95% change in rate).

Panel Data

Table 4 contains the descriptive statistics and the correlation matrix for the panel data. The data indicates 67% of the firms use venture capital backing in this data set. The average firm is about 8 ½ years old. Most of the firms developing innovative products in this data set are in SIC 2834

(36%) followed by 2836 (37%), 8731 (16%) and with 2835 accounting for about .01% (not shown on the table). The two data sets are very similar even though some data is lost in the panel data set.

Table 4
DESCRIPTIVE STATISTICS AND CORRELATIONS

		Mean	Std. Dev.	1	2	3	4
1	Total Value	90.2031	160.7320	1.0000			
2	Age	8.4541	6.4791	0.0965*	1.0000		
3	Previous Alliances	1.2082	1.6410	0.3010*	0.8562*	1.0000	
4	Private/Public[a]	0.7143		0.3034*	0.2443*	0.2677*	1.0000
5	Patent Portfolio	631.8221	1852.7960	0.0298	0.2754*	0.3472*	0.0390
6	IPO Market Sum	102.6551	67.0814	0.3889*	0.3032*	0.2917*	0.6547*
7	Alliance Market Sum[b]	166.2499	103.5274	0.3184*	0.3179*	0.3273*	0.7010*
8	Offer Amount[b]	77300.0000	227000.0000	0.0320	0.2875*	0.3599*	0.0000
9	Underwriter Prestige	7.2720	2.7109	0.1792*	-0.0065	0.0753	0.0000
10	VC Involvement	0.6714	0.4702	0.1905*	0.0522	0.0915*	0.0000

		5	6	7	8	9	10
1	Total Value						
2	Age						
3	Previous Alliances						
4	Private/Public[a]						
5	Patent Portfolio	1.0000					
6	IPO Market Sum	0.0738	1.0000				
7	Alliance Market Sum[b]	0.0015	0.6004*	1.0000			
8	Offer Amount[b]	0.7706*	0.0554	-0.0476	1.0000		
9	Underwriter Prestige	0.1431*	0.1396*	-0.0954*	0.1381*	1.0000	
10	VC Involvement	0.0218	0.1216*	-0.0910*	0.1139*	0.2174*	1.0000

Location and SIC dummy variables omitted

n=400 [a]= dummy variable

*p<.05 [b]= shown in thousands

In this data set, we have three variables that will not vary over time: the location of the firm, the quality of the underwriter involved in the IPO and venture capital involvement during the IPO process, but we also have several variables that do vary over time. The advantage of

using panel data in this research is to allow variables like the accumulation of patents, the private-public status of the firm, the amount of money available in the IPO and the amount of money available in the alliance markets to change over time.

Table 5
GEE RESULTS

	Model 1	**Model 2**
Age	-8.1201*	-8.6835*
	(4.0756)	(4.0278)
Previous Alliances	43.8329*	44.7236*
	(20.5065)	(20.5501)
Private/Public	-3.1836	-3.4510
	(13.0764)	(13.1581)
Patent Portfolio	-0.0030	0.0001
	(0.0159)	(0.0148)
IPO Market Sum	0.4839***	0.4749***
	(0.0961)	(0.0972)
Alliance Market Sum	0.0002*	0.0002*
	(0.0001)	(0.0001)
Offer Amount	-0.0000	-0.0000
	(0.0000)	(0.0000)
Underwriter Prestige	6.8264*	5.1265
	(2.9645)	(3.0431)
VC Involvement		55.5345*
		(21.7222)
Constant	19.6261	-8.4968
	(42.0239)	(46.1515)
Wald Chi 2	110.85***	118.94***

Location and SIC dummies not shown
Standard Error in parenthesis
Standard Error adjusted for 70 clusters
n = 490
+ p<.10 * p<0.05, ** p<0.01, *** p<0.001

We use a generalized estimating equation (GEE) model to test our hypothesis. GEE models are a population-averaged model. Our model uses a normal distribution, and a robust option to cluster the standard error by the firms developing innovative products to test our hypothesis. We choose a GEE model because it is well suited to test group effects (i.e. firms with venture capital backing) as opposed to other regression techniques intended to provide coefficients that predict individual effects (UCLA Statistical Consulting Group, 2013). Our methodology includes several measures that will tend to minimize any possible reverse causality. First, it takes a year or more to find a partner and negotiate an alliance contract. Therefore, we lag IPO Market Sum, Alliance Market Sum and Patent Portfolio so these measures are more

likely to reflect the time period associated with the negotiation of the alliance contract (and not the signing year when the amount is reported). We also have a variable that should be lagged an additional year. The variable Previous Alliances is from the year preceding the negotiation year. We assume the firms developing innovative products have (at the minimum) already started an alliance for it to learn much from its prior alliances. In addition to methodological practices that minimize reverse causality, we also performed a Granger Causality test.

Table 5 shows the generalized estimation equation results. Both models have 70 firms followed over a seven-year period. The first model tests the control variables. Model 1 is significant $Chi^2_{(17)} = 110.85$, $p<0.05$. The control variables Age, Previous Alliances, IPO Market Sum, Alliance Market Sum and Underwriter Prestige reach significant levels, $p<0.05$. Model 2 is significant $Chi^2_{(18)} = 118.94$, $p<0.05$. The variable VC Involvement is significant, $p<0.05$. Thus, Hypothesis 2: firms turning public with venture capital backing will form alliances promising greater remuneration, is supported. The control variables Age, Previous Alliances, IPO Market Sum, and Alliance Market Sum remain significant, $p<0.05$ in Model 2.

DISCUSSIONS, LIMITATIONS, FUTURE DIRECTION

Discussion

We focused on two relatively fundamental questions for this study: does venture capital involvement improve an innovative firm's access to the alliance markets, and does venture capital involvement tend to increase the amount of remuneration those alliances provide. We find support for our proposed theory with this data set. Venture capital backed firms tend to form alliances more quickly in the seven-year time period around the IPO (one year prior to, the IPO year, and a five-year period after), and firms developing innovative products with venture capital backing tend to be promised more remuneration in the alliance contracts they sign over the time period in this research.

This work extends previous research on the benefits of venture capital involvement in three specific ways. First, firms developing innovative products tend to be in critical need of resources (Rothaermel & Boeker, 2008; Teece, 1986) that support the survival of the firm (Stinchcombe, 1965). Alliances have been a means to acquire critical resources in the biotech industry for several decades now (Ahuja, 2000; Baum, Calabrese, & Silverman, 2000; Rothaermel, 2001a; Rothaermel, 2001b; Rothaermel &Deeds, 2004). Forming alliances more quickly implies quicker access to critical resources and more alliances in a given time period. More alliances in a given time period in turn implies greater access to critical resources. Our findings show alliances forming quicker, and in most cases more often for firms using venture capital backing. Thus, venture capital backed firms should have both quicker access and greater access to critical resources compared to firms lacking venture capital backing. Second, previous research indicated venture capital firms help IPO firms overcome critical hurdles leading up to the IPO process that helped firms succeed (Jain & Kini, 1999). Forming alliances can be considered a critical hurdle for firms developing innovative products in the biotech industry if one accepts the assertion alliances provide critically needed resources that support the development of the firm. Our results indicate venture involvement has a positive impact alliance formation, not only prior to, but also shortly after the IPO. Thus, we find venture capital involvement not only helps firms overcome critical hurdles prior to an IPO and shortly after the IPO. This is consistent with Fisher & Pollock's (2004) assertion that venture capitalist maintain on ongoing interest in the firms they represent beyond the IPO. Finally, past research indicated

venture capital involvement tended to increase money flowing into the firm through increased IPO values (Lerner, 1994 Stuart, Hoang & Hybels, 1999), and our results show venture capital involvement also tends to improve money flowing into the firm through the alliances it forms.

