Creative Systems, Social Networks, and New Product Development: Two Essays Examining the Impact of Connected Teams and Heavyweight Leaders on Marketing Outcomes

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CREATIVE SYSTEMS, SOCIAL NETWORKS, AND NEW PRODUCT DEVELOPMENT:
TWO ESSAYS EXAMINING THE IMPACT OF CONNECTED TEAMS AND
HEAVYWEIGHT LEADERS ON MARKETING OUTCOMES

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Dedicated to Michael, Dylan, and Kyle, without whom there would be no light to work by.

“In the end, though, maybe we must all give up trying to pay back the people in this world who sustain our lives. In the end, maybe it's wiser to surrender before the miraculous scope of human generosity and to just keep saying thank you, forever and sincerely, for as long as we have voices.” – Elizabeth Gilbert
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ABSTRACT

The overall objective of this dissertation is to enhance understanding of the role of social networks in creative systems and new product development. In the first study, the ripple effects of internal creative teams on downstream marketing outcomes are examined. Nearly half of Fortune 500 companies deploy teams of some type to address complex, knowledge-intensive projects. The core objective in the present study is to understand how social network connections within and across work teams impact downstream marketing outcomes. A two-stage study was conducted using two sets of data drawn from the movie industry. Social capital theory is drawn upon to link multilevel team social structures to downstream customer outcome measures and financial performance. In Stage 1, social network structures are constructed using UCINET and data from wide release movies spanning 2002 – 2006. In Stage 2, the social network measures are linked to key downstream marketing outcomes using partial least squares structural equation modeling (PLS-SEM) and data from wide release films released between January 2007 to June 2007. Despite the widely accepted notion that cohesive teams and connected team members improve team performance, results indicate that when creative or novel output is the team goal, these assumptions are tenuous. Results also support the general proposition that internal network structures impact product financial performance directly, as well as both customer satisfaction and product financial performance indirectly via product quality. The findings suggest that marketing scholars and practitioners would benefit from consideration of the effects of team design policies and strategies on downstream, customer-focused outcome measures.

Delving deeper into the downstream stream effects of internal network characteristics, new product development team leader effects are examined in the second study. The new product development (NPD) paradigm is shifting, and with it, the structure of NPD teams and the roles of team leaders. The social structure in which these teams and leaders are embedded is known to influence team dynamics and productivity. In this paper, the systems theory of creativity is utilized to offer an extended view of team-level effects by linking team and leader social network characteristics to key product outcome metrics. A research model is developed using data from director teams and outcomes for wide release films from January 2002 to June 2008. Social network analysis is used to measure team and leader network characteristics, and partial least squares structural equation modeling (PLS-SEM) links the effects of team
cohesiveness, team connectedness, and team leader clout to critical reviews and movie goer satisfaction. Results indicate that the network position of a team member has an indirect effect on customer satisfaction evaluations, a surprising result given the lack of interaction between team and customer in remote services such as films. The results are also surprising in that, contrary to popular belief, there is a potential downside to high team cohesion. The cohesion-quality relationship is shown to be curvilinear, suggesting that a moderate level of cohesion is ideal. The results also indicate that heavyweight team leaders can offset the downsides of cohesion by serving as boundary-spanners for highly cohesive teams. Finally, results indicate that heavyweight leaders contribute to product quality both directly and indirectly by securing higher levels of financial resources. For marketing academics, the results extend NPD research by exposing the tradeoffs associated with leader and team member network characteristics in NPD, and the consequences and promise of network-based team design. For managers, the work provides useful recommendations for enhancing product quality and customer satisfaction via social network-based team design, and identifies leader networks as crucial mechanisms for securing financial resources and neutralizing the downside of low and high team cohesion, thereby maximizing downstream product metrics.

**Keywords:** applied social networks, teams, leaders, clout, social networks, creativity, systems theory, cohesiveness, connectedness, product quality, customer satisfaction, financial performance, film industry, motion picture
CHAPTER ONE
INTRODUCTION

The overall objective of this dissertation is to enhance understanding of the role of social networks in creative systems and new product development. Two essays examine the effects of local and global social network characteristics on key marketing outcomes. Conventional team configuration strategies encompass descriptive measures, such as demographic and functional variables, to achieve a team configuration comprised of cross-functional diversity. However, systems theory suggests that social networks are an important contextual component of team performance. This research identifies key network characteristics that impact team performance in creative contexts such as new product development. Findings suggest that social networks are an important factor in team configuration, and ultimately in downstream team performance outcomes. As marketers evolve into leaders of new product development teams, creative teams, and sales teams, the insights from this body of work will have important practical implications.

The first essay establishes the baseline effects of team social network characteristics on product quality, customer satisfaction, and financial performance. Findings demonstrate that social network characteristics are an important component of team configuration. In the context of creative industries, significant effects were found between team network characteristics and marketing outcomes. Interestingly, results demonstrate that the commonly held belief that cohesive teams increase team performance does not necessarily hold in creative contexts. The work uncovers the ripple effect internal team structures can have on the performance of creative products, even in cases of remote services, where the customer does not directly interact with the team. Thus, the findings contribute to the body of scholarly work on teams and social networks, and they offer guidance for practitioners regarding the costs and benefits of highly connected and highly cohesive teams.

In the second essay, employing the systems theory of creativity, the examination of the structural mechanisms impacting team performance deepens to include the effect of team leaders. Specifically, the essay examines the effect of “heavyweight” leaders on team performance as measured by product quality assessments and customer satisfaction. Team leader clout is found to have a significant effect on third-party product quality assessments, impact the availability of financial resources, and offset the negative effect of high cohesion on team
performance. Moreover, a curvilinear relationship between cohesion and product quality assessments is identified, suggesting that moderately cohesive teams outperform teams with low or high levels of cohesion and providing clarity to the negative effect identified in essay one. This work, therefore, extends the insights in the first essay and sheds additional light on the effects of social networks on team performance, including the distinct effect of team leader networks. Taken together, the two essays offer guidance for managers of new product development teams, sales teams, and teams engaged in creative processes where novelty, innovation, and originality are valued.
CHAPTER TWO

CONNECTED TEAMS, HAPPY CUSTOMERS, AND RED INK: THE ROLES OF LOCAL AND GLOBAL TEAM SOCIAL STRUCTURES ON DOWNSTREAM MARKETING OUTCOMES

Introduction

As firms attempt to survive in an uncertain and highly competitive environment, they are increasingly reliant on team-based strategies (Ahearne, MacKenzie, Podsakoff, Mathieu, and Lam 2010; Devine, Clayton, Philips, Dunford, and Melner 1999), particularly in handling complex, knowledge intensive projects. A recent survey of 962 firms revealed that 84% use teams to handle special projects, 51% use them for customer service innovation, and 74% employ functional teams that act as departments (The Ken Blanchard Companies 2006). Despite their prevalence, teams fail to meet their stated objectives anywhere from 50% (Hackman 1998; Harris 2008) to as often as 90% of the time (Wang and He 2008).

These failures are particularly important in creative or complex problem solving, where they are most likely to be employed. For example, team members with many connections among their peers and within their industry have been shown to command higher salaries (Seibert, Kraimer, and Linden 2001; Seidel, Polzer, and Stewart 2000), which may decrease the financial resources dedicated to the problem. Moreover, although cohesive teams have been shown to be efficient in traditional tasks, cohesiveness may also inhibit creativity and decrease functional conflict (Kratzer, Leenders, and van Engelen 2005), resulting in less novel or creative outcomes. Meanwhile, because teams have become so commonplace, managers and employees may assume they are effective (Klein 2012; Tannenbaum, Mathieu, Salas, and Cohen 2012) or may tolerate ineffective or inefficient teams (Hackman 2012).

Team effectiveness has bearing on issues for marketing scholars because the impact of ineffective teams can be significant beyond the boundaries of the firm. Systems theory predicts that the internal social structures within organizations are likely to impact downstream marketing outcomes such as product quality and customer satisfaction. Against this backdrop, it is perhaps surprising that little work has been done to understand the downstream ripple effects that teams may have beyond the organization. Prior research on teams primarily examines the effects of
employee-level variables such as educational achievement, race, gender, and functional role (e.g., Bantel and Jackson 1989; Cummings and Pletcher 2011) on team outcomes, such as team performance (Ancona and Caldwell 1992; Balkundi, Kiliduff, Barsness, and Michael 2007; Cummings and Cross 2003; Sparrowe, Liden, Wayne, and Kraimer 2001) and job satisfaction (Baldwin, Bedell, and Johnson 1997). Thus, the objective of the present study is to shed light on how internal team-level phenomena impact customer satisfaction and other key customer-focused outcomes.

In the tradition of systemic thinking, the current research advances the premise that teams can be viewed as social systems (Hackman 2012) that interact with downstream systems. As such, their performance can be enhanced or constrained by the social ties within and among the individual members. Social capital theory (Burt 2001) reasons that social capital is the mechanism by which resources embedded within the web of social ties can be transmitted to an individual who, in turn, can apply the resources to a complex problem (Burt 1997, 2000). Previous research reveals two primary sources of social capital that operate within and outside a group and that yield potential benefits to the firm. Specifically, in the present study, cohesiveness references social ties within a group, known as the local network, whereas connectedness refers to social connections outside the group, or to the global organizational network.

To test the proposed relationships between team social structure and customer-related outcomes, a two stage study was conducted using film director teams and motion picture outcome data derived from box office returns. Motion pictures are an ideal setting in which to study teams because they represent complex, knowledge-intensive projects that (1) are highly influenced by network effects, (2) have a short product lifecycle, (3) experience little price fluctuation, and (4) have relatively few brand effects. The characteristics of films, therefore, minimize potential confounds commonly found in other research contexts. Moreover, the study of the film industry has intrinsic value due to its considerable economic impact (Moon, Bergey, and Iacobucci 2010). Motion pictures are one of the largest exports of the U.S., reaching revenues of $32.6 billion in 2011 (MPAA Theatrical Statistics Summary 2011), and the industry employs over 350,000 individuals (U.S. Department of Labor 2011). However, film admission ticket sales are on a downward trend over the last five years (MPAA Theatrical Statistics Summary 2011) and 60 to 70 percent of films are unprofitable (Brewer, Kelley, and Jozefowicz 2012).
2009). As a result, investors and other stakeholders in the industry struggle to determine which films to support (Eliashberg, Elberse, and Leender 2006), leading one private-equity firm manager to surmise, “The business model within films is broken” (The Economist 2013). Therefore, a secondary objective of the present study is to offer novel insights into team-based sources of variation in film quality and subsequent customer satisfaction scores – an important concern for the film industry (Brewer, Kelley, and Jozefowicz 2009).

In the present study, key relationships between team network structures and product quality, customer satisfaction, and financial performance were examined (see Figure 1.1). Specifically, in Stage 1, social network structures were assessed based on five and a half years of data, and then, in Stage 2, the hypothesized downstream relationships were modeled (see Figure 1.1) and tested in an independent film cycle sample. Controls for film-specific variables such as star popularity were included in the model. Counter to common practice, results indicate that cohesive and or connected teams are not always the optimal configuration for effective team design. Results also support the idea that team social structures impact product quality, customer satisfaction, and financial performance both directly and indirectly. More broadly, the results suggest that team-level phenomena represent an important consideration for marketing practitioners and scholars alike.

![Figure 1.1: Hypothesized relationships between team network characteristics and key marketing outcomes.](image-url)
The study incorporates a systems theoretic perspective, viewing organizations as interdependent multidimensional social systems (Hackman 2012, Meadows 2008). In so doing, it adds to the limited body of work in applied social networks and accounts for the multidimensional nature of social capital (Moliterno and Mahoney 2011). Therefore, the present study contributes to the ongoing dialogue in understanding social networks and expands understanding of how team social structure influences important downstream customer and financial metrics. The next sections review the relevant literature on social networks in general and teams specifically, offer a conceptual model that drives hypothesis development, outline the methods used in the two studies, and provide the results. Finally, implications are discussed and a conclusion is offered that ties the results to practical challenges and contributions to scholarship.