The control variables in this study also provide some additional insights into a possible connection between the IPO markets and the alliance markets. We find a positive relationship between the money available in the IPO markets and the amount of money the firms developing innovative products promised in the alliance contract. We also find a positive relationship between the money available in the alliance markets, and the amount of money promised the firms developing innovative products; when there is more overall money available in the markets, more money tends to go to individual firms and not simply more money spread out over more firms. This is consistent with Lerner, Shane and Tsai's (2003) findings that predict that the available funding in the alliance markets and capital markets rise and fall together. It also implies market receptivity in the alliance markets in addition to the capital markets (see Brown, 1970 for a complete explanation of market receptivity in the capital markets).

Past research indicates experienced venture capitalists are skilled at timing the capital markets, so the firms they represent tend to enter receptive IPO markets and thus, generate more money from the IPO (Lerner, 1994). Our findings indicate timing the alliance market will also tend to improve the remuneration a firms developing innovative products will receive, thus practitioners should be aware of the potential benefits associated with timing an alliance market as well as timing the IPO market. Finally, previous experience with alliances improved both the rate at which firms form alliances and the amount of remuneration the firms developing innovative products receives in our data set. We are, however, unable to fully explore the impact and implications of previous alliance experience (i.e. Kale, Dyer, & Singh, 2002) beyond a simple positive impact in this data set.

This sample also leads to additional insights about the development of firms developing innovative products in addition to our formal hypothesis. Past research already indicated that many firms fail because of rigors of the IPO process (Hensler, Rutherford, & Springer, 1997). Turning public stresses manager's capabilities, as they must to continue with the day-to-day management responsibilities of the firm while simultaneously navigating the IPO process. A typical IPO in the biotech industry involves about 5.5 years of technical preparation prior to the IPO (Beckman, 2006). The IPO itself costs about $1.5 million (Silverman, 2006), and involves an intense one-year period beginning with the IPO's announcement when the managers are immersed in the IPO process. The intense one-year period involves multiple meetings with the intermediaries involved in the IPO process and a "road show" to help recruit the investors that will purchase the initial stock offering. These activities associated with an IPO process stress managerial capabilities. Our findings indicate that in addition to the stressors associated with the IPO, the managers of firms developing innovative products will also be forming a meaningful number of alliances at about the same time as the IPO. Forming and managing alliance is a challenging, time intensive, and costly task for managers of firms developing innovative products (Kale, Dyer, & Singh, 2002; White & Siu-yun Lui, 2005). The managers of the firms developing innovative products must identify appropriate partners, convince those potential partners to enter the alliance, negotiate the alliance contract and then, manage the alliance processes if the alliance is to be successful. It takes a year or more for a firm to search for partners, negotiate an alliance agreement and begin an alliance. The hazard function in our study show an upturn in the odds a firm will sign an alliance agreement just prior to the IPO and continues in inverted "U" shape for about three years after the IPO before dropping quickly. This

hazard function indicates that the firms in this study are forming initial alliances in a critical time period that coincides with the IPO. Thus, managers of firms developing innovative products that rely on alliances as a source of funding and other resources are likely to be tasked with two high stakes, time intensive processes spanning about a four-year period: turning public and forming alliance(s).

Limitations and Future Direction

This study is limited to biotech firms, and thus generalizing any of the findings beyond this industry is not advisable. This study essentially parallels the work on venture capital involvement in the capital markets, so additional work is needed in a couple of areas. Historically, and practically, work involving venture capital begins with the question: "do venture capitalists make a difference," and subsequent research addresses variability among venture capitalists should a difference exist. The nature of this data set does not allow us to explore the reputation, experience or other characteristics of the venture capitalists; so additional work should be done to determine the impact of reputation and/or experience on remuneration. The connection between the money available in the capital markets and the money available in the alliance markets is not fully explored. The desire or ability of venture capitalists to time the alliance market to maximize their own returns is also unknown, and could use additional research.

REFERENCES

Ahuja, G. 2000. The duality of collaboration: Inducements and opportunities in the formation of interfirm linkages. *Strategic Management Journal*, 21: 317-342.

Anand, B. N. & Khanna T. 2000. Do firms learn to create value? The case of alliances. *Strategic Management Journal*, Special Issue 21(3): 295-315.

Arend, R. J. 2006. SME-Supplier alliance activity in manufacturing: Contingent benefits and perceptions. *Strategic Management Journal*, 27: 741-763.

Arrow, K. J. 1962. Economic welfare and the allocation of resources for invention. In R.F. Nelson (Ed), *The rate and direction of inventive activity: Economic and social factors* (pp. 609-622). Princeton, NJ: Princeton University Press.

Barron, O. E., Byard, D., Kile, C. & Riedl, E. J. 2002. High-technology intangibles and analysts' forecasts. *Journal of Accounting Research*, 40(2): 289-313.

Baum, J. A., Calabrese, T. & Silverman, B. 2000. Don't go it alone: Alliance network composition and startups' performance in Canadian biotechnology firms. *Strategic Management Journal,* 21: 267-294.

Bhattacharya, S. & Ritter, J. R. 1983. Innovation and communication: Signaling with partial disclosure. *Review of Economic Studies*, 50: 331-346.

Bowman, E. H. & Hurry, D. 1993. Strategy through the option lens: An integrated view of resource investments and the incremental-choice process. *The Academy of Management Review*, 18(4): 760-782.

Brau, J. C. & Fawcett, S. E. 2006. Initial public offerings: An analysis of theory and practice. *The Journal of Finance*, 61(1): 399-436.

Brown, J. Michael. 1970. Post-offering experience of companies going public. *The Journal of Business*, 43(1): 10-18.

Carter, R. B. & Dark, F. H. 1993. Underwriter reputation and initial public offers: The detrimental effects of flippers. *The Financial Review*, 28(2): 279-301.

Carter, R. B., Dark, F. H. & Singh, A. K. (1998). Underwriter reputation, initial returns, and the long-run performance of IPO stocks. *The Journal of Finance*, 53(1): 285-312.

Carter, R. & Manaster, S. 1990. Initial public offerings and underwriter reputation. *The Journal of Finance*, 45(4): 1045-1067.

Cleves, Mario. 2009. How do I analyze multiple failure-time data using Stata? Retrieved from: http://www.stata.com/support/faqs/stat/stmfail.html

Colombo, Massimo G., Grilli, Luca, & Piva, Evila. 2006. In search of complementary assets: The determinants of alliance formation of high-tech start-ups. *Research Policy*, 35: 1166-1199.

Das, S., Sen, P. K. & Sengupta, S. 1998. Impact of strategic alliances on firm valuation. *Academy of Management Journal*, 41: 27-41.

Deeds, D.L., DeCarolis, D., Coombs, J.E., 1997. The impact of firm-specific capabilities on the amount of capital raised in an initial public offering: evidence from the biotechnology industry. *Journal of Business Venturing*, 12: 31– 46.

Finkle, T. A. 1998. The relationship between boards of directors and initial public offerings in the biotech industry. *Entrepreneurship Theory and Practice*, Spring: 5-29.

Fisher, H. M. & Pollock T. G. 2004. Effects of social capital and power on surviving transformational change: The case of initial public offerings. *Academy of Management Journal*, 47(4): 463-481.

Folta, T. B. & Miller, K. D. 2002. Real options in equity partnerships. *Strategic Management Journal*. 23: 77-88.

Gans, Joshua S., Hsu, David H., & Stern, Scott. 2002. When does start-up innovation spur the gale of creative destruction? *RAND Journal of Economics*, 33(4): 571-586.

Green, W.H. 2008. *Econometric Analysis (6th ed.).* MacMillan Publishing Company: New York.

Gulati, R. 1995a. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal*, 38: 85-112.

Hagedoorn, J. & Schakenraad, J. 1994. The effect of strategic technology alliances on company performance. *Strategic Management Journal*, 15(4): 291-309.

Hall, Bronwyn H., Jaffe, Adam B., & Trajtenberg, Manuel. 2001. The NBER patent citations data file: lessons, insights and methodological tools. Working Paper. 8498. National Bureau of Economic Research.

Hamel, G. 1991. Competition for competence and inter-partner learning with international strategic alliances. *Strategic Management Journal*, Summer Special Issue, 12: 83-103.

Heckman, J. J. 1979. Sample selection bias as a specification error. *Econometrica*, 47(1): 153-161.