Literature Review

Social Networks

“You think that because you understand ‘one’ that you must therefore understand ‘two’ because one and one make two. But you forget that you must also understand ‘and’ (Sufi teaching story, Meadows 2008). Systemic thinking is based on this underlying premise – connections are the key to understanding many phenomena. From systemic thinking stem both social network and social capital theories, which speak to the social connections within and between members of a social network. Practitioners and scholars alike acknowledge the potent insights that the network perspective can offer (Achrol and Kotler 1999, Cross and Parker 2004, Iacobucci 1986, Van den Bulte and Wuyts 2007). Social network research has risen to prominence in many disciplines as scholars expand beyond a focus on the individual and delve into relational approaches to research problems.

A social network is a complex entity made up of the pattern of connections, or ties, between individuals (Balkundi and Harrison 2006; Wasserman and Faust 1994). Network configurations – the presence or absence of ties between individuals – are structural conduits for information and resource flow. Examples of social networks found in organizations include networks of informal, advice-seeking relationships between employees in a firm, the communication patterns between customers in a particular market segment, a pattern of alliances
between firms, and ties between board members of different organizations (Borgatti and Foster 2003; Goldenberg, Libai, and Muller 2001).

Social systems within organizations are comprised of elements including departments and units, which have flows of information within and between them. Drilling down a bit further, organizational teams are social subsystems of organizations that operate independently and collaboratively to accomplish strategic tasks. In examining teams as social systems, it follows that the underlying structure of the team network becomes a source of information that can be leveraged in team configuration strategies, and subsequently as a signal for consumers. For consumers, information flows are particularly important in creative industries because production and consumption are driven by social network-based mechanisms (Potts, Cunningham, Hartley, and Ormerod 2008). For example, when selecting a film to watch, movie goers will often seek out reviews from reputable film critics; thus agents in creative markets “rely on information from the choices of others to coordinate their own generic behaviour” (Potts 2009, p. 664).

Organizational networks have multiple levels (Payne, Moore, Griffis and Autry 2011), often referred to as local and global levels. Local networks, such as new product development teams, are nested within larger global networks, such as firms. Likewise, individual members of a team have connections to each other (local ties), and they also have connections to people outside the team (global ties). Calculating network scores based on the patterns of relationships between employees throughout an organization is considered measuring network characteristics at the global network level. Conversely, examining network characteristics within a team is said to be measuring network characteristics at the local level. In the next section, teams are defined and prior research on teams is examined.

Teams

Teams impact customers both directly and indirectly, and therefore are an important subsystem for marketing scholars to examine. A team is defined as “a distinguishable set of two or more people who interact, dynamically, interdependently, and adaptively toward a common and valued goal/objective/mission, who have each been assigned specific roles or functions to perform, and who have a limited life-span of membership” (Salas, Dickinson, Converse, and
Teams are attractive from a strategic perspective when the combination of skills and knowledge is expected to produce more than the individuals can produce on their own (Mathieu, Maynard, Rapp, and Gilson 2008). Research on teams within organizations has experienced exponential growth (Kozlowski and Bell 2001), particularly in the field of organizational behavior. To a great extent, prior work is focused on team-level characteristics such as functional diversity and team size (Kozlowski and Bell 2001) as a means to understand the benefits of effective team design strategies. Benefits of high functioning teams may include increased productivity, lower absenteeism, reduced turnover, and ultimately, improved firm performance (Glassop 2002). Marketing scholars tend to explore teams in the context of new product development (e.g., Ahuja 2000, Kratzer, Leenders, and Van Engelen 2005) and sales (e.g., Menguc, Auh, and Uslu 2012). More relevant to the present work, effective teams have been linked to increased product quality (Glassop 2002).

Setting the present research against prior team-focused research, few scholars have applied a systemic structural perspective to the customer-firm interface. Fewer still consider how social and structural ties among individuals and groups play out in key customer-focused metrics that organizations use to evaluate performance. However, organizations and markets are multilevel systems of nested networks where networks at one level of the system impact other levels within the system (Moliterno and Mahoney 2011). Employing multilevel networks remains a relatively novel approach (Moliterno and Mahoney 2011), but may offer unique insight into the effects of team design decisions on marketing outcomes.

**Key Customer-Based Outcomes**

Many outcomes are relevant to the study of marketing. However, a few outcomes -- product quality, customer satisfaction, and product financial performance -- may be considered cornerstones of marketing research, based on prior literature (e.g., Cronin, Brady, and Hult 2000; Fornell, Johnson, Anderson, Cha, and Bryant 1996). Product quality is defined as “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs” (ISO 8402). In creative industries, product quality is ambiguous and often socially determined (Potts et al. 2008). Prior to consumption, quality is difficult to predict in creative industries. However, there are signals, such as the financial resources allocated to a
project or reviews by third parties, which can ease information asymmetry prior to consumption (Suarez-Vazquez 2011). The present study proposes that social structures may be a source of information that eases the uncertainty of assessing quality prior to consumption, thereby offering a tool for predicting customer satisfaction.

It is well known that customer satisfaction is critical to marketing practitioners. Customer satisfaction is defined as the “customer-based measure of firm performance” (Anderson, Fornell, and Lehmann 1994, p. 54). As firms become increasingly customer-focused, customer satisfaction is considered “an important cornerstone for customer oriented business practice across a multitude of companies operating in diverse industries” (Szymanski and Henard 2001 p. 16). Research on customer satisfaction has consistently shown that employee attributes and the quality of the product offering influence customers’ evaluation of their experience, thereby affecting their assessment of satisfaction (e.g., Cronin, Brady, and Hult 2000, Gilson, Mathieu, Shalley, and Ruddy 2006). Though it has not been tested, the relationship between service provider characteristics and customer satisfaction is expected to hold true even within remote services such as films (Brady and Cronin 2001).

Beyond satisfaction, a product’s financial success is a measure of customer responses to a product offering. Product financial performance can be defined in multiple ways. However, for studies where teams are the unit of analysis, financial success at the team level has been operationalized as product revenue and profitability (Phillips, Chang, and Buzzell 1983; Zeithaml 2000). Drawing on insights gleaned from a systemic structuralist perspective and multilevel social capital theory, the next section proposes a conceptual model and a series of hypotheses.

Conceptual Background

Theoretical Foundation: Social Capital

A system is defined as a set of interconnected elements that are coherently organized for a specific purpose or purposes (Meadows 2008). Out of systemic thinking arises the structuralist perspective and social capital theory. The structuralist perspective asserts that variations in the social structure of a group or organization are expected to lead to variance in focal outcomes.
Moreover, the structuralist perspective proposes that interactions between individuals indicate ties in the social network (Brass 1984, Kimberly 1976), and represent the structural dimension of social capital.

Social capital is defined as the assets that are accessible via social connections (Burt 2000, 2001). Individuals are able to draw on the assets of their social connections when navigating a problem (Lin 1999). Moreover, social capital theory suggests that social capital is a multidimensional construct (Burt 1992, Coleman 1990, Lin 1999, Putnam 1995) with dimensions that operate at distinct levels of the organization (Burt 2000, Reagans and Zuckerman 2001).

There is a clear distinction in the literature between two types of structural social capital relevant to the present study. The first stream focuses on individuals and their external connections as the relationships of interest. The connections to external relationships are known as bridging structural holes where the focus is on linking unconnected others within the network (Brass 1992; Burt 1992). More importantly, external links are measures of access to unique resources because the unconnected others are sources of novel information (Burt 1992). Structural holes separate individuals and groups from one another in an otherwise connected network. Bridging ties link these unconnected individuals and groups and allow the individuals linking the two previously unconnected others to access their knowledge resources and broker information across the bridge. In so doing, the bridging individuals act as conduits for information and provide access to unique knowledge resources that are otherwise inaccessible (Burt 1992, 1997, 2000).

The second type of structural social capital, known as network closure (Burt 2000), focuses on the internal connections between individuals within a group or team. Network closure is focused on the number of connections between individuals within a team network (Burt 2000, Lin 1999, Putnam 1995, Reagans and Zuckerman 2001) and, as such, represents a measure of cohesion in a group. Specifically, the network closure perspective looks at interconnected elements between a group rather than the individual level (Lin 1999). Network closure lowers risk and improves trust between groups, which is associated with increased efficiency (Lin 1999). Increased efficiencies manifest due to the effect of improved cohesiveness among group
The present work adopts the premise that structural hole-based social capital (connectedness) is (1) a product of the global organizational network and (2) represents access to external resources. At the team level, the more influential the individual members of the team are in the context of the global social network, the more resources from which the team can draw. In contrast, network closure-based social capital (cohesion) is (1) a product of the local network and (2) represents how efficiently teams protect and utilize their own resources. Because structural hole-based social capital is a measure of the connectedness of a team in the global network, it is referred to in the remainder of the study as “Team Connectedness,” whereas network closure is considered a measure of cohesion, and therefore referred to as “Team Cohesiveness.”

These two types of social capital are intertwined; that is, cohesion is critical to realizing the potential value in the unique information that connectedness offers (Burt 2000). Unique information is brought into a team via connected team members who bridge structural holes in the global network, and are capitalized on by a cohesive team. These structural characteristics are expected to have direct and indirect effects on customer satisfaction and product financial performance via product quality (see Figure 1.1). In the next section, the foundation for the proposed relationships between team connectedness/cohesiveness and key customer outcomes is discussed and related hypotheses are developed.

Hypotheses Development

Quality and other positive outcomes have been linked to interaction with a variety of outside influences that allow for cross-fertilization of ideas (Perry-Smith and Shalley 2003). Access to knowledge from multiple domains can produce novelty, and extensive experiences can produce outputs with high average performance (Taylor and Greve 2006). Bridging structural holes in the global organization provides individuals access to unique knowledge resources (Burt 1999, 2000). It stands to reason, then, that if members of a team, on average, are highly connected within the global network, the team will also have access to more unique knowledge resources embedded in the global network. Therefore, teams with high connectedness scores should have access to unique resources that improve product quality. Therefore,
Hypothesis 1: There is a positive relationship between team connectedness and product quality ratings.

Moreover, prior research that examines budget effects on team performance has reported inconsistent results. For example, in film, the few studies that incorporate budget information have uncovered an ambiguous relationship in explaining variance in film success (Simonton 2009). The present study proposes that the inconsistency in finding positive and significant relationships between financial resources and team performance is because financial resources and team network characteristics interact to impact team performance as measured by product quality. That is, whereas team connectedness allows knowledge resources to travel across bridges from the global network to the team, teams require the financial resources to implement novel solutions to the complex problem of creating innovative films. Therefore, an additional hypothesis is proposed to account for the interaction effect between connectedness and financial resources as follows:

Hypothesis 1B: There will be a positive interaction between budget and team connectedness where the greater the budget, the more team connectedness increases product quality ratings.

However, there is a potential downside to configuring a highly connected team. Specifically, network ties have been correlated to advantages in salary negotiations (Ibarra and Deshpande 2007). Moreover, access to unique resources is also associated with higher salaries (Seibert, Kraimer, and Linden 2001), suggesting that individuals who bridge structural holes are able to obtain higher levels of compensation, thereby negatively impacting product financial performance. Therefore,

Hypothesis 2: There is a negative relationship between team connectedness and product financial performance.

Central to the team network concept are the elements and processes associated with maintaining collective assets. Closed networks are viewed as a way to protect collective social capital (Lin 1999). Network closure based social capital is higher between individuals who have frequent interactions, because the more the team members have interacted with each other in the
past, the more cohesion within the group (Burt 2000). Cohesion is believed to have a curvilinear effect on performance (Stewart 2006). Specifically, although previous studies have shown that cohesion can promote cooperation and reduce conflict (Ancona and Caldwell 1992), some researchers argue that the familiarity and reduced conflict inhibits creativity (Kratzer, Leenders, and van Engelen 2005). The inhibition of creativity can be damaging to team performance, particularly when working on non-routine tasks that have a high degree of uncertainty (Jehn 1995). Given that output in creative industries is characterized by uncertainty and is valued according to novelty and creativity, and that high cohesion is expected to inhibit creativity, the present study proposes that higher team cohesiveness decreases product quality. Therefore,

**Hypothesis 3:** There is a negative relationship between team cohesiveness and product quality.

Customer satisfaction has been extensively studied in marketing, and has a well-established nomological network. Central to this network is a significant amount of support for quality as an antecedent to customer satisfaction (e.g., Anderson and Sullivan 1993, Cronin and Taylor 1992). In the development of the American Customer Satisfaction Index, Fornell and his co-authors found that customer satisfaction is more quality-driven than value or price-driven (Fornell, Johnson, Anderson, Cha, and Bryant 1996). Cronin, Brady and Hult (2000) find that the link between quality and satisfaction is robust and stable. Given the robust relationship between product quality and customer satisfaction, product quality is expected to influence satisfaction.

**Hypothesis 4:** There is a positive relationship between product quality ratings and customer satisfaction.

Moreover, customer satisfaction is a multidimensional construct comprised of transaction-specific customer satisfaction and cumulative customer satisfaction. Transaction-specific consumer satisfaction is a post-choice evaluative judgment of a specific purchase occasion (Boulding, Kalra, Staelin, and Zeithaml 1993, Johnson and Fornell 1991, Yi 1991). The creative industries represent a unique challenge in the study of customer satisfaction because consumer choice and assessment of satisfaction in creative industries is not governed by traditional consumer demand theory (Potts, Cunningham, and Hartley 2008). Given that transaction specific satisfaction is a post-purchase evaluation, where the purchase has already
taken place, no direct path is expected between transaction-specific customer satisfaction and product financial performance in the present study. However, high product quality is expected to lead to enhanced financial performance (Fornell et al. 1996). Capon, Farley, and Hoenig (1990), in their meta-analysis, demonstrate that 20 studies find a significant positive link between quality and economic returns. Thus,

*Hypothesis 5:* There is a positive relationship between product quality ratings and product financial performance.

**Methods**

The purpose of the present study is to establish the relationships between structural measures of team cohesiveness and connectedness and key, customer-oriented marketing outcomes (i.e., product quality, customer satisfaction, and product financial performance). The present study is set in the film industry. Films have been fertile ground for marketing scholars examining service and experience goods (e.g., Hennig-Thurau, Houston, and Heitjans 2009; Moon, Bergey, and Iacobucci 2010). In films, quality is somewhat ambiguous and cannot be properly evaluated until after consumption (Neelamegham and Jain 1999, Suarez-Vazquez 2011). Moreover, films are hypercompetitive environments (Lampel and Shamsie 2000) where the product lifecycle is extremely short and each movie is essentially a new product offering. This allows researchers to examine generations of new product offerings. Additionally, pricing and branding effects—factors that often confound studies—are generally absent (Schmidt, Zayer, and Calantone 2012).

Previous studies of teams in film (e.g., Reagans and Zuckerman 2001) conceptualize the filmmaking team as comprised of various combinations of producers, directors, cinematographers, and writers as the “core team.” However, work on dedicated teams is scarce, and there is little consensus on what constitutes the “core team” of critical members (Simonton 2009). In the study of customer-based outcomes, the director function is the appropriate team on which to focus. Director teams drive the completion of a film product and they have final say on whether or not contributions from other teams (like producers) are implemented in the end product. Therefore, direction has been identified as the function that has the most impact on --
and is held accountable for -- the quality of a film (Bare 2000). Hence, the structural characteristics of director teams are utilized in the present work.

Film and director data are publicly available through professional industry databases, such as the Internet Movie Database (imdbpro.com), MetaCritic (metacritic.com), and Box Office Mojo (boxofficemojo.com). The study was conducted in two stages: Stage 1 includes analysis of the social networks at the local and global levels as a means to calculate scores for connectedness and cohesion. Specifically, Stage 1 uses five years of interaction data to derive the number of interactions between directors. The interactions data were then used to calculate connectedness scores for individuals in the global director network. As a second step in Stage 1, using the interaction values from the first five years, cohesiveness is calculated for the director teams in the 6 month film cycle immediately following the five year period. Then, Stage 2 casts the network scores in a structural model and tests the relationships specified in the hypotheses.

Stage 1: Social Network Analysis

Social network data. To test the hypotheses proposed in the empirical model, the network of the pre-existing interactions based on wide-release films (shown on 600 screens or more) released during the five year period between 2002 and 2006 were first generated using UCINET (Borgatti, Everett, and Freeman 2002). The sample included 2,942 directors – including assistant directors, first assistant director and other supporting staff in a director role – of 692 films. A valued one-mode matrix was constructed, where values indicate the number of film projects the directors worked on together during the five year period. This sample represents the global network of active major film directors between 2002 and 2006. Animated films were excluded from the sample due to the increased requirement for technical capabilities and the additional specialized teams involved in their production; films with a single director rather than a team also were excluded since cohesion cannot be calculated on a single person.

Team connectedness was calculated using UCINET and is operationalized using betweenness centrality. Betweenness centrality is an indication of the degree to which individuals bridge structural holes in the social network (Hanneman and Riddle 2005, Wasserman and Faust 1994). Specifically, betweenness centrality is a measure of how many paths include an individual as an intermediary that bridges two otherwise unconnected nodes on
a geodesic path (Hanneman and Riddle 2005) and therefore it can be considered a measure of a director team’s access to unique informational resources embedded in the global network. Unique information is known to contribute to creativity, innovation and novelty in complex problem solving. To account for differing team structures, the standard deviation of betweenness centrality also was included. For example, the standard deviation will indicate that a team comprised of one individual team member with high betweenness centrality in a team comprised of low betweenness members is different from a team where all members have a moderate level of betweenness centrality.

Directors often work on more than one movie in a given year. To minimize interdependencies in the data due to directors being members of multiple teams, an independent sample of a single film cycle (6 months) was collected using RottenTomatoes.com, IMDBpro.com, BoxOfficeMojo.com, theNumbers.com, and metacritic.com. The data represent 78 wide release films with a release date between January and June of 2007. This time period was chosen because it immediately follows the period in which director connectedness was measured (i.e., network measures were obtained from data between 2002 and 2006). The cohesiveness of these 78 director teams was also calculated using UCINET.

Team cohesiveness is operationalized using density, which refers to the number of links between members in a social network (Scott 2000). Team density is calculated using a valued one-mode matrix, which indicates whether or not current team members worked on projects together in the past five years. Using a time span limited to a five year period helps reduce any confound from director tenure. That is, if the team members had previously worked on a project, the value of the tie is the number of films worked on in the 2002-2006 period. However, if team members did not work together previously, the value for that tie was set to 0, indicating no past interaction. For the purposes here, the density measure was normalized by dividing the total number of ties between team members by the total number of possible ties among team members (Wasserman and Faust 1994). To account for differing team structures, the standard deviation of the density within teams was included in the analysis. The density standard deviation differentiates between teams where, for example, one dyad on a team has multiple interactions while the other dyads are unconnected versus one where every dyad in the team has a single interaction. Table 1.1 shows the descriptive statistics for the constructs in Stages 1 and 2.
Table 1.1: Descriptive Statistics of Team Network and Outcome Variables

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAGE 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connectedness$^a$</td>
<td>0.187</td>
<td>0.120</td>
</tr>
<tr>
<td>Cohesiveness$^b$</td>
<td>0.022</td>
<td>0.021</td>
</tr>
<tr>
<td>STAGE 2$^b$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budget (in millions)</td>
<td>41.282</td>
<td>51.195</td>
</tr>
<tr>
<td>Product Quality - rottentomatoes.com</td>
<td>5.101</td>
<td>1.458</td>
</tr>
<tr>
<td>Product Quality - metacritic.com</td>
<td>48.269</td>
<td>17.738</td>
</tr>
<tr>
<td>Customer Satisfaction - imdb.com</td>
<td>6.037</td>
<td>1.147</td>
</tr>
<tr>
<td>Customer Satisfaction - metacritic.com</td>
<td>6.029</td>
<td>1.458</td>
</tr>
<tr>
<td>Product Financial Performance</td>
<td>7.463</td>
<td>38.921</td>
</tr>
</tbody>
</table>

$^a$ Data collected from 2002 – 2006; n$_{films} = 692$; n$_{directors} = 2942$

$^b$ Data collected from January 2007 – June 2007; n$_{films} = 78$; n$_{directors} = 662$

Stage 2: Structural Model

The structural model was tested on the sample from the January to June of 2007 period, which is a separate sample from the interaction data used to construct the social networks (2002-2006). Separating the network data from the outcome data addresses the temporal and interdependency effects that can potentially confound results and issues of endogeneity and, in so doing, allows for causal inferences to be made from the results of the PLS analysis.

Stage 2 combines the team cohesiveness and the team level connectedness calculated from Stage 1 with the downstream marketing outcomes to develop the structural model. Specifically, the effects of these structural components on product quality, customer satisfaction, and product financial performance are examined. Table 1.2 summarizes the operationalized variables for the present study. The data used in the study are primarily comprised of objective measures and not self-reported (with the exception of customer satisfaction), thereby averting issues with common method bias.
Table 1.2: Operationalization of Constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
<th>Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Cohesiveness</td>
<td>The total number of actual ties among members of a local network group divided by the total possible ties among the members (Wasserman and Faust 1994).</td>
<td>Normalized Local Group Density, stdv&lt;sub&gt;dens&lt;/sub&gt;</td>
</tr>
<tr>
<td>Team Connectedness</td>
<td>For node i: A measure of the number of geodesic paths between actor j and actor k that pass through node i (Wasserman and Faust 1994).</td>
<td>Normalized Global Betweenness Centrality, stdv&lt;sub&gt;btwn&lt;/sub&gt;</td>
</tr>
<tr>
<td>Product Quality</td>
<td>Product quality is defined as those distinguishing characteristics or traits inherent in a product or service that differentiate it from competitive product or service offerings (Lu and Lin 2002).</td>
<td>Film Critic Metascore, Rotten Tomatoes Critic Score</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Customer satisfaction is defined as a customer's overall evaluation of the performance of an offering to date (Johnson and Fornell 1991).</td>
<td>Moviegoer Rating Scores on IMDB.com and metacritic.com</td>
</tr>
<tr>
<td>Financial Performance</td>
<td>Affording profits: yielding advantageous results.</td>
<td>Profitability per BoxofficeMojo.com, theNumbers.com</td>
</tr>
</tbody>
</table>

*Product Quality.* While there is no single measure of team performance, product quality often is used as an indication of team performance (De Dreu and Weingart 2003, Guzzo and Dickson 1996). Product quality has been measured in various ways in the film literature (Simonton 2009). However, quality assessments have been primarily the domain of third party expert reviewers, known as movie critics. Critics, as informed third parties, help to alleviate the information asymmetry in judging the quality of output from creative industries (Moon, Bergey, and Iacobucci 2010) by providing second-hand knowledge of the technical attributes that can signal quality (Holbrook and Hirschman 1982; Suarez-Vazquez 2011). Indeed, critical reviews are related to cumulative box office receipts (Eliashberg and Shugan 1997).

Composite critic review measures are created when using multiple sources of critical reviews. These composite measures tend to display a normal distribution and show consensus between pre- and post-release assessments (Simonton 2009). It is important to note that there is a fundamental difference between critical reviews and individual reviews (Holbrook 1999). Critical reviews, although correlated with end user reviews, are not an accurate reflection of
general public preferences (Brewer, Kelley and Jozefowicz 2009), indicating discriminant validity between critic ratings and user ratings.

The study operationalizes the product quality construct using reviews from metacritic.com and rottentomatoes.com. Metacritic.com is an online database of aggregated critical film reviews. Metacritic uses accredited, professional movie critics that are active in film societies, associations or printed publications. Reviews are compiled from respected critics nationwide, and the aggregate rating is presented as a percentage, allowing for comparisons between films. Moreover, for critics who do not rate the movie using a number, the content of the reviews are analyzed by multiple raters and a consensus rating is developed from the raters’ grades.

However, it is possible that there is some systematic variance stemming from metacritic raters in rating film reviews without numerical scores; using multiple sources may help alleviate this problem. Like metacritic.com, RottenTomatoes.com houses an online database used to gather critical ratings and conducts qualitative analysis similar to that of metacritic.com for reviews that do not explicitly provide a score. This database has been used in previous research (e.g., Brewer, Kelley, and Jozefowicz 2009; Hening-Thurau, Huston, and Heitjans 2009).