Hennart, J. F. 1988. A transaction cost theory of equity joint ventures. *Strategic Management Journal*, 9: 361-374.

Hensler, D. A., Rutherford, R. C. & Springer, T. M. 1997. The survival of initial public offerings in the aftermarket. *The Journal of Financial Research*, 20(1): 93-110.

Hitt, M. A., Dacin, M. T., Levitas, E., Arregle, J. L. & Borza, A. 2000. Partner selection in emerging and developed market contexts: Resource-based view and organizational learning perspective. *Strategic Management Journal*, 43: 449-467.

Hsu, David H. 2006. Venture capitalists and cooperative start-up commercialization strategy. *Management Science*, 52(2): 204-219.

Ireland, R. D., Hitt, M. A. & Vaidyanath, D. 2002. Alliance management as a source of competitive advantage. *Journal of Management*, 28(3): 413-446.

Jain, B. A. & Kini, O. 1999. The life cycle of initial public offering firms. *Journal of Business Finance and Accounting*, 26(9): 1281-1307.

Jain, B. A. & Kini, O. 2000. Does the presence of venture capitalist improve the survival profile of IPO firms? *Journal of Business Finance and Accounting*, 27(10): 1139-1176

Kale, P., Dyer, J. H. & Singh, H. 2002. Alliance capability, stock market response, and long-term alliance success: The role of the alliance function. *Strategic Management Journal*, 23(8): 747-767.

Kimbrough, M. D. 2007. The influences of financial statement recognition and analyst coverage on the capital market's valuation of R&D capital. *The Accounting Review*, 82(5): 1195-1225.

Kogut, B. 1988. Joint ventures: Theoretical and empirical perspectives. *Strategic Management Journal*, 9: 319-332.

Koh, J. & Venkatraman, N. 1991. Joint venture formation and stock market reactions: An assessment in the information technology sector. *Academy of Management Journal*, 34: 869-892.

Leland, H. E. & Pyle, D. H. 1977. Informational asymmetries, financial structure, and financial intermediations. *The Journal of Finance*, 32(2), Papers and Proceedings of the Thirty-Fifth Annual Meeting of the American Finance Association, September 16-18, 1976: 371-387

Lerner J. 1994. Venture capitalists and the decision to go public. *Journal of Financial Economics*, 35: 393-316.

Lerner, J. 1995. Venture capitalists and the oversight of private firms. *The Journal of Finance*, 50(1): 301-318.

Lerner, J., Shane, H. & Tsai, A. 2003. Do equity financing cycles matter? Evidence from biotechnology alliances. *Journal of Financial Economics*, 67: 411-446.

Liebeskind, J. P. 1996. Knowledge, strategy and the theory of the firm. *Strategic Management Journal*, 17: 93-107.

Lindsey, L. 2008. The Role of Venture Capital in Strategic Alliances. *The Journal of Finance*, 63(3): 1137-1168.

Logue, D. E., Rogalski, R. J., Seward, J. K. & Foster-Johnson, L. 2002. What is special about the roles of underwriter reputation and market activities in initial public offerings? *The Journal of Business*, 75(2): 213-244.

Megginson, W. L. & Weiss, K.A. 1991. Venture capitalist certification in initial public offerings. *The Journal of Finance*, 46(3): 879-903.

McGrath, R. G. 1997. A real options logic for initiating technology positioning investments. *Academy of Management Review*, 22: 974-996.

McGrath, R. G. and Nerkar, A. 2004. Real options reasoning and a new look at the R&D investment strategies of pharmaceutical firms. *Strategic Management Journal*, 25: 1-21.

Oxley, J. E. & Sampson, R. C. 2004. The scope and governance of international R&D alliances. *Strategic Management Journal*, 25: 723-749.

Pisano, G. P. 1994. Knowledge, integration, and the locus of learning: An empirical and analysis. *Strategic Management Journal*, 15: 85-100.

Podolny, J. M. & Stuart, T. E. 1995. A role-based ecology of technological change. *The Journal of Sociology*, 100(5): 1224-1260.

Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, 14(1): 15-34.

Reuer, J. J. & Ariño, A. 2002. Contractual renegotiations in strategic alliances. *Journal of Management*, 28(1): 47-68.

Reuer, J. J., & Ariño. A. 2007. Strategic alliance contracts: Dimensions and determinants of contractual complexity. *Strategic Management Journal*, 28: 313-330.

Reuer, J. J. & Tong, T. W. 2005. Real options in international joint ventures. *Journal of Management*, 31(3): 403-423.

Ring, P. S. & Van de Ven, A. 1992 Structuring cooperative relationships between organizations. *Strategic Management Journal*, 13(7): 483-494.

Rothaermel, F. T. 2001a. Incumbent's advantage through exploiting complementary assets via interfirm cooperation. *Strategic Management Journal*, 22 (6/7): 687-699

Rothaermel, F. T. 2001b. Complementary assets, strategic alliances, and the incumbent's advantage: An empirical study of industry and firm effects in the biopharmaceutical industry. *Research Policy*, 30: 1235-1251.

Rothaermel, F. T. & Boeker, W. 2008. Old technology meets new technology: Complementarities, similarities, and alliance formation. *Strategic Management Journal*, 29: 44-77.

Rothaermel, F. & Deeds, D. 2004. Exploration and exploitation alliances in biotechnology: A system of new product development. *Strategic Management Journal*, 25(3): 201-221.

Silverman, E. 2006. The hermit crab solution. *Nature Biotechnology*, 24(3): 245-247.

Sorenson J.B. & Stuart T.E. (2000) Aging, obsolescence and organizational innovation. *Administrative Science Quarterly*, 45(1): 81-112.

Spence, A. Michael. 1973. Job market signaling. *The Quarterly Journal of Economics*, 87(3): 355-374.

Stinchcombe, A. L. 1965. Social structure and organizations. In *The Handbook of Organizations*, Chicago Rand McNally: 142-193.

Stuart, T. E. 2000. Interorganizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry. *Strategic Management Journal*, 21: 791-811.

Stuart, T. E. & Podolny, J. M. 1996. Local search and the evolution of technological capabilities. *Strategic Management Journal*, 17: 21-38.

Stuart, T. E., Hoang, H. & Hybels, R. E. 1999. Interorganizational endorsements and the performance of entrepreneurial ventures. *Administrative Science Quarterly*, 44: 315-349.

Teece, D. J. 1986. Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, 15: 285-305.

Teece, D.J. 1992. Foreign Investment and Technological Development in Silicon Valley. *California Management Review*, 34(2), 89-107.

Tushman, M. L. & Anderson, P. 1986. Technological discontinuities. *Administrative Science Quarterly*, 31: 439-465.

Trajtenberg, M. 1990. A penny for your quotes: Patent citations and the value of innovations. *The Rand Journal of Economics*, 21(1): 172-187.

UCLA Statistical Consulting Group. Stata Library: Panel Data Analysis. From http://www.ats.ucla.edu/stat/stata/library/gee.htm (Retrieved November 12, 2013).

Vassolo, R. S., Anand, J. & Folta, T. B. 2004. Non-additivity in portfolios of exploration activities: A real options-based analysis of equity alliances in biotechnology. *Strategic Management Journal*, 25: 1045-1061.

White, Steven & Siu-Yun Lui, Steven. 2005. Distinguishing costs of cooperation and control in alliances. Strategic Management Journal, 26: 913-932.

Zajac, E.J. & Olsen, C.P. 1993. From transaction cost to transaction strategies. *Journal of Management Studies*, 30: 131-145.

CEO DIRECTORS: GOING IT ALONE OR CLUSTERING ON BOARDS?

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ABSTRACT

CEO directors are a unique type of outside director and have been the object of governance scholars' inquiry. Scholarly investigation includes the characteristics of appointing firms, those of CEOs and their home firms that influence their acceptance of director Appointments, and the impact of CEO directors on appointing firm outcomes. Examination of the incidence of active CEO directors serving on corporate boards as outside directors has produced conflicting findings as to whether firms have multiple CEOs serving as directors or if firms are reluctant to replicate skills of directors already on the board. This study examines this clustering effect investigating circumstances surrounding board service of active CEOs and proposes that CEO directors do indeed cluster on boards.

INTRODUCTION

CEO directors are active CEOs serving as outside directors on the boards of other firms (Fahlenbrach, Low, & Stutz, 2010). In their pivotal study of U.S. corporate boards, Lorsch and MacIver (1989) reported 63% of outside board members serving as active CEOs. Fich (2005) reported that number as 59% for the period 1997-1999 from a sample of Fortune 1000 firms. More than twenty years after Lorsch and MacIver's work, Fahlenbrach and colleagues show that figure to be nearly 9% during the period 1989-2002 ranging from a high of 11% in 1995 to a low of 6% in 2001. These changes reflect a trend reported by Lorsch and MacIver (1989) citing the growing complexity of the CEO Job and the increasing commitment required for director Service. Even as the number of active CEOs serving as corporate directors has declined over the past decade, the critical role they play in corporate governance has increased in importance.

CEO directors are greatly valued by appointing firms and external constituencies for their potentially unique performance of the governance functions of monitoring as prescribed by agency theory (Fama & Jensen, 1983), of connecting the firm to vital resources as described by the resource dependence perspective (RDP) (Pfeffer & Salancik, 1978), and of advising and counseling the CEO in discharging the service role of the board (Johnson, Daily, Dalton, & Ellstrand, 1996; Zahra & Pearce, 1989). Indeed, they are a unique category of director with attributes different from those of many other director types (e.g., insiders, non-CEO outsiders, grey directors, etc.) that uniquely add value to the firm. For example, Fich (2005) reported a positive response by financial markets upon appointment of active CEOs as outside directors on corporate boards noting, in particular, the value that CEOs of commercial banks bring to the appointing firm. In addition, a CEO director brings prestige to the appointing firm by "certifying" (Fahlenbrach et al., 2010) the firm to be worthy of her/his valuable time and prestige, and board service adds to the CEO director's own prestige by acknowledging the experience, knowledge, and expertise that comprise her/his human capital as a strategic leader (Fahlenbrach et al., 2010; Horner, 2015).

This study investigates how the existence on corporate boards of active CEOs influences subsequent appointments of other active CEOs. This "clustering" effect was noted by Fahlenbrach

and colleagues (2010) who reported that existing CEO directors increased the likelihood of additional CEO directors. In contrast to these findings, Fich (2005) reported an inverse relationship of CEO appointments with the proportion of CEO directors already on the board suggesting the possibility that firms are reluctant to appoint directors with skills similar to those already serving. This study examines the nature of these conflicting findings, explores the circumstances that potentially influence clustering of CEO directors, and proposes the tendency of CEO directors to cluster on corporate boards.

CEO DIRECTORS: APPOINTING FIRM AND SOURCE FIRM

Scholarly thinking about CEO directors comes largely from the finance and strategic management literatures. It can be summarized in terms of effects on appointing (focal) firms and characteristics of the source (home) firms and appointing (focal) firms. Effects on appointing firms reflect performance outcomes and governance processes. Regarding firm performance, Fich (2005) reported a positive stock market reaction to announcement of appointments of active CEOs as outside directors. Tian and colleagues (2011) also observed a favorable market reaction to involvement by CEO directors in CEO selection. With respect to governance processes, Faleye (2011) found managerial compensation to be higher and less sensitive to performance, although Fahlenbrach and colleagues (2010) using a broader sample and longer time frame found no relationship between the presence of CEO directors and managerial compensation. The presence of CEO directors may also impact the advising and monitoring functions of boards especially for firms with high governance needs such as small or growing firms or those with inexperienced CEOs (Fahlenbrach et al., 2010). CEO directors may also facilitate the spread of institutional governance norms. They subjected focal firm CEOs to loss of power through increased board power such as addition of more outsiders or separation of the chair and CEO positions when these CEO directors had experienced similar events at their home firms (Westphal & Zajac, 1997).

Finally in a set of mixed findings, the existence of incumbent CEO directors showed a negative association with appointment of new CEO directors to boards (Fich, 2005), while another study showed that the presence of CEOs directors increases the likelihood of subsequent appointments of new CEO directors (Fahlenbrach et al., 2010). In sum, CEO director Research reflects an increase in market value in response to the presence of CEO directors (Fich, 2005).

In addition, the presence of CEO directors tends to enhance governance at fledgling firms (Fahlenbrach et al., 2010), may impact managerial compensation, and may also be a vehicle whereby corporate governance practices diffuse across firms (Westphal & Zajac, 1997). Furthermore, findings are mixed as to whether the presence of CEO directors impacts subsequent appointment of additional CEOs as outside directors (Fahlenbrach et al, 2010; Fich, 2005).

Characteristics of appointing firms play a role in influencing acceptance by active CEOs of director appointments. Similarities between the source (home) and appointing (focal) firm in terms of size, age, financial and investment policies, governance structures, and even geographic proximity (due to reduced time and travel cost) make them easier to understand and reduce the time and effort required to adapt to the new board (Fahlenbrach et al., 2010). A new director can need three to five years to adequately understand the firm (Bacon and Brown, 1975). Similarities between the two firms can reduce the opportunity costs of board service thereby reducing the employment risk CEOs may experience by taking on the added responsibilities of outside board service (Wiersema, 2002). In contrast to such costs, board service may bring benefits to the CEO director and her/his home firm through increased knowledge of business

opportunities (Booth and Deli, 1996). In addition, board service enhances directors' compensation in a non-financial manner through greater prestige that is often highly valued among strategic leaders. Furthermore, the presence of prestigious incumbent CEO directors may be an inducement that attracts other active CEOs to service as outside directors.

Beyond the similarities discussed above, CEO directors' home firm characteristics also influence their acceptance of outside directorships. CEOs whose home firms have high growth opportunities tend to hold fewer outside directorships (Booth and Deli, 1998). This supports the notion identified above that knowledge of business an opportunity is a factor in attracting active CEOs to board service. In addition, CEOs with heirs apparent or strong top management teams to whom they may delegate decision making tend to hold more outside directorships (Booth and Deli, 1998).

In sum, this line of research demonstrates markets' favorable reaction to the appointment of CEO directors and the impact of board service by active CEOs on board quality and governance processes at the appointing firm. In addition, similarities between the source (home) and appointing (focal) firms can reduce the opportunity costs of board service thereby reducing employment risk for active CEOs serving as outside directors. Such service may also lead to greater knowledge of business opportunities, enhanced prestige, and inducements for other active CEOs to also serve as outside directors. Finally, source (home) firms are a factor in influencing acceptance by active CEOs of outside directorships if they lack growth opportunities or possess strong management teams affording the CEO greater flexibility for such service. The next section more closely examines characteristics of CEO directors and issues of multiple CEO directors serving on the same board.

CEO DIRECTORS' CHARACTERISTICS AND CLUSTERING

A number of characteristics make CEOs particularly unique as corporate directors in terms of the skills, expertise, and experiences they bring to the tasks and processes of governance. Among these is the general knowledge they have acquired over the course of their professional development. Their prior achievements are seen as a measure of their talent, and this notion is the basis of the managerial talent hypothesis (Fich, 2005): CEOs of well-performing firms are rewarded with directorships and also disciplined through penalties (e.g., forced exit) in the director Labor market (Fama, 1980; Fama and Jensen, 1983). Active CEOs as corporate directors are seen as bringing superior management talent (Fich, 2005) and are considered the most likely among the different types of directors to impact the appointing firm (Fahlenbrach et al., 2010). CEO directors also bring a certain amount of specialized expertise (Fich, 2005) in that as a group they typically share specialized sets of interests, skills, knowledge, and relationships (Kotter, 1982). In addition, appointing firms seem to value certain industry backgrounds more than others. For example, CEOs of commercial banks tend to be viewed from the standpoint of appointing firms as more valuable than CEO directors from other types of firms (Fich, 2005). CEO directors may also be more independent as outside directors as they are considered by investors as less likely to be coopted by an appointing firm's CEO (Fich, 2005) perhaps due to their positions of power. Results of one study suggest that such a favorable reaction from financial markets may be in response to an expectation that an outside CEO director may be more likely to support the appointing firm CEO in making needed changes at the appointing firm (Fich, 2005; Westphal & Zajac, 1997). Some CEOs may have heirs apparent or other able lieutenants to whom to transfer decision making authority (Booth & Deli, 1996; Fahlenbrach et al., 2010) allowing them

greater freedom and flexibility to perform their governance duties. Finally, CEO directors also bring to the appointing firm a certain amount of prestige. A CEO contemplating acceptance of a board appointment may be particularly sensitive to the reputational risk of associating oneself with a particular firm's direction. By accepting a board appointment, the CEO signals to the business and broader community her/his "certification" of the firm's future prospects (Fahlenbrach et al., 2010). In sum, CEO directors bring to the board general, specific, and industry knowledge through their career and life experiences, independence through their structural positions (Jensen & Zajac, 2004), and, by their acceptance of board appointments, certification of the firm's direction and future prospects.