Customer Satisfaction. Customer satisfaction is arguably the most critical customer-related outcome, as is it a measure of firm performance from the perspective of the customer. Customer satisfaction is operationalized as imdbpro.com user ratings. Imdb.com is searchable database of more than 100 million data items, including more than 2 million movies, and is considered the number one film-dedicated customer review website (www.imdb.com). With over 160 million online and web visitors monthly, imdb.com is a relatively comprehensive source of moviegoer satisfaction.

Moreover, to ensure a more accurate measure of customer satisfaction and eliminate any systematic variance from a single source measure, user ratings were gathered from an additional database, metacritic.com. As mentioned previously, metacritic.com is another online database used as a source of user ratings in the literature (Chen, Liu, and Zhang 2011). These ratings were added to improve measurement reliability and validity of the customer satisfaction construct.
Product Financial Performance. Financial performance is an elusive concept in film, particularly given that expense information is difficult to obtain (Simonton 2009). However, because compensation expenses associated with highly connected teams and costs of production can vary, accounting for the cost in the product financial performance measure is expected to be a more accurate measure of product financial performance. Although all films generate revenue, many are unprofitable (Brewer, Kelley, and Jozefowicz 2009; Simonton 2009). Product profitability has been utilized in prior research as a measure of product financial performance (e.g., Harmancioglu, Droge, and Calantone 2009), and is used as the measure of financial performance in the present study. Profitability was captured using data found in the boxofficemojo.com database.

Taken together, the proposed model (see Figure 1) is composed of network variables representing team cohesiveness and team connectedness, and variables representing product quality, customer satisfaction, and product financial performance. Although the model is far from exhaustive, it nonetheless includes key linkages between network-based factors and important, downstream outcomes.

Analysis

Partial Least Squares (PLS –SEM) was used to test the model (Ringle, Wende, and Will 2005). Like covariance-based structural equation modeling, PLS allows for simultaneous evaluation of the proposed paths. Moreover, PLS is preferred for testing interactions because it does not inflate measurement error (Chin, Marcolin, and Newsted 2003), and does not assume normally distributed data.

The reliability and convergent and discriminant validity of the measures were assessed. Results indicated that all items load on their respective constructs, and composite reliabilities were greater than .7. Additionally, the average variance extracted (AVE) for each construct exceeds their correlation with other constructs in the model, indicating discriminant validity (Fornell and Larcker 1981). Additionally, all indicators were mean-centered prior to calculating multiplicative terms to mitigate any multicollinearity. Table 1.3 displays the correlations and average variances extracted.
Table 1.3: Correlations, Average Variance Extracted

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Cohesiveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.934</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Connectedness</td>
<td>.126</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Product Quality</td>
<td>-.158</td>
<td>-.048</td>
<td>.981</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Customer Satisfaction</td>
<td></td>
<td></td>
<td></td>
<td>.826</td>
<td>.867</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Financial Performance</td>
<td>.017</td>
<td>-.084</td>
<td>.227</td>
<td>.168</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) Budget</td>
<td>.305</td>
<td>.116</td>
<td>.100</td>
<td>.052</td>
<td>.126</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7) Director Popularity</td>
<td>.096</td>
<td>.068</td>
<td>.291</td>
<td>.233</td>
<td>.295</td>
<td>.453</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(8) Duration</td>
<td>.110</td>
<td>-.065</td>
<td>.372</td>
<td>.251</td>
<td>.558</td>
<td>.398</td>
<td>.332</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(9) Star Popularity</td>
<td>.218</td>
<td>-.074</td>
<td>.058</td>
<td>.076</td>
<td>.041</td>
<td>.628</td>
<td>.329</td>
<td>.225</td>
<td>.819</td>
<td></td>
</tr>
<tr>
<td>(10) Number of Theaters</td>
<td>.385</td>
<td>.124</td>
<td>-.044</td>
<td>-.109</td>
<td>.428</td>
<td>.667</td>
<td>.309</td>
<td>.513</td>
<td>.320</td>
<td></td>
</tr>
<tr>
<td>Construct Reliability</td>
<td>.966</td>
<td>.986</td>
<td>.990</td>
<td>.929</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>.819</td>
</tr>
<tr>
<td>R²</td>
<td>-</td>
<td>-</td>
<td>.131</td>
<td>.688</td>
<td>.446</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a Intercorrelations are presented in the lower triangle of the matrix; Average variance extracted (AVE) is in bold along the diagonal.

Controls

Although films are an appropriate context in which to examine business-related phenomena, there are factors unique to the film industry that should be controlled.

Star popularity. Stars receive a disproportionate level of attention in the film industry, as well as in academic research (Elberse 2007, Simonton 2009). Star-related factors are proposed to account for 22% of the variance in box office receipts (Elberse 2007). Until recently, measures of popular star appeal were difficult to find. IMDBpro.com now offers a measure of star popularity called StarMeter that scores popularity based on online searches. The mean StarMeter score was calculated for the top three title stars in each film and used as an item, along with the standard deviation, for the star popularity construct.

Director popularity. Similarly, box office results have been linked to directors’ prior mass popularity (Bagella and Becchetti 1999). Star directors have been demonstrated to have
positive impact on a film’s honors and critical acclaim (Holbrook 1999, Simonton 2009). To control for star director popularity effects, the StarMeter score for the primary director prior to the film cycle was collected and added to the model as a control.

Theatrical release factors. Theatrical release factors can vary; some films, for example, are shown for weeks whereas others are quickly replaced (Brewer, Kelley, and Jozefowicz 2009). Some scholars suggest that duration does not guarantee success (Brewer, Kelley, and Jozefowicz 2009) while others find that theater release factors are related to critical evaluations, financial performance, and awards and nominations (Holbrook 1999, Simonton 2005). Thus, two theater factors – duration and total number of screens on which the film was shown – were added as controls.

Results

Control variables yielded significant effects on product quality, customer satisfaction, and product financial performance. Budget had negative, significant direct effects on customer satisfaction ($\beta = -.098; p < .05$) and financial performance ($\beta = -.428; p < .05$), but not on product quality ($p > .05$). The popularity of the director had a significant and positive effect on product quality ratings ($\beta = .282; p < .001$), customer satisfaction ($\beta = .237; p < .001$) and financial performance ($\beta = .221; p < .001$). Conversely, star popularity had no effect on financial performance of a film ($p > .05$), but had a significant and positive effect on product quality ratings ($\beta = .079; p < .05$) and customer satisfaction ($\beta = .143; p < .001$). As expected, the total number of theaters screening the film, as well as the duration of the film run, significantly impacted financial performance ($\beta = .468; \beta = .386$ respectively; $p < .001$).

Overall, the results of the structural model tests support the proposed model. Table 1.4 illustrates the total indirect and direct effects. Although the direct effect of connectedness on quality is nonsignificant ($p > .05$; H1 is unsupported), the relationship is qualified by an interaction with budget; results support the hypothesis that budget interacts with connectedness to positively and significantly impact product quality ($\beta = .128, p < .001$), supporting H1B. As hypothesized, the direct effect of team connectedness on financial performance is significant and negative after controlling for other factors ($\beta = -.080; p < .05$), supporting H2. Additionally, H3 is supported; team cohesiveness has a negative and significant effect on product quality ($\beta = -$.
Finally, to support the nomological validity of the model, the network constructs were embedded in the context of known theoretical constructs (Iacobucci, Saldanha, and Deng 2007). As expected, product quality loads significantly on both customer satisfaction ($\beta = .829; p < .001$) and product financial performance ($\beta = .087; p < .05$), supporting H4 and H5. Moreover, team cohesiveness indirectly impacts both customer satisfaction and financial performance via product quality.

Table 1.4: PLS-SEM Results: Total Effects of Team Networks on Key Marketing Outcomes$^a$

<table>
<thead>
<tr>
<th></th>
<th>Product Quality</th>
<th>Satisfaction</th>
<th>Financial Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Cohesiveness</td>
<td>-.173</td>
<td>-.144</td>
<td>-.015</td>
</tr>
<tr>
<td>Team Connectedness</td>
<td>(ns)</td>
<td>(ns)</td>
<td>-.080</td>
</tr>
<tr>
<td>Team Connectedness * Budget</td>
<td>.128</td>
<td>.106</td>
<td>(ns)</td>
</tr>
<tr>
<td>Product Quality</td>
<td>-</td>
<td>.829</td>
<td>.087</td>
</tr>
<tr>
<td>Budget</td>
<td>(ns)</td>
<td>-.098</td>
<td>-.428</td>
</tr>
<tr>
<td>Director Popularity</td>
<td>.282</td>
<td>.237</td>
<td>.221</td>
</tr>
<tr>
<td>Duration</td>
<td>-</td>
<td>-</td>
<td>.386</td>
</tr>
<tr>
<td>Number of Theaters</td>
<td>-</td>
<td>-</td>
<td>.468</td>
</tr>
<tr>
<td>Star Popularity</td>
<td>.079</td>
<td>.143</td>
<td>(ns)</td>
</tr>
</tbody>
</table>

Note: Bold values are significant at $p < .001$; non-bold values are significant at $p < .05$; Customer satisfaction-performance relationship was not expected, and therefore not hypothesized because in transaction specific satisfaction, the contribution to financial performance is made prior to consuming the product.

General Discussion

The objective of the present study was to assess the effect of team connectedness and cohesiveness on product quality, customer satisfaction, and product financial performance as key marketing outcomes. As suggested by systems theory and the sub-theories of social capital and social networks, the results of the model tests generally support the proposed existence of a ripple effect from internal team structures that impact key customer-related marketing outcomes. Specifically, team cohesiveness significantly and negatively impacts product quality ratings, suggesting that a highly cohesive team may be detrimental when products need to be creative, novel, and innovative. Moreover, although team connectedness does not significantly impact
product quality directly, it interacted with budgets to impact assessment of product quality, and it had a direct effect on product profitability.

In sum, of the six hypothesized relationships between network structures and key marketing outcomes, five were significant and the sixth was qualified by an interaction. Taken together, the findings indicate that the ripple effects from internal social structures are felt beyond the walls of the organization, and therefore should be of interest and importance to marketing scholars and practitioners. The uncovering of a team-based ripple effect has implications for both marketing practitioners and marketing scholars. In the next sections, the implications for both constituencies are discussed.

Implications

Managerial implications. Although the context of the present work was film, the general conceptual framework is grounded in well-established social systems, social network, and multidimensional social capital theories. The theoretical foundation suggests that managers in other industries can apply the same network construction methods using prior project interactions to enhance the results of team design. For example, results suggest that managers should consider the interactive effects of budget and connectedness. Specifically, the idea that budget considerations are important in translating knowledge resources into meaningful outcomes is a notable addition to the management and marketing literatures. Moreover, team connectedness may be a detriment to product profitability, implying that there is a tradeoff between having a well-funded, highly connected team and the expense of recruiting that team. By investigating both the direct and indirect effects of network characteristics on financial performance and customer satisfaction, the present study suggests that although connected team members in the organizational network do positively affect team performance, there is a cost associated with these teams; managers must be prepared to make the necessary budgetary investment to make certain that the team can leverage its social capital, while ensuring the benefits of that team do not outweigh the costs.

Additionally, the present study offers a feasible method for uncovering informal social structures, thereby making the implementation of network-based strategies an attainable goal. The present study addresses the obstacles to network-based strategies for managers by (1)
demonstrating that historical project team and outcome data can be used to uncover network structures, thus eliminating the need for intensive primary data collection, and (2) providing guidance into important network measures to calculate when evaluating the network. To implement network-based strategies, managers should calculate potential team cohesiveness and connectedness based on prior project membership when forming a team. Using this framework may yield an additional source of information to predict future team performance. Moreover, given the inseparability of social structures and the firm, the competitive advantage from social capital is sustainable (see Adler and Kwon 2002; Burt 2000; Kogut 2000; Moran and Ghoshal 1999). Therefore, understanding and leveraging social structure may provide a source of sustainable competitive advantage. Most importantly, the present study suggests that marketing managers may want to have input on team design decisions, given that the ripple effect impacts fundamental marketing outcomes.