An active CEO's service as an outside director on the boards of other firms is driven by a variety of motives. Perhaps chief among these motives is the opportunity to identify and exploit new opportunities for growth (Booth & Deli, 1996). This growth motive is particularly acute when the CEO's home firm is experiencing low opportunities for growth, and the CEO is seeking information concerning new growth opportunities. The CEO turned CEO director seeks information for growth opportunities through the enhanced general business knowledge that can develop from the interpersonal connections forged through board service. This general business knowledge about the corporate arena is distinct from the type of information that directors might glean about specific opportunities such as acquisition targets (Haunschild, 1993) or specific product market or geographic market opportunities. Board service may indeed encompass a good deal of information about specific business opportunities or threats, and CEO directors may indeed benefit from such specific knowledge. However, board service and the ensuing director ties are more vital sources of knowledge concerning business models and "know-how" rather than as sources of private information (Haunschild, 1993). Thus, the expanded information network developed through corporate board service provides a general "business scan" (Useem, 1984: 45) that is an important intangible resource for the CEO director's home firm (Horner, 2006).

This information seeking by CEO directors could potentially conflict with the same activity by other CEO directors serving on the same board. CEO directors with similar skill sets may be seeking similar types of opportunities. In the event multiple CEOs serve on the same board, all may infer similar conclusions from the information gleaned in that context and develop similar strategies thereby increasing the potential for competitive intensity. Firms with low growth opportunities such as those run by CEO directors may be singularly vulnerable to increased competitive intensity. The tendency of CEO directors not to "cluster" on boards of the same firms could grow out of a desire not to expose the CEO director's home firm to competitive intensity, which could have negative performance consequences for the CEO's home firm. Fahlenbrach and colleagues (2010) noted that only 13% of appointing firms and source firms were in the same industry suggesting that this might be explained by "concerns about sharing sensitive business information with close competitors" (p. 18). This same concern may extend to common service on the same board when directors share similar skill sets. This provides some explanation as to why "clustering" may not occur. That is to say, the inverse relationship reported by Fich (2005) of appointment of CEO directors with the percentage of CEOs already serving as outside directors on a board may be due to the desire by CEOs to avoid situations that increase competitive intensity for their home firm.

As Fich (2005) further observed, an appointing firm way wish not to replicate existing skills brought to the board by incumbent CEO directors. Appointing firms may wish to avoid costs of redundancy in the skills of its directors, as redundant systems are costly and typically

require trade-offs between costs and their resulting benefits. Directors are key organizational resources, and the time spent in recruiting and developing directors must take into account the trade-offs of similar skill sets among its board members. Nominating committees expend a certain amount of effort considering board candidates. In addition, it may often take 3-5 years for a director to "learn the ropes" (Bacon & Brown, 1975). It is in firms' (and incumbent boards') interests to balance the costs and benefits of director development, and one way this may occur is by avoiding, as Fich (2005) suggests, duplicate skill sets among its board members.

In addition to the costs associated with similar skill sets among directors, issues of board process may also come into play. The separation of strategy decision making between managers and the board can be seen as comprising four stages: formulation, ratification, implementation, and monitoring (Fama & Jensen, 1983). Formulation comprises plans for positioning the firm with respect to resource and product markets, proposals for resource utilization, and proposed interorganizational relationships. Ratification is the process of approval of the formulated strategies including choosing from the decision alternatives generated in the formulation phase. Implementation is the execution of the formulated plans and requires creation of the organizational parts, processes, and systems and their relationships to one another. Implementation is organizing, coordinating, and integrating the work of the organization through structures, processes, culture, and procedures. Monitoring is the processes of evaluating the performance of those implementing the strategy and developing reward systems. Because formulation and implementation is the domain of managers, these two functions comprise decision management. Similarly, because ratification and monitoring is generally the domain of the board, these functions are considered to be decision control. Decision management and decision control are at the core of the organizational decision process or system (Fama & Jensen, 1983), and the distinction between the two crystallizes the distinction between management and governance.

The multiple voices accompanying such similar skill sets on the board would seem to illustrate the notion that "two heads are better than one." However, research suggests that diversity among strategic leaders can be a two-edged sword (Milliken & Martins, 1996). Diversity among top management teams tends to promote more sound strategy formulation due to the richness of information and opinions inherent in group diversity but less agreement on implementation due to the multiplicity of views on how to proceed (Hitt, Ireland, & Hoskisson, 2003). In addition, multiple viewpoints, even if from a similar skill set, may proceed from a more heterogeneous set of perspectives (Mintzberg, 1988). This may acutely be the case with the types of non- programmable behaviors (Misangyi & Acharya, 2014) characteristic of strategic leadership, which can be very difficult to articulate and to assess. Strategy ratification by the board is a more passive process requiring a fairly forthright decision of approval or disapproval while monitoring is a more active process requiring board action (formative or disciplinary) with respect to outcomes of specific steps taken by the focal firm's CEO and top managers. Hence, strategy ratification by the board is analogous to strategy formulation by managers in that it is deliberative in nature focusing more on a desired state of affairs rather than on courses of action. Strategy monitoring is analogous to strategy implementation in that it is active in nature focusing on a course of action in response to strategic outcomes. Just as formulation benefits from multiple viewpoints and implementation suffers from multiple viewpoints, ratification likewise benefits from multiple viewpoints and monitoring suffers from them. Whereas control is a primary governance function of the board, governance quality may benefit or suffer from the potential unanimity resulting from having

directors with similar skill sets such as that developed while also serving as an active CEO.

In sum, a number of characteristics of CEOs influence their tendency to serve as corporate directors and may, in turn, influence their tendency not to cluster on boards. CEOs are attractive as corporate directors to appointing firms on the basis of their unique knowledge, independence, and prestige. Their unique knowledge comes in the form of general management skills, expertise, and experiences, in the form of the specialized knowledge that is somewhat singularly the domain of the top position in an organization, and in the form of industry knowledge such as commercial banking. Their independence may be a function of their equal status relative to the appointing firm's CEO as well as of their own power base at their home firm where long tenure and a strong top management team may afford them the flexibility to explore additional corporate leadership opportunities such as service on other corporate boards.

Their prestige is a combination of factors stemming from their structural position, their knowledge, and their home firm power bases. The opportunity for new business knowledge may drive them toward board service but also may conflict with motives of other CEO directors contributing to a tendency not to serve with other CEO directors. In addition, appointing firms may avoid board service by multiple CEOs in order to conserve scarce governance resources and to reduce the potential for multiple strong voices on the board that could lead to dissension, especially in performance of the board's monitoring function. The next section addresses the empirical evidence regarding the tendency for service by multiple CEOs on the same corporate board.

RESOLVING THE TWO CONFLICTING FINDINGS

In contrast to Fich's (2005) findings, Fahlenbrach and colleagues (2010) found that the existence of a CEO director on the board increases the likelihood of additional CEO director Appointments. They reason that this finding lends support to the notion that potential directors seek prestigious appointments. Given the additional prestige that CEO directors bring to appointing firms joining a board with an existing CEO director enhances the prestige of the incoming CEO director through the new association with the incumbent CEO director.

In addition to the qualitative differences in the two studies, the samples of the two are considerably different. The sample in the study of Fahlenbrach and colleagues (2010) consists of 26,231 director Appointments from 1989-2002, while Fich's (2005) sample of 1493 director appointments comes from 432 Fortune 1000 firms from 1997-1999. Hence, Fahlenbrach and colleagues' (2010) sample encompasses a broader time frame than Fich's (2005) sample, and the sampling frame is director appointments while Fich's (2005) study derives its director appointments from a sample of firms. Fich (2005) provides strong theoretical arguments for his finding that firms avoid clustering of CEO directors, while Fahlenbrach and colleagues (2010) provide strong empirical evidence of clustering. However, Fahlenbrach and colleagues (2010) suggest that the clustering they observed supports the notion that director Candidates accept appointments partially based on the potential prestige those appointments bring to the director. Furthermore, the board's literature has long supported this "prestige hypothesis" with theory and empirical evidence. Hence, despite Fich's (2005) convincing argument against the clustering of CEOs, Fahlenbrach and colleagues (2010) provide stronger statistical evidence in support of the clustering effect and demonstrate that this is consistent with scholarly theory and empirical evidence.

To summarize, the scholarly literature on boards presents strong evidence that active CEOs tend to be attracted to boards where other active CEOs already serve as directors. They

are attracted to such boards by the potential growth in general knowledge of business opportunities and by the prestige associated with serving on a board along with other prestigious CEO directors (Fahlenbrach et al., 2010). The preceding discussion suggests the following primary proposition: Active CEOs seeking board service will tend to accept appointment to boards with incumbent CEO directors.

SUGGESTIONS FOR FUTURE RESEARCH

A number of additional issues warrant further investigation. One such area is the issue of the benefits accruing to CEOs who join boards composed already of active CEOs serving as outside directors as well as the benefits to those incumbent CEOs of having directors joins the board who are also CEOs. Previous discussion addressed the initial prestige accorded an active CEO joining a board with incumbent CEO directors. Future research might examine other benefits such as the impacts on performance of the new CEO director's home firm, on the new CEO director's home firm compensation, or on the incidence of subsequent additional board appointments.

Another area that might benefit from additional investigation is whether the value of the expertise brought by CEO directors to the board of the focal firm is context dependent. If context dependent, then their value occurs only if the focal firm is involved in a context in which the CEO director has a certain level of expertise. Moreover, their presence on the board may be detrimental to the focal firm if not engaged in that context. Wernerfelt (1984) points out that resource are not necessarily strengths unless they fit strategically with the firm's needs. Krause and colleagues (2013), in their study of the impact of COO directors show that the expertise brought to the board by this unique type of director is valuable only when the firm needs the expertise and otherwise that expertise is detrimental to the focal firm. These researchers found that the operational expertise presumed to exist among the skills brought to the board by COO directors is valuable only in certain contexts. When the firm's operational efficiency is decreasing, the presence of COO director(s) is associated with improved profitability (industry-adjusted ROA), while presence of non-CEO outside executive directors is associated with declining profitability. When operational efficiency is increasing, the presence of COO director(s) is associated with declining profitability, while the presence of non-CEO outside executive directors is associated with improved profitability. The research on boards shows that while certain director expertise is valuable when the focal firm engages in activities relevant to that expertise, there is little or no evidence that such expertise causes declining performance if the firm is not engaged in activities relevant to that expertise. For example, Kroll and colleagues (2008) and McDonald and colleagues (2008) showed how outside CEO director acquisition experience improved acquisition performance of the focal firm demonstrating that boards with experience in specific contexts may provide more effective governance. While providing support for the notion of strategic relevance (Wernerfelt, 1984), there is no empirical evidence that the presence of CEO directors with context specific experience might be detrimental to the performance of firms not engaged in that context.

Finally, issues of measurement regarding the value of CEO directors need to be addressed. Currently, the measurement of CEO directors is on a nominal scale indicating merely the presence or absence of CEOs on the board of a firm. Nominal scales provide the least amount of information about a particular variable in that such nonmetric scales identify attributes, characteristics, or categorical properties and, in the case of CEO directors, indicate the number of occurrences of CEO directors on a board. In addition, such measurement may capture

a variety of constructs and likely includes a good deal of noise as well. Substantive results may depend on development of more statistically meaningful measurement scales.

SUMMARY AND CONCLUSION

The quality of a firm's corporate governance is thought to be enhanced by membership on the board of directors of active CEOs. These individuals bring unique experience as managers of an existing firm providing both a valuable and rare attribute to the governance function of the firm. Active CEOs are sought by appointing firms in the belief that they add financial value to the firm as well as non-monetary reputational value by certifying the future prospects of the firm. Investigation of the tendency of CEO directors to cluster on boards extends scholarly understanding of boards, the directors that compose them, and the firms whose affairs they are charged with overseeing.

REFERENCES

Bacon, J. & Brown, J. K. 1975. *Corporate directorship practices: Role, selection and legal status of the board*. NewYork: The Conference Board.

Booth, J. R., & Deli, D. N. 1996. Factors affecting the number of outside directorships held by CEOs. *Journal of Financial Economics, 40*(1): 81-104.

Fahlenbrach, R., Low, A., & Stulz, R. M. (2010). Why do firms appoint CEOs as outside directors? *Journal of Financial Economics, 97*(1): 12-32.

Faleye, O. 2011. CEO Directors, Executive Incentives, and Corporate Strategic Initiatives. *Journal of Financial Research 34*: 241-277.

Fama, E. F. (1980). Agency problems and the theory of the firm. *Journal of Political Economy 88*(2):288–35.

Fama, E. & Jensen, M. 1983. Separation of Ownership and Control. *Journal of Law and Economics, 26*(June): 301-325.

Festinger, L. 1954. A theory of social comparison processes. *Human Relations, 7*(2): 117-140.

Fich, E., 2005. Are some outside directors better than others? Evidence from director appointments by Fortune. *Journal of Business, 78*(5): 1943–1971.

Haunschild, P. 1993. Interorganizational imitation: The impact of interlocks on corporate acquisition activity. *Administrative Science Quarterly, 38*: 564-592.

Hermalin, B. E., & Weisbach, M. S. 1988. The determinants of board composition. *RAND Journal of Economics,* -606.

Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. 2003. *Strategic management (concepts): Competitiveness and globalization* (5th edition). Cincinnati, OH: Southwestern College Publishing.

Horner, S. V. 2006. Director ties, board experience, and firm strategic outcomes: Board experience effects on post-acquisition performance. (Unpublished doctoral dissertation), University of Missouri, Columbia.

Horner, S. V. 2015. CEOs as Corporate Directors: A Human Capital Perspective. *Academy of Strategic Management* 1): 30-42.

Jensen, M., & Zajac, E. J. 2004. Corporate elites and corporate strategy: How demographic preferences and structural position shape the scope of the firm. *Strategic Management Journal, 25*(6): 507-524.

Johnson, J. L., Daily, C. M., & Ellstrand, A. E. 1996. Boards of directors: A review and research agenda. *Journal of 22*(3): 409-438.

Krause, R., Semadeni, M., & Cannella, Jr., A. A. 2013. External COO/presidents as expert directors: A new look at the service role of boards. *Strategic Management Journal, 34*(13): 1628-1641.

Lorsch, J. W., & MacIver, E. 1989. *Pawns or potentates: The reality of America's corporate boards.* Boston, MA: Harvard Business School Press.

Milliken, F. J., & Martins, L. I. 1996. Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review, 21*(2): 402-433.

Mintzberg, H. 1988. Opening up the definition of strategy. In Quinn, J. B, Mintzberg, H., & James, R. M. (eds.), *The Strategy Process: Concepts, contexts, and cases.* (pp. 13-20). Englewood Cliffs, NJ: Prentice-Hall.

Pfeffer, J. & Salancik, G. R. 1978. *The external control of organizations: A resource dependence perspective.* New York: Harper & Row.