Although the contribution of this work is intended to offer insight for multiple industries, it also has merit for offering insight specifically to the film industry. This research highlights the impact of team network characteristics on product quality. For film industry professionals, understanding a priori causes of variance in product quality is a non-trivial concern (Brewer, Kelley and Jozefowicz 2009). Films require significant investment, but no one can perfectly predict when a film will be successful (Suarez-Vazquez 2011). Given that interaction data in the film industry is readily available, accounting for the ripple effect of the team social system on future financial success of each film may provide a way to address growing investor uncertainty.

**Theoretical contributions.** The present work employs systemic thinking to elaborate on the interconnections between firm elements (teams and leaders) and marketplace elements (consumers and economic opportunity). Both social capital theory and social network analysis are manifestations of systemic thinking, and both provide a lens through which one can examine social systems in a marketing context. Systemic perspectives in prior literature streams relevant to marketing were limited to work in logistics (e.g., Gomes and Mentzer 1988), information systems (e.g., Yourdon 1989), and supply chain research (e.g., Choi, Dooley, and Rungtusanatham 2001). However, the present study expands the theory to incorporate the system comprised of the firm, product quality as a stock of value, and marketplace outcomes, thereby expanding the application of systemic thinking beyond what is captured in extant research.
In the same vein, the present work supports the existence of a ripple effect from internal structural social capital that impacts fundamental marketing outcomes. By linking organizations and teams to key customer-related outcomes, the current study answers the call to examine supply-side factors in exploring important marketing outcomes (Moon, Bergey, and Iacobucci 2010). Furthermore, both global and local network factors were shown to contribute to the proposed ripple effect. By accounting for both global and local network structures, the present work addresses the need for multilevel approaches to empirical social capital research (Payne, Moore, Griffis, and Autry 2011). Moreover, the current work expands Hackman’s (2012) proposition to explore enabling conditions by conceptualizing social structures as enabling conditions that should be considered in team design.

Additionally, there is growing interest in understanding the impacts of third party reviewers (Chen and Xie 2005). Information asymmetry is amplified in creative industries, where intangibility and inseparability make it difficult to evaluate quality prior to consumption, and third party reviewers help ease information asymmetry. The present work provides insight into the effects of critics as they impact consumers, which is an important concern for film makers (Eliashberg, Elberse, and Leenders 2006) due to their influence on customer satisfaction and product financial performance.

Moreover, creative industries are driven by network effects both in the production and consumption decision. The present work sheds light on some of the underlying network mechanisms of creative industry markets, extending the social network influence beyond consumer networks and into the networks of producing firms. Finally, the present work offers the first known empirical evidence that the well-established quality-satisfaction and quality-financial performance relationships hold even in the case of remote industries such as film. Prior research (e.g., Brady and Cronin 2001) identifies the understanding of the quality-satisfaction and quality-profitability framework in remote services as a gap in the marketing literature.

**Limitations and Future Research**

The current research offers many insights. However, like any study, it has limitations that open the door to future research opportunities. First, systems are complex and impacted by temporal effects (Meadows 2008). Future research can explore these temporal and balancing or
reinforcing loops to further explain variance in marketing outcomes. Additionally, future research should explore other measures of social structures beyond betweenness centrality and density. For example, understanding the impact of the team leader’s social network, as well as the interaction of the multilevel, multidimensional team networks with the leader’s social network, may provide additional insight for team design strategies. An interesting hierarchical extension to the present study is to explore the relationship between network structures and firm-level outcomes. Specifically, movies are produced by movie studios (firms). Firms introduce multiple products into the market, and firm outcomes are a result of cumulative performance of each product offering. Finally, the present study analyzes domestic financial performance, but future research could explore international markets as well.

Conclusion

Systems theory provides a unique perspective on organizational phenomena, blurring the lines between siloed research streams. The present research suggests that multidisciplinary research is essential to understand the systems in which marketing phenomena take place. Social networks, the structural artifacts of social systems, offer a novel source of information in exploring organizational phenomena. Borgatti and Foster (2003) outlined many of the areas in which organizational research has applied network insights from other disciplines. However, this trend has yet to be realized in mainstream marketing research. A preliminary search of ISI Web of Knowledge reveals a discrepancy between the marketing literature and other disciplines.

Specifically, there were 53 articles in the four top marketing journals with “network” as part of the title (4 in 2012) and 171 with “network” as a topic key word (12 in 2012). By contrast, 171 articles in the top four management journals had “network” in the title (450 listed “network” as a topic keyword). Marketing researchers, therefore, are just beginning to explore the network effects on their respective key outcomes. The present study asserts that exploration into social networks in organizations should extend beyond the boundaries of the firm. These social structures create ripples into the marketplace that impact outcomes critical to marketing practitioners and of interest to marketing scholars. Finally, the present work offers marketing practitioners additional reason to engage in and provide input for team design, an area that had previously been considered the concern of the management function.
CHAPTER THREE

WE COULD BE SO GOOD TOGETHER: PERFORMANCE IMPLICATIONS OF CONNECTED, COHESIVE TEAMS AND HEAVYWEIGHT LEADERS

Introduction

New product development (NPD) processes are becoming more complex and riskier, particularly in the case of creative or radical innovations (Potts, Cunningham, Hartley, and Ormerod 2008). Meanwhile, the importance of NPD to firm performance is growing (McNally, Akdeniz, and Calantone 2011). In response to the escalating NPD environment, top performing firms are moving away from traditional cross-functional NPD team structures with formalized processes to specialized teams with more flexible processes (Markham and Lee 2013; Patanakul, Chen, and Lynn 2012; Planview Study 2012). For example, Spotify, a popular commercial music streaming service, employs “squads” that have ownership over specific product areas for extended periods of time, thereby developing expertise in that product domain. These squads share workspaces designed to promote collaboration, are designed to be fully autonomous, and do not have to rely on others to complete their work (Kniberg and Ivarsson 2012). Similarly, Wooga, the third-largest game developer on Facebook, also uses small, independent teams that are responsible for a single game (Richter-Reichhelm 2013). Both organizations cite the need to remain agile in a complex and competitive environment as the primary reason for their nontraditional NPD structures.

Interestingly, while team design strategies have been significantly altered in practice, research on team configuration strategies and group dynamics has remained relatively stagnant. Clearly, these new team configurations require additional research to understand, among other things, how group and individual team dynamics ultimately play out in the developed product (Barczak 2012). Examining patterns of social connections within and between individuals may provide much needed insights into team dynamics, particularly in understanding how these connections interact to yield higher team performance. For example, social interactions can be used to infer team cohesiveness, and therefore the level of trust and cooperation that may exist within a team (Janz, Colquitt, and Noe 1997; Lin 1999). Moreover, team connectedness, or team member access to unique sources of information, can be inferred from the number of unique
connections they have to individuals external to the team (Burt 2000; Lin 1999). Taken together, these patterns of connections, or social networks, within and between NPD teams are indicators of overall team dynamics (e.g. Reagans and Zuckerman 2001, Wise 2014), and can provide useful insight in designing highly effective teams.

A further consideration of modern, specialized NPD teams is that they are typically led by “heavyweights” in the organization (Clark and Wheelwright 1992). Heavyweights are defined as high ranking managers who have strong expertise and wield significant organizational clout (Clark and Wheelwright 2001) in a given domain. For example, the squads at Spotify are led by “product owners,” who prioritize the work done by the teams, and serve a boundary spanning function by interacting with other product owners responsible for other product areas (Kniberg and Ivarsson 2012). Similarly, the Wooga teams are led by a “product lead,” who has final say on team decisions (Richter-Reichhelm 2013). Heavyweight leader clout can also be inferred from the organizational social networks, and provide insight into team dynamics.

Beyond internal team dynamics, the social structure of NPD teams is expected to impact objective team performance. Product quality assessments often serve as a measure of team performance (Lemmink and Kasper 1994; Molina-Castillo, Calantone, Stanko, and Munuera-Aleman 2013; Sebastianelli and Tamimi 2002). Product quality is a complex concept, and can be difficult to assess, particularly for intangible and creative products (Stoneman 2010). Thus, consumers tend to emphasize the opinions of what Csikszentmihalyi (1999) termed “the field,” which is comprised of individuals and groups empowered by the public to assess the quality of new offerings introduced into the product domain. These individuals are considered “gatekeepers” in the domain. Examples of these kinds of gatekeepers include art critics and curators of museums in the domain of the visual arts, movie critics in the film domain, and peer reviewers and editors in academic disciplines. The goal of gatekeepers in the new product domain is to vet new product offerings and guide consumers to more satisfying experiences (Csikszentmihalyi 1999).

The patterns of interactions of team leaders, and within and between team members, are proposed to indirectly and uniquely impact downstream customer satisfaction evaluations. Specifically, cognitive artifacts (Norman 1991) of team effectiveness, such as cohesive problem
and task definition, are proposed to be embedded in new product offerings. These artifacts are expected to affect customer experiences (Spillers 2004), and therefore, subsequent satisfaction evaluations. Yet, despite the potential downstream implications associated with well-designed teams, little research exists that links internal specialized teams to external marketing outcomes, such as product quality and customer satisfaction.

Interestingly, research on the outcomes of team dynamics suggests that teams often dampen creativity and suppress novel innovations. Specifically, groups and teams are viewed as a deterrent to creativity due to social pressure for consensus (Janis 1982), reduced accountability (Karau and Williams 1983), and a focus on common, rather than unique, ideas (Stasser 1999). In sum, while autonomous, specialized teams are the choice of firms to tackle NPD efforts, teams are simultaneously viewed as inherently detrimental to creativity and novelty. Understanding creativity at the group level, therefore, becomes an important and practical problem.

In pairing insights from social network analysis with the framework of the systems theory of creativity, the present work seeks to provide insights into managing the tension between the need to use teams in NPD and the challenges they present. The fundamental premise of Csikszentmihalyi’s systems theory of creativity (1988) is the assertion that creativity is not the result of the efforts of single actors, but rather of social systems that provide evaluations of the offering. Systems theory provides a theoretical explanation for the proliferation of teams in the NPD paradigm, and suggests that it is not team attributes alone that inhibit creativity, but rather the configuration of teams and leader characteristics that enhance or inhibit the creative process. The current research employs the systems theory of creativity framework to examine the interplay between team attributes, team leader characteristics, and NPD quality and satisfaction evaluations. Figure 2.1 illustrates the research model.

The current study yields insights for both practitioners and academics. In testing these propositions, the present work extends the existing literature by illustrating the delicate interplay between teams, their leaders, and the products they develop. By revealing the surprising linkages between internal network characteristics and external product outcomes, the present work reconciles the view of teams as both the mechanism for – and deterrent to – successful new
product development. Moreover, static models of innovation, creativity, and new product development offer limited insights in a dynamic NPD environment.

By contrast, the systems theory of creativity provides an avenue for viewing NPD from a holistic perspective, where new product developers, end users, and the cultural domain in which the NPD process is embedded are considered in examining NPD related phenomena. As a contribution to the conversation, the present work introduces the systems theory of creativity as a theoretical framework for examining the process and function of new product development.

For marketing practitioners, this research provides additional guidance in team-level factors that contribute to new product success. Specifically, the study demonstrates conflicting effects of social network characteristics and the tradeoffs associated with various leader and team configurations. As a solution to the challenge of designing an effective team, the present work offers ways to simultaneously reap the benefits of heavyweight leaders and cohesive and well-connected teams, while minimizing the downsides of both. It provides useful recommendations for enhancing product quality assessments and customer satisfaction evaluations via social network-based team design. Additionally, the study identifies leader network characteristics that enhance or inhibit product quality; for marketing managers leading an NPD team, it is useful to

Figure 2.1: Conceptual Model
understand the impact of these leader characteristics on the availability of financial resources, product quality assessments and customer satisfaction evaluations.

In the following sections, the research on leaders and teams, product quality, and customer satisfaction are reviewed through the lens of new product development. Next, the conceptual model is discussed, the theoretical underpinnings are presented, and the hypotheses are developed. The model is then tested and results are discussed. The implications for theory and practice are subsequently outlined. Finally, the paper concludes with a general discussion and suggestions for future research.