Tian, J., Haleblian, J., & Rajagopalan, N. 2011. The effects of board human and social capital on investor reactions to new CEO selection. *Strategic Management Journal, 32*(7): 731-747.

Useem, M. 1984. *The inner circle: Large corporations and the rise of business political activity in the U.S. and* York: Oxford University Press.

Walster, E., Berscheid, E. and Walster, G. W. 1973. "New directions in equity research." *Journal of Personality and Social Psychology, 25*(2): 151-176.

Westphal & Zajac, 1997. Defections from the Inner Circle: Social Exchange, Reciprocity, and the Diffusion of Board U.S. Corporations. *Administrative Science Quarterly, 42*(1): 161-183.

Zahra, S. A. & Pearce, J. A. 1989. Boards of directors and corporate financial performance: A review and integrative *management, 15*(2): 291-334.

STRUCTURAL COMPARISON OF MANAGEMENT APSECTS OF COMMUNITY HEALTHCARE CENTRES IN EUROPE WITH SPECIAL FOCUS ON GERMANY

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ABSTRACT

Advances in pharmaceutical research and increased medical treatments allow individuals on a worldwide scale, especially in the developed countries to have a higher average life expectancy. Although positive individually, sets this phenomenon healthcare systems under enormous pressure to provide affordable and efficient healthcare for citizens in urban and rural areas as well. Beside central steered management undergoing's in central healthcare systems, decentralized approaches for inter-medical professional cooperation, here Community Healthcare Centers (CHC) promise to be more effective by utilizing systematic network effects. Within this article we try to compare CHC instances within the EU, with a special focus on the German instance of CHC, the MVZ (Medizinisches Versorgungszentrum), which seem to prove the expectancy of a higher individual management effectiveness by fostering the use of dashboards and KPI based scorecards.

INTRODUCTION

The provision of high quality health care at an affordable cost is a major challenge for health care systems all over the world. In many countries, the bulk of annual spending growth is due to increases in the prices of health care goods and services, and the availability of ever more new, often high-cost medical products and treatments. As a result, health care providers are facing ever greater pressure to reduce operational costs without affecting the level and quality of their services (Kaplan & Haas, 2014). In this context, hospitals are of particular interest as they make up the largest cost component in the health care system. Typically, all these health care resources are scarce and so the challenge lies in synchronizing their availability with the needs for care. Taking a broader context, logistics is also concerned with patient flows. Planning, coordinating, and controlling the resources involved in material as well as in patient flows are the functions performed by operations management (OM). Hence, similarly to industrial settings, logistics and OM are also two intertwined areas in a hospital, together, they account for a sizeable portion of a hospital's budget. In the area of information technology, focus has been given to the development of modern hospital information systems (HIS) (Baerwolf, 2010). These systems are designed to deal with all aspects of information processing in a hospital. In particular, they enable the collection, storage, management, and retrieval of data related to the clinical, administrative, and financial aspects of providing services within the hospital.

HEALTHCARE SYSTEMS

In most countries in the European Union, governments are responsible for health policy and legislation (Commission, 2016). Overall the government's plays supervisory roles among the numerous actors involved in health care, with several functions being shared with or delegated.

General Task, Bodies and Aims

- Insurance provides free access to a package of services; services not included in this package may require
- Upfront payments by patients, or co-payments. Direct payments are also made when using benefits that are
- not covered by the package or that are delivered through physicians not employed by the respective social
- Health insurance fund. Exemptions from co-payment exist for specific categories of patients (chronically ill, below a certain income level, etc.).

Provincial authorities are specifically responsible for the implementation of hospital care, the maintenance of hospital infrastructure, health promotion and prevention services; social welfare benefits and services are the responsibility of local governments (districts, statutory cities and municipalities). Access to health services is not regulated, in that patients are not obliged to enroll with one specific physician and physicians do not play a gate-keeping role. Patients may thus also access outpatient departments of hospitals without referral. Outpatient care is provided through physicians (some self-employed), outpatient clinics, privately owned or belonging to the social health insurance funds, other specialists and outpatient departments of hospitals. Physicians usually have a contract with the social health insurance funds.

Healthcare in the European Union

Different countries in the European Union have different system of healthcare services, examples are as outlined in the following countries diversified by size of members within the healthcare system.

Germany: Example Large Healthcare System

At the central level, the Federal Assembly, the Federal Council and the Federal Ministry of Health are responsible for legislative and supervisory functions. The federal legal framework regulates governance, services to be provided and the funding mechanisms of the health system. Policy-making for health care is shared between the federal government, the counties, and a large number of civil society organizations. These organizations are self-governing bodies representing the various existing sickness funds and the doctors' associations, i.e. the payers and the providers. The 16 counties are responsible for ensuring hospital care. In particular, the states' health care responsibilities include hospital planning, hospital financing investments, disease and drug abuse prevention, and vaccination. They are also responsible for medical education and for ensuring public health services such as the prevention of transmissible diseases or environmental hygiene, although these tasks have mostly been delegated to the local level (municipalities). Since 2009, health insurance has been mandatory. Individuals are covered by Statutory Health Insurance (SHI) on the basis of their income (some 88% of the population being covered by SHI) (BAEK, 2013). High earners may choose to be covered by Private Health Insurance (PHI), which also applies to civil servants and the self-employed (some 10% of the population being covered by PHI). Special regimes apply to other categories, such as soldiers and policemen. As at March 2010, insurance was provided by some 169 quasi-public sickness funds for SHI and 46 private insurance companies for PHI, though these numbers continuously change, the market being competitive.

Belgium: A Medium Sized Healthcare System

Health care is determined by three levels of government: the federal government, the federated authorities (three regions and three communities) and, to a minor extent, the local governments (provinces and municipalities) (Eeckloo, 2007). The division of responsibilities for health care reflects the structure of the country as, since the 1980s, some responsibilities have been devolved to the three communities (Flemish, French, and German). The federal level, through the Ministry of Social Affairs and Public Health, is responsible for the regulation and financing of compulsory health insurance, pharmaceutical policy and hospital legislation. Responsibilities of the federated authorities are mainly on 'health promotion and prevention; maternity and child health care and social services; different aspects of community care; coordination and collaboration in primary health care and palliative care; the implementation of accreditation standards and the determination of additional accreditation criteria; and the financing of hospital investment.

Estonia: A Small Sized Healthcare System

The health care system is administered by the Ministry of Social Affairs. The organizational structure of the system consists of several bodies including, among others: various agencies under the Ministry for Social Affairs; the Estonian Health Insurance Fund (EHIF), as an independent, public legal entity; private primary care units and hospitals established as limited companies or foundations, but mostly owned or controlled through supervisory boards by local governments; and various non-governmental organizations and professional associations. Responsibilities for the financing and management of public health services are at the central level (EU, 2015). The Ministry for Social Affairs, structured into four main departments (Health Care, Public Health, Health Information and Analysis and eHealth), is responsible for health and health care policy formulation, regulation, planning, and monitoring, as well as regulation and funding of ambulance services and emergency care services for uninsured people. The EHIF (Haigekassa) is accountable to the Ministry of Social Affairs through the chair of its Supervisory Board. At county level, county governments, representing the state regionally, are responsible for the planning, supervision and administration of primary care within the county.

Decentralized Private Bodies in EU/Germany

Ownership in hospitals had co-shareholders, been open to governmental entities, not-for profit organizations (in particular church affiliated charities) and private or publicly listed for-profit investors. In order to slowly overcome the internationally strict separation between the inpatient and the outpatient sector and in order to open the latter for investors, a new legal form, the Medizinisches Versorgungszentrum ('MVZ') was introduced by the German legislator with effect as of 2004 (MVZ, 2015). MVZ are licensed outpatient medical service providers who may employ physicians and who may be owned by any person or entity entitled to render any (other) services or sell products within the SHI – such as hospitals but also physiotherapist service provider entities, medical appliance shops amongst other things. By 2010, approximately 1,500 MVZ had been established and 20 per cent of them were owned by others than doctors or hospitals. At the end of 2009, the then newly elected government aimed at prohibiting new MVZ being established unless doctors had a majority stake in them. Only hospitals had been envisaged to become an eligible co-owner but it was initially expected that they would be limited to a minority stake.