**Background**

**NPD, Product Quality, and Satisfaction**

*Product Quality.* Product quality is an important determinant of new product financial performance and popular adoption (Sethi 2000) and, therefore, a meaningful metric in the evaluation of the performance of an NPD team. Many definitions have been offered for product quality. For example, product quality is defined as “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs” (ISO 8402). It is also defined as “perceived superiority or excellence in a product as compared with alternatives from the perspective of the marketplace,” (Sethi 2000, p. 2). Both definitions imply subjectivity and assume that product quality is assessed by others. These others are who Csikszentmihalyi (1999) refers to as the gatekeepers – either domain experts or highly involved consumers whose needs the product is attempting to meet. Gatekeepers provide a necessary service by ensuring that quality products are accepted into the domain. For example, film critics deter movie audiences from attending poor quality films (Moon, Bergey, and Iacobucci 2010), and they identify films that will be considered for industry awards.

However, despite prior research suggesting team characteristics and contextual influences impact product quality (Sethi 2000), the social aspect of product quality is rarely addressed in the literature. The omission of social elements in product quality ratings is particularly notable in the case of products that have few physical attributes, such as services (Cronin, Brady, and Hult 2000). For example, team-level characteristics and leader reputation may serve as signals of
unobservable product quality (Kirmani and Rao 2000). Yet, little research exists that examines product quality as a team-level outcome (Sethi 2000). Rather, the extant research has primarily focused on aggregate, firm-level assessments of product quality (e.g., Menon, Jaworski, and Kohli 1997; Morgan and Piercy 1998), which may not capture team-level influences on product quality (Sethi 2000). Therefore, the existing literature provides an important, but limited view of drivers of product quality that can be extended by the present work. Moreover, the missing link between team-level outcomes and product quality is mirrored in the customer satisfaction literature, suggesting additional opportunity for exploration.

**Customer Satisfaction.** To minimize risk in the new product development process, effective NPD processes should begin with the identified need, and develop features that satisfy that need (Coviello and Joseph 2012; Fuchs and Scheier 2011; Ulwick 2002; von Hippel 2005). Customer satisfaction is defined as “the post-purchase evaluation of product quality given pre-purchase expectations” (Anderson and Sullivan 1993, p. 126), and is a measure of firm performance (Anderson, Fornell, and Lehmann 1994). Satisfaction is considered a cornerstone of business practices for many companies and industries (Henard and Szymanski 2001). Customer satisfaction has been linked both to employee attributes (e.g., Gilson, Mathieu, Shalley, and Ruddy 2006) and product quality (e.g., Cronin, Brady, and Hult 2000). However, in the NPD literature, the effectiveness of using customer satisfaction as a metric of product success has been debated. Critics argue that customer satisfaction does not always positively impact profitability (Anderson and Mittal 2000), and if satisfaction was the ultimate metric for NPD success, NPD teams would design costly and unprofitable products to maximize satisfaction (see Anderson, Fornell, and Lehmann 1994; Anderson, Fornell, and Rust 1997). Moreover, radically innovative products are fraught with increased uncertainty, which may reduce customer satisfaction (Stock 2011), leading teams to be less innovative in order to increase satisfaction.

Conversely, supporters of using satisfaction as an NPD metric assert that profit requirements, resource constraints, cross-functional pressures, and diminishing returns for added features (Joshi and Sharma 2004, Li and Wang 2011; Thompson, Hamilton, and Rust 2005) would prevent those types of illogical product development efforts. Moreover, firms need not only to be responsive to *stated* customer needs, but need to satisfy *latent* customer needs to create and sustain new product success (Narver, Slater, and MacLachlan 2004). Customer
satisfaction is, in part, a measure of *surprise* in the purchase or consumption experience (Oliver 1981), when compared to the customer’s prior needs, wants and expectations (Westbrook and Reilly 1983). Therefore, it can serve as a measure of satisfying latent and stated customer needs, which suggests satisfaction and as an appropriate measure for new product performance.

The present work adopts the latter view that practical constraints make customer satisfaction a reasonable and appropriate measure of NPD effectiveness. The work argues that, because NPD teams are charged with designing products to meet customer needs, it follows that customer satisfaction should be the ultimate measure of NPD team performance. However, research that connects new product development team performance to customer satisfaction is rare, and none has been uncovered that examines the interaction of team characteristics and team leader clout on customer satisfaction. To begin that exploration, the extant literature on new product development teams and their leaders is presented in the next section.

**NPD Teams and Team Leaders**

*NPD Teams.* With the increasing availability of information and the resulting push for specialization, organizations are increasingly moving away from traditional cross-functional teams and employing dedicated NPD teams to tackle the new product development process (Paulus and Nijstad 2003). A review of the top performing firms in the 2012 PDMA study revealed that top performers use more specialized, dedicated, and agile teams with sufficient skill to see a project to completion, than their underperforming peers (Markham and Lee 2013). These autonomous teams are usually given flexibility in their new product development processes, as well as responsibility for the success or failure of the resulting project (Clark and Wheelwright 2001). As a result of their design, these teams excel at rapid and efficient NPD because they are focused and therefore able to select and attract team members more freely than more traditional NPD teams. Additionally, the best teams are equipped with skills and have access to resources necessary to turn novel ideas into successful products (Markham and Lee 2013).

*Team Leaders as Heavyweights.* Access to resources is a critical part of successful NPD programs (Markham and Lee 2013) and, as a result, the role of a leader in the changing NPD paradigm has evolved into that of a boundary spanner and resource gatherer (Shalley and Gilson 2004). If a leader has the appropriate clout within the organization, it follows that the leader will
be more effective in securing the resources necessary to foster creative NPD. Social network metrics allow researchers to make inferences about leader clout via objective measures such as their centrality in the informal organizational network (Bonacich 1972; Bonacich and Lloyd 2001). Social network theory suggests that heavyweight leaders are able to secure resources as a result of their structural position, or pattern of connections, within the organizational network (Mehra, Dixon, Brass, and Robertson 2006). Their social network serves as a conduit for information flow and represents access to resources (Burt 2000, Lin 1999). These social networks and those of the individual team members represent an important element of creativity.

Creativity is a highly contextualized and social process (Shalley and Gilson 2004); it is impacted by individual creativity as well as the context in which the creative process is embedded. Team leaders impact their teams socially in a variety of ways, including by their behaviors and actions (Shalley and Gilson 2004), and by the resources they acquire. Thus, leaders are likely the most potent force that influences a team’s creative environment (Amabile, Schatzel, Moneta, and Kramer 2004). Yet, the influence of leadership has generally been ignored in studies of creativity (Mumford, Scott, Gaddis, and Strange 2002). Specifically, the social networks of leaders in creative contexts has received relatively little attention (for a notable exception, see Mehra, Dixon, Brass, and Robertson 2006), particularly in the marketing literature.

To address this challenge, the present work adopts two systems theories that can inform the development of a conceptual model: social network theory (Wasserman and Faust 1994) and the systems theory of creativity (Csikszentmihalyi 1999). Through these theoretical lenses, the proposed relationships between leader clout, team networks, product quality, and customer satisfaction are crafted (see Figure 1). In the next sections, the two systems-based theories are explored. These theories subsequently guide the development of corresponding hypotheses in the empirical model.

Social Networks Theory

The present study employs social network theory to guide the exploration of leader and team characteristics in the NPD domain. Recall that the best performing teams surveyed in the PDMA 2012 survey used specialized, autonomous teams more than their underperforming peers.
Autonomous teams can be viewed as information processing systems (Barczak and Wilemon 1992) wherein information regarding the task and implementation plan is processed via interactions within and between teams. Therefore, the interactions within teams and between team members and external parties can be viewed as conduits for information flow (Burt 2000).

A social network is a complex entity comprised of patterns of connections, or ties, between individuals (Balkundi and Harrison 2006; Wasserman and Faust 1994). Social networks have five defining characteristics: (1) the focus of social networks is on the relationships between individuals, or between individuals and events, (2) individuals and their actions are interdependent, (3) the structures are conceptualized as lasting patterns of relationships, (4) network structures represent opportunities or constraints on individual actions, and (5) the links between individuals represent conduits for resource and information flow (Wasserman and Faust 1994). Therefore, social network theory allows us to make inferences about team effectiveness and access to information and resources (Burt 2000), as well as their impact on team outcomes.

Moreover, social network theory provides a method for measuring an NPD team leader’s clout, or social status, which can be inferred from the leader’s number of highly connected contacts (Bonacich 1972; Bonacich and Lloyd 2001). More favorable or central positions in organizational social networks have been linked to more positive reputations (Mehra et al. 2006) and higher levels of power (Pfeffer 1981, Brass 1984), which are important components in measuring the magnitude of individual social influence. Therefore, social networks provide a unique lens for exploring team and leader effects on product quality because the evaluation of even objective product attributes is open to interpretation, influenced by the perceptions of the team, leaders, gatekeepers, and intended customers (Boyd, Bergh, and Ketchen 2010).

The history of product durability serves to illustrate the socially-constructed nature of perceived product quality. Before the late nineteenth century, durable goods were associated with lower socioeconomic status, as only the rich could afford fragile or delicate products (Cooper and Christer 2012; Yepsen 1982). Today, given the focus on sustainability and recycling, it could be argued that the reverse is true; durability is perceived as a signal of higher quality. Therefore, quality is more than just making a good product with objectively superior features (Garvin 1984,
Ishikawa 1984). What are considered attributes of quality, and therefore satisfying to the customer, are at least partially socially constructed.

The present work proposes that the social networks of leaders and teams, as information processing systems, serve as a means for processing social or cultural information regarding what constitutes a quality product. The teams are then able to embed the insights gleaned from that information into a newly developed product. If an NPD team is ineffective, it lacks the ability to effectively convert that information into a product that meets consumer needs. Artifacts of team effectiveness can therefore manifest in the final product, and can enhance or inhibit perceptions of product quality, and directly or indirectly affect customer satisfaction. In the next section, the systems theory of creativity is employed to link the characteristics of team and leader social network to product quality and satisfaction.

**Systems Theory of Creativity**

Creativity is defined as “the development of original ideas that are useful or influential” (Paulus and Nijstad 2003, p. 3). Individual creativity is the building block of organizational creativity and innovation, and therefore an elemental force in firm performance and survival (Shalley and Gilson 2004). As such, creativity represents a process of idea development that resonates with the objectives of new product development.

What is considered creative is essentially a social process (Csikszentmihalyi 1988), heavily influenced by context (Csikszentmihalyi 1988). However, most research on creativity has not recognized the social or contextual aspects of creativity (notable exceptions include Perry-Smith and Shalley 2003, and Woodman, Sawyer, and Griffin 1993). Moreover, teams continue to be the dominant mechanism deployed for new product development initiatives. Yet groups and teams are viewed as a deterrent to creativity. Social pressure for consensus (Janis 1982), reduced accountability (Karau and Williams 1983), and a focus on common, rather than unique, ideas (Stasser 1999) inhibit the development of creative innovations. Yet, NPD practitioners rely heavily on teams to develop their new products; the counterintuitive nature of this practice begs explanation, given the findings in academic research. The systems theory of creativity suggests reconciling evidence can be found to justify the deployment of teams in NPD.

The systems theory of creativity suggests that creativity happens at the intersection of three fundamental elements of the creative system: the individual, the field made up of
gatekeepers, and the domain (Csikszentmihalyi 1988, 1999). New product development is
domain-specific, involves gatekeepers such as experts, reviewers, and critics, and is the result of
the efforts of individual leaders and teams of individuals. The characteristics of NPD therefore
suggest that the systems theory of creativity can provide an effective theoretical framework for
linking NPD teams and leaders to critical marketing outcomes. The three elements of the systems
theory of creativity are discussed in the following sections.

*Domain.* Creativity is not generalized or abstract, but rather is domain specific; the
domain represents the first component of the systems theory of creativity, and is comprised of
information, rules, and norms (Csikszentmihalyi 1999). Domains can include religion, academic
disciplines, sports rules, art, and other such information, and the sum of all domains makes up
the dominant culture. Thoughts and actions, in turn, are ordered and directed by the information
individuals collect and internalize from culture. In terms of creativity, individuals are said to be
creative when they convert the cultural information into a new and novel idea, product, or action
that changes a domain (Csikszentmihalyi 1999).

*The field and the gatekeepers.* The second component in the systems theory of creativity
is the field – defined as ‘a complex network of experts with varying expertise, status, and power’
(Sawyer 2006, p. 124). These experts, such as scientists, engineers, and film and art critics,
serve as gatekeepers for the domain. Because ideas are constantly being conceived but few are
worthy of implementation, gatekeepers are needed to protect frivolous use of resources
(Csikszentmihalyi 1999). Gatekeepers also protect the integrity of the field by controlling the
criteria for what is considered creative. Like film critics assessing a newly released film, they
determine which of the many innovative or original ideas are actually creative and facilitate the
addition of those ideas and products to the domain. Moreover, for mass market products like
films, the field may also encompass a general audience or population, who also pass evaluation
on the product offering (Csikszentmihalyi 1999). Therefore, for the purposes of developing new
products intended for mass market, both the experts and customers serve as gatekeepers for the
domain.

*The individuals.* The third component in the systems theory of creativity is comprised of
the individual(s). For new product development, these are the individuals involved in generating
a product. Initially, creativity scholars focused on personal traits to account for the individual
component of the creative system. However, the systems theory suggests that, beyond the
personal traits of team members, creativity at the individual level is a manifestation of access to resources and information and influenced by social context (Amabile, Conti, Coon, Lazenby, and Herron 1996; Shalley and Perry-Smith 2008). This assertion expands creativity beyond the purview of a single individual and encompasses groups, teams, and their leaders. In exploring the NPD creative system and employing social networks analysis, the present work develops hypotheses about the relationships between heavyweight leaders and team network characteristics, financial resources, product quality assessments, and customer satisfaction evaluations.

**Hypotheses Development**

One of the objectives of the present work is to identify ways in which marketing practitioners, as leaders, can inhibit or enhance creative output for new product development teams. To this end, the current research examines the interplay between leader and team characteristics and their effects on resources, product quality, and customer satisfaction. Specifically, this research examines how team leader clout impacts the resources available to teams and interacts with team characteristics to enhance or hinder product quality and customer satisfaction. The systems theory of creativity and social network theory guide the development of hypotheses that link NPD team characteristics and leader clout to product quality and customer satisfaction as measures of NPD team performance, as these relationships are not well established in the literature. The next section offers hypotheses regarding the independent, mediating, and interaction effects, beginning with two important network characteristics of the team: connectedness and cohesion.

**Team Network Characteristics**

While creativity can occur in isolation, it frequently results from an interactive process between individuals within and external to the team (Agrell and Gustafson 1994, Mumford and Gustafson 1988). Therefore, the social influences of others are important to the overall creative performance of teams (Shalley and Gilson 2004). Social structures arise from individuals’ behavior and represent relatively stable patterns of interaction and interpretation (Krackhardt and Brass 1994). Moreover, for organization members, the informal structure of the organization represents access to resources. The impact of the structures on resource availability and team performance is the foundation of organization-based social network research. However, one
challenge in social network analysis is the lack of attention to how various dimensions of organizational social networks interact (Mehra et al. 2006). The present work addresses this challenge by examining two dimensions of team social networks expected to have the most significant structural effect on team creative performance: cohesiveness and connectedness.

**Team Connectedness.** Connectedness refers to the number of social connections outside the focal team. The level of team connectedness provides a measure of access to unique knowledge and information embedded in the social network (Burt 2000). Access to knowledge from multiple domains can produce novelty, and extensive experiences can produce outputs with high average performance (Taylor and Greve 2006). Interaction with individuals outside a focal team allows for cross-fertilization of ideas and has been linked to quality and other positive outcomes (Perry-Smith and Shalley 2003; Richter, Hirst, van Knippenberg, and Baer 2012). It stands to reason, then, that teams with high connectedness should have more access to unique knowledge and information resources that improve product quality, implying that there is a positive relationship between team connectedness and product quality ratings.

**Cohesiveness.** Additionally, the concept of cohesiveness is explored in a creative context. In the present study, cohesiveness references social ties within a group or team (Burt 2000, Lin 1999, Putnam 1995, Reagans and Zuckerman 2001). Cohesion is higher between individuals with frequent interactions (Burt 2000). Some scholars have demonstrated the positive effects of team cohesion. For example, the more the actors interact, the stronger their connection becomes, which leads to increasingly positive perceptions of trustworthiness and increased trust (e.g., Krackhardt 1992, Tsai and Ghoshal 1998). Trust has been shown to increase as two individuals interact over time and expectations and obligations are met (e.g., Granovetter 1985). The resulting increase in cohesion between team members can promote cooperation and reduce conflict (Ancona and Caldwell 1992). Moreover, cohesion is proposed to lower risk (Lin 1999), promote efficient problem solving (Bettenhausen and Murnighan 1985), improve productivity (Reagans and Zuckerman 2001), and increase cooperation (Janz, Colquitt, and Noe 1997). The present work proposes that team network characteristics impact both product quality assessments by gatekeepers directly, as well as customer satisfaction evaluations indirectly.

In the following sections, the indirect and direct effects of team connectedness and cohesiveness are discussed. First, the indirect effects of connectedness and cohesiveness on customer satisfaction are discussed (H1a, b). Second, the interaction between connectedness and
financial resources are proposed (H2). Third, the direct effect of cohesiveness on product quality is hypothesized as curvilinear, where moderate team cohesiveness results in higher product quality evaluations, relative to low and high levels of team cohesiveness (H3a, b). Next, the effects of leader clout on the key product outcomes are evaluated. Specifically, the availability of financial resources is hypothesized to be a function of leader clout (H4). Then, a moderated relationship is proposed, where leader clout and team cohesiveness interact symbiotically to offset the downsides of each, resulting in a positive net impact on product quality assessments (H5). Finally, leader clout is hypothesized to have a direct effect on customer satisfaction evaluations (H6).

Indirect effects of cohesiveness and connectedness on satisfaction. Team network characteristics are proposed to indirectly influence customer satisfaction via cognitive artifacts (Norman 1991). Artifacts are physical or mental devices that are elicited or created in order to successfully complete a task, and reveal the problem-solving and problem-structuring that occur during the completion of the task. (Norman 1991). Most research into cognitive artifacts in a product design context is focused on the end user, and how product designers can use artifacts of user interaction to design better products (e.g. Stigliani 2008). While adopting the concept of cognitive artifacts as sources of information available to influence product design, the present study reverses the flow of information from customer to the design team.

Specifically, the present work suggests that artifacts of the new product development team serve to inform and enhance the customer experience. A cohesive and well-connected team, with a clear definition of the problem (Bettenhausen and Murnighan 1985), strong sense of cooperation (Janz, Colquitt, and Noe 1997), higher level of trust (Granovetter 1985, Krackhardt 1992, Tsai and Ghoshal 1998), and sufficient sources of unique knowledge to combine in novel ways (Burt 2000) allow teams to process information from the cultural domain and hence generate a product that satisfies customers. The artifacts of the development team’s cohesiveness and connectedness are proposed to exist in the final design of the product, and impact customer satisfaction via customers’ interaction with and experience of the product and the artifacts contained therein. Therefore, not only are connectedness and cohesiveness expected to impact product quality assessments directly, but also
**Hypothesis 1:** Team network characteristics indirectly and positively influence customer satisfaction evaluations, such that product quality assessments mediate the effects of a) team connectedness and b) team cohesiveness on customer satisfaction evaluations.

**Financial resources.** Financial resources play a key role in product development. In NPD, firms vary in how they allocate financial resources for a new project or idea. According to the PDMA benchmark study, formal direct budgets were preferred by the best performing firms in selecting new project ideas (Markham and Lee 2013), relative to their lower performing peers. The distinction indicates that financial resources play a role in the success of new products. Further supporting this conjecture is the finding that insufficient budget was the second most cited reason why innovation tools were not adopted in the product development process (Markham and Lee 2013), and financial resources were cited as one of the major obstacles in successful new product development overall (Page 1993). Therefore, the level of financial resources available to the team is expected to impact NPD team performance as measured by product quality. Specifically, there is a positive relationship between financial resources and product quality.

Moreover, if a team is highly connected, it is able to pool a significant amount of unique information and, given their charge for creative output, strive to combine them in unique or novel ways. In order to execute the idea developed from the unique combination of information, however, it is critical to have the necessary financial resources. That is, although team connectedness allows knowledge resources to travel across bridges from the global network to the team, teams require the financial resources to implement novel solutions to the complex problem of creating innovative new products. Therefore,

**Hypothesis 2:** There is an interaction between team connectedness and financial resources on product quality, such that gatekeepers will have more favorable assessments of quality when teams have more financial resources than when they have lower financial resources.

**The downside of team cohesiveness.** While acknowledging the potential benefits of cohesion, scholars have suggested that high levels of team cohesion lead to negative behaviors such as diffusion of responsibility, de-individuation, group think, and conformity. These negative behaviors are proposed to increase as unity increases within the group (Buys 1978). Recent studies offer additional conflicting results on the effects of cohesion on team performance.
(Mehra et al. 2006, Reagans and Zuckerman 2001, Sparrowe et al. 2001). Interestingly, one line of thinking suggests that familiarity and reduced conflict inhibits creativity (Kratzer, Leenders, and van Engelen 2005). In turn, the inhibition of creativity can be damaging to team performance, particularly when working on non-routine tasks that have a high degree of uncertainty (Jehn 1995). The challenge presented by these conflicting results is an unclear understanding of the effect of cohesion on team performance, particularly in highly creative contexts such as new product development. In attempting to understand these results, prior research suggests social network measures, such as team cohesion, have a curvilinear effect on team performance (Stewart 2006, Wise 2014). Therefore,

**Hypothesis 3**: Team cohesiveness has a curvilinear relationship to product quality, presenting as an inverted U-shaped pattern where a) the linear relationship is positive and b) the quadratic relationship is negative, indicating that teams with moderate cohesiveness receive higher assessments of product quality relative to their counterparts with both low and high team cohesiveness.

Teams are greatly affected by the characteristics of their leaders (Sarin and McDermott 2003). As the role of NPD leaders shifts to that of boundary spanning and resource acquisition, the task of securing sufficient financial resources falls to them (Amabile et al. 2004). As such, the present work explores how NPD leaders interact with financial resources and team network characteristics to directly and indirectly impact assessments of product quality and customer satisfaction. To this end, in the next section, the effects of financial resources on team performance is examined, followed by a discussion on the effects of team leaders on both the availability of financial resources and on team performance as measured by product quality. The next section examines the effect of leader clout on both the availability of financial resources and team performance.

**Heavyweight Leaders**

The systems theory of creativity asserts that contextual and social elements condition the relationship between creative individuals and their creative output (Csikszentmihalyi 1988, 1999), and leaders significantly impact the context of creativity for the teams they lead (Amabile et al. 2004). Therefore, the systems theory of creativity provides theoretical justification for anticipating a relationship between leaders and team creative output. Specifically, leader clout
determines leader ability to gather material resources (Amabile et al. 2004), contributes to the pool of unique information the team has at their disposal via their unique connections (Brass 1992), and brokers information between the team and the external organization (Burt 2000). Taken together, resources, unique information, and information sharing are all expected to contribute to enhanced NPD outcomes.

Leaders who wield significant influence have very active and far-reaching networks (Brass and Krackhardt 1999). Additionally, leaders’ hierarchical positions are a source of legitimate power in their organization (Brass and Krackhardt 1999). The informal social network and hierarchy of an organization therefore represent systemic sources of power at the disposal of team leaders (Emerson 1976) and are tied to reputation and access to resources (Brass and Krackhardt 1999). Leader clout and the access to resources influence the perceptions of the creative environment for NPD team members (Amabile, Schatzel, Moneta, and Kramer 2004). These perceptions, in turn, significantly impact the resulting creative performance of the team (e.g., Amabile et al. 2004, Mumford et al. 2002).

Additionally, information transfer through social ties is expected to impact the financial investment in new product initiatives. When a firm engages in new product development, it essentially invests in a new venture. A financial investment by the firm is a necessary part of the new product development process. Like new ventures, investment is risky and it is difficult to measure the potential success of proposed new products. Also like new ventures, the decision to fund, and how much to fund, new product development is influenced in part by social ties (Shane and Cable 2002). These social ties contribute to leader reputation, which can serve as a signal of expected success of the NPD outcome. The present work proposes that leader clout provides a signal of potential quality and, as such, facilitates the gathering of financial resources, which in turn helps facilitate quality in the resulting product. Therefore,

**Hypothesis 4:** Heavyweight leaders indirectly and positively influence product quality assessments, such that financial resources mediate the effects of team leader clout on product quality assessments.