Management Dimensions of German CHC: MVZ

MVZs run by doctors will only show further clear growth in the individual form of branch MVZs or as an MVZ chain whereas individual MVZs run exclusively by doctors may possess fewer opportunities for influence. It has become clear in recent years from the developments in the healthcare sector that in Germany the MVZ has definitely achieved a certain status.

Figure 1
MEDICAL ACTORS WITHIN AN CHC/MVZ (OWN ILLUSTRATION)

The management of the MVZs varies between the three MVZ categories as follows:

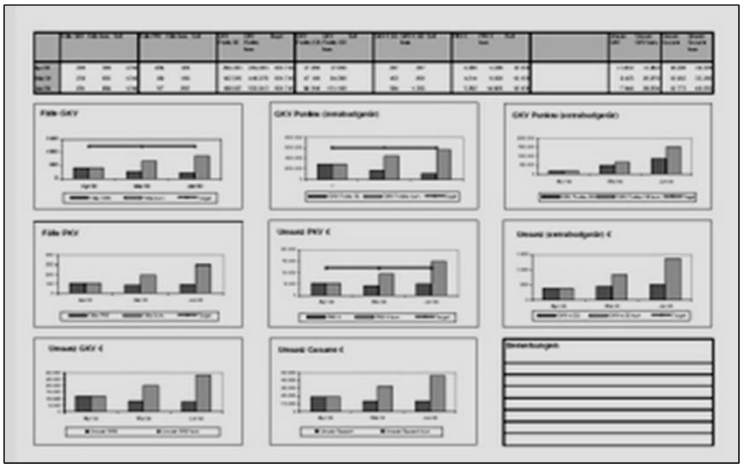
- In the case of a usual MVZ partnership it is necessary for the lead doctor to have sufficient free time to keep up the management within the MVZ.
- In the case of a usual MVZ company limited by shares it is important for the executive director to be able to carry out his management operations to the best of his ability, for example, by working with appropriate tools.
- In the case of an MVZ corporation current management instruments such as, for example, in the case of business management operations, integrated management systems, are centralized for the board or the executive

The MVZ partnership has the important goal of offering the best care to patients and ensuring patient satisfaction with them. In the case of the MVZ Company limited by shares it is of great importance that it is able to fulfill its care responsibility.

CHC Related Business Processes and KPI Scorecards

There are very different approaches to how management is handled within MVZs. Depending on the category of MVZ, management will be based on the staff available and their qualifications and on the structure of the organization.

Figure 2
KPI SCRORECARD AS AN AUXILIARY TO STEER (BAERWOLF, 2010)



Even the legal form (in which the MVZ is established) consequently also affects the MVZ management structure. Taxation factors affecting the MVZ such as, for example, a potential local business tax or value added tax liability have an effect on the way an MVZ is directed, even where such perspectives are only partially expressed. KPI based scorecards as an auxiliary for the related business process can be used to support to steer the organization operationally on figure oriented basis.

Cooperation Instead of Central Steering

Changes to the parameters underlying healthcare – such as, for example, social change, the break-up of traditional social and family networks, demographic developments, the altered range of illnesses, the heightened complexity of care, the limited financial and staffing resources and the changed attitudes of those within the profession and patients towards themselves – mean that new health concepts are necessary, as is an adjustment of the cooperation structures between the different health professions. In economically underdeveloped regions, in particular in the former East Germany, there are also bottlenecks evident in region wide outpatient care by doctors.

CONCLUSION

Community Healthcare Centers, as acting medical entities, positioned within the healthcare domain between an hospital and a doctors single practice seem to be an increased attractive organizational form within the EU, especially within the large healthcare system Germany (Here: the MVZ). Different Subject Matter Experts (SME), in the role of different medical experts, decentralized working in a single legal entity seems to mine special efficiencies based on their relative small structure. Although the management of these entities require a complete end-2-end management of processes, also covered by much larger healthcare entities, like hospitals. A strict operational business management, using current business process supporting IT systems seems to be relevant for the mid-term surviving of these organizations.

OUTLOOK AND FUTURE RESEARCH

Based on the results of the current article it became obvious, that a deeper knowledge is necessary in regards to a better understanding of the multi-dimensional aspects of the pan-European comparison. Therefore additional dimensions have to be included in future research efforts.

- Dimension 1 (D1): Business Process Management (BPM) Level 1-3
  In order to understand the in-depth procedures of both, clinical pathways and administrative procedures within a CHC thorough analysis of each single process steps need to be undertaken and modeled in a comparable form, e.g. in a BPMN (Business Process Modeling Notation) (OMG, 2015) process description language.
- Dimension 2 (D2): Key Performance Indicators
  Comparing structures in regards of effectiveness and efficiency using a standardized, quantitative approach seem to be most plausible. Therefore a set of Key Performance Indicators (KPI), mostly focusing on the General & Administration (G&A) processes, e.g. "Time-to-get-an-appointment" could enhance the impact of the study.
- Dimension 3 (D3): Influence-Matrix to national healthcare regulations
  Furthermore the impact of the (still very national) specific gestalt of the healthcare system, on the structure of a CHC needs to be enhanced. Factors, like payment scheme, legal-approval status of the facility or maximum, legal approval status for the personnel should be analytical standardized and then be compared in a common matrices based view.
- Dimension 4 (D4): Information-Systems (IS) strategy
  In regards of efficacy of the facility also the usage of underlying IT infrastructure, how the CHC business process are relying on (cp. To D1 dimension) must be better understood, especially in regards to the D3, the national regulatory procedures. Are they more centrally provided, by a state or region, or, decentrally under the authority of the facility and only data exchange e.g. via the HL7 schema (HL7 Organization, 2016).

REFERENCES

Baerwolf, Sabine. "IT as Sucessfactor in Care Management in a MVZ (DE)." Netzwerk Gesundheit: Vortrag Frau Baerwolff. Polikum Gesundheitszentrum, 13 Dec. 2010. Web. 25 Jan. 2016. <http://de.slideshare.net/sibbev/vortrag-frau-baerwolff6122010>.

BAEK. "Healthcare System." German Association of Doctors (BAEK). Http://www.bundesaerztekammer.de/weitere-sprachen/english/healthcare-system/, 01 Mar. 2013. Web. 25 Jan. 2016. <http://www.bundesaerztekammer.de/weitere-sprachen/english/healthcare-system/>.

Commision, EU. "European CommissionPublic Health." *Policy*. European CommissionPublic Health, Feb. 2013. Web. 25 Jan. 2016. <http://ec.europa.eu/health/strategy/policy/index_en.htm>.

Eeckloo, Kristof. "The Belgian Healthcare System." *Healthcare Managers and Development Tools for Organisations*. Health Management Organisation (HMO), Cyprus, 2007. Web. 25 Jan. 2016. <https://healthmanagement.org/c/hospital/issuearticle/the-belgian-healthcare-system-2>.

EU Commision. "Health Insurance - Estonia for Researchers." EURAXESS Estonia. EURAXESS Research in Motion, 2015. Web. 25 Jan. 2016. <http://euraxess.ee/incoming-researchers/health/health-insurance/>.

HL7 Organisation. "Introduction to HL7 Standards." Introduction to HL7 Standards. Health Level Seven International, 2016. Web. 25 Jan. 2016.

OMG Group. "Documents Associated with Business Process Model and Notation™ (BPMN™) Version 2.0." BPMN 2.0. Object Management Group, 2015. Web. 25 Jan. 2016.

Kaplan, Robert, and Derek Haas. "How Not to Cut Health Care Costs." Harvard Business Review. Harvard Business Review, Dec. 2014. Web. 01 Jan. 2016. <https://hbr.org/2014/11/how-not-to-cut-health-care-costs>.

"MVZ." *MVZ Structure*. Wikimedia Foundation, 17 Aug. 2015. Web. 25 Jan. 2016. <https://de.wikipedia.org/wiki/Medizinisches_Versorgungszentrum>.