*Addressing the downside of team cohesiveness.* Financial resources are only one of the components of new product success. Similar to new ventures, social factors are proposed to be relevant in new product development initiatives (Shane and Cable 2002). For example, the present work has proposed that high cohesion among team members has a curvilinear impact on
product quality (Hypothesis 2). However, ties to important others in the organization represent access to unique and valuable information that may serve to offset the negative effects of high levels of team cohesion. Given the known upside to a high level of cohesion between team members (i.e., trust, Barczak, Lassk, and Mulki 2010; reduced conflict, Bettenhausen and Murnighan 1985; and resource efficiency Lin 1999), the possibility of offsetting the downside of cohesion (reduced creativity) via the choice of leader is a compelling strategic tool. Heavyweight leaders are leaders who have important social positions and are linked to important others in the social network (Clark and Wheelwright 2001). Recall that in the new NPD paradigm, these leaders are serving the role of boundary spanner, which implies the more clout they have, the higher their level of access to unique information and valuable knowledge assets.

Hypothesis 5: There is an interaction between leader clout and team cohesiveness on product quality, such that product quality will be higher when a leader has higher levels of organizational clout relative to teams whose leaders have lower levels of organizational clout.

Conversely, celebrity can have an upside as well. Prior work on celebrity CEO highlights the position of power journalists and the media hold in shaping public perception of firms and their employees (Hayward, Rindova, and Pollock 2004; Herman and Chomsky 1988). Receiving positive press for a new product, or the reputation of the leader in developing successful products can serve to influence satisfaction by shaping customer expectations (Anderson and Sullivan 1993). Given that creativity is a social process, what constitutes creative work is, according to the systems theory of creativity, determined as much by the audience as the creator (Csikszentmihalyi 1999). This is particularly meaningful for service and experience products, where the intangibility of the product causes social influence to play a more significant role (Csikszentmihalyi 1999). Expectations are then confirmed or disconfirmed upon consumption (Fornell 1992), where product quality is evaluated and compared against expectations of quality. Therefore,

Hypothesis 6: Leader clout indirectly and positively influences customer satisfaction evaluations, such that product quality assessments mediate the effects of leader clout on customer satisfaction evaluations.

The hypotheses proposed suggest team network characteristics indirectly impact downstream customer satisfaction evaluations (H1a, b). Moreover, higher financial resources are
expected to enhance the relationship between team connectedness and product quality assessments (H2). Additionally, moderate team cohesiveness is expected to positively impact assessments of product quality, relative to low and high levels of team cohesiveness (H3a, b). Further, heavyweight leaders are expected to receive higher levels of financial resources (H4), and allow teams to capitalize on their level of cohesiveness by positively impacting the relationship between team cohesiveness and product quality assessments (H5). Due to the powerful role of the popular press, the celebrity CEO literature suggests that the presence of a heavyweight team leader can play a role in shaping customer expectations of a product, thereby influencing customer satisfaction indirectly and positively (H6). Finally, the relationship between product quality and satisfaction has been well established in the literature (e.g. Cronin, Brady, and Hult 2000; Anderson, Fornell, and Lehmann 1994; Gilson, Mathieu, Shalley, and Ruddy 2005) and is therefore, expected to be positive and significant.

In sum, the proposed model suggests that network characteristics of teams and leaders have direct and indirect effects on product quality assessments and customer satisfaction evaluations. Interestingly, the artifacts that result from the cohesiveness and connectedness of the product development teams are expected to impact satisfaction via product quality, despite the fact that customers do not witness team dynamics. Moreover, while cohesiveness has a curvilinear effect on assessments of product quality, the present study asserts that leader clout and cohesiveness interact to positively influence assessments of quality, as well as elevate downstream customer satisfaction. In the following sections, the constructs are operationalized, the hypotheses are tested, and the results are discussed.

Methods

Data

The sample was taken from wide release films released between January 2002 and June 2008. Films have been fertile ground for marketing scholars examining service and experience goods (e.g., Moon, Bergey, and Iacobucci 2010). Like other new products, the quality of new film product offerings is somewhat ambiguous and cannot be properly evaluated until after consumption (Neelamegham and Jain 1999, Suarez-Vazquez 2011). The film context provides a rare opportunity to examine generations of new product offerings because the film product lifecycle is extremely short and the industry is hypercompetitive (Lampel and Shamsie 2000).
Moreover, the pricing and branding effects that often confound studies are generally absent in the film industry (Schmidt, Zayer, and Calantone 2012).

Similar to prior research in new product development, previous studies of teams in film (e.g., Reagans and Zuckerman 2001) conceptualize the filmmaking team as a cross-functional team comprised of various combinations of producers, directors, cinematographers, and writers. However, work on specialized teams is scarce, despite the prevalence of these types of teams in new product development. As specialized new product development teams, director teams drive the completion of a product and are ultimately held accountable for the quality of the film product offering (Bare 2000). Hence, the structural characteristics of director teams are utilized in the present work. The data were gathered from publicly available professional industry databases, such as the Internet Movie Database (imdbpro.com), MetaCritic (metacritic.com), and Box Office Mojo (boxofficemojo.com).

To test the hypotheses, the study was conducted in two stages whereby the social network and NPD outcome variables were derived from different time periods. Separating the measurement of the social network and related variables from the causal model minimizes interdependency in the data (i.e., having the same directors on multiple teams) and addresses issues of endogeneity (i.e., it provides temporal separation between the network effects and the causal model). In Stage 1, director social networks are constructed based on movie industry data between January 2002 and June 2007. The value of the ties between directors is derived from directors working on the same film together during that period. Additionally, individual director connectedness and clout scores are calculated from the network for all directors in the sample. The sample included 3,604 directors working on wide-release films during the five-year time period.

Stage 2 is made up of two steps. The first step in Stage 2 uses the network-based scores from Stage 1 to calculate network-based, team-level variables for director teams working on films released in the 12-month film cycle immediately following the Stage one period (July 2007 – June 2008). The network-based variables include the leader clout of the leading director, as well as the cohesiveness and average connectedness team measures. The sample in this stage is made up of 62 films comprised of 493 directors. In the second step of Stage 2, the resulting network-based variables are combined with product quality and customer satisfaction scores, as well as control variables, in a partial least squares structural model (Wold 1974) to test the
relationships specified in the hypotheses. Figure 2.2 illustrates the two stages of analysis. The two-stage analysis is described in detail in the following sections.

**Stage 1: Social Network Analysis**

*Social network data.* In the first stage, the social networks are constructed and based on interactions between directors working together on wide-release films (shown on 600 screens or more) released during the five year period between January 2002 and June 2007. For example, if two directors worked on creating the same film, it represents a tie with a value of one. However, if team members did not work together previously, the value for that tie was set to 0, indicating no past interaction. If the same two directors worked on three films together, the value of their tie is a three. Limiting the time span to a five year period helps reduce any potential confound from director tenure.

![Figure 2.1: Constructing the Network from January 2002 - June 2007 Interactions](image1)

![Figure 2.2: Step 1 - Calculating Team-Level, Network-Based Scores for Films Released between July 2007 – June 2008](image2)

![Figure 2.2: Illustration of Stages of Analysis](image3)
The network constructed is a valued one-mode matrix; tie values indicate the number of
film projects the directors worked on together during the five year period. The sample represents
the network of active major film directors between January 2002 and June 2007. The total
sample of individual directors consists of 3,604 directors working on 770 films. The sample
included assistant directors, first assistant director, and other supporting staff working on the
director team. Animated films were excluded from the sample due to the increased number of
specialized technical teams involved in the production of animated films. Films with a single
director also were excluded from the sample because cohesion cannot be calculated on a single
person. All network variables were calculated with UCINET (Borgatti, Everett, and Freeman
2002).

Team connectedness is operationalized using betweenness centrality. Betweenness
centrality provides a measure of structural holes bridged by an individual in the social network
(Hanneman and Riddle 2005, Wasserman and Faust 1994), and therefore it can be considered a
measure of a director team’s access to unique informational resources embedded in the network.
Unique information is known to contribute to creativity, innovation, and novelty in complex
problem solving. Moreover, the standard deviation of betweenness centrality also was included
to distinguish teams comprised of one individual team member with high betweenness centrality
in a team comprised of low betweenness members from teams where all members have a
moderate level of betweenness centrality (See Appendix A for further detail).

Next, to avoid interdependencies in the data due to directors being members of multiple
teams over the five year period and avoid issues of endogeneity, an independent sample was
collected of director teams working on films from July 2007 to June 2008 using
RottenTomatoes.com, IMDBpro.com, BoxOfficeMojo.com, theNumbers.com, and
metacritic.com. The sample resulted in 147 films fitting the research criteria. However, to ensure
complete independence of the samples, and given that director team members work on multiple
movies a year, the data were refined, first by eliminating films with the most duplicate team
members, then by selecting the first film of the year and eliminating the subsequent films from
the sample. The resulting data represent 62 wide release films that have completely independent
teams. Given that social ties decay over time (McPherson, Smith-Lovin, and Cook 2001), this
time period was chosen because it immediately follows the period from which the social network
was constructed.
Team cohesiveness is operationalized using density, which refers to the number of links between members in a social network (Scott 2000). Team density is calculated using a valued one-mode matrix, which indicates whether or not current team members worked on projects together in the past five years. That is, if the team members had previously worked on a project, the value of the tie is the number of films worked on in the 2002-2007 period. However, if team members did not work together previously, the value for that tie was set to 0, indicating no past interaction. For the purposes here, the density measure was normalized by dividing the total number of ties between team members by the total number of possible ties among team members (Wasserman and Faust 1994; see Appendix A for further detail).

Leader clout is operationalized using eigenvector centrality (Newman 2008). Eigenvector centrality is a way to measure an individual’s position of power in the social network, adjusted for the connectivity of their contacts. Unlike a degree centrality measure, which simply counts the number of direct ties to an actor, eigenvector centrality accounts for the fact that not all connections are equal; connections that are themselves well-connected are more influential than less connected contact. The adjusted measure provides a more accurate depiction of an actor’s status in the social network, and is often used as a proxy for power (e.g., Treadway, Breland, Williams, Cho, Yang, and Ferris 2013).

**Stage 2: Team Level Variables and PLS Structural Model**

A sample from the July 2007 to June of 2008 period was used to test the structural model. Using a non-redundant sample independent of the social network calculations separates the causal model from the interaction data used to construct the social networks, addressing the temporal and interdependency effects that can potentially confound results and, in so doing, allows for causal inferences to be made from the results of the PLS analysis. Stage 2 combines the team cohesiveness and the team level connectedness calculated from Stage 1 with the NPD marketing outcomes. The data used in the study are primarily comprised of objective measures and not self-reported (with the exception of customer satisfaction), thereby averting issues with common method bias.

**Product Quality.** Although there is no single measure of team performance, product quality often is used as an indication of team performance (De Dreu and Weingart 2003, Guzzo and Dickson 1996). Although product quality has been measured in various ways in the film
literature (Simonton 2009), quality assessments have been primarily the domain of third party expert reviewers, or gatekeepers, known as movie critics. Critics, as informed third parties, help to alleviate the information asymmetry in judging the quality of creative output (Moon, Bergey, and Iacobucci 2010) by providing second-hand knowledge of the technical attributes that can signal quality (Holbrook and Hirschman 1982; Suarez-Vazquez 2011). Composite critic review measures are created when using multiple sources of critical reviews. These composite measures tend to display a normal distribution and show consensus between pre- and post-release assessments (Simonton 2009).

The study operationalizes the product quality construct using reviews from metacritic.com and rottentomatoes.com. Metacritic.com is an online database of aggregated critical film reviews. Metacritic uses accredited, professional movie critics that are active in film societies, associations or printed publications. Reviews are compiled from respected critics nationwide, and the aggregate rating is presented as a percentage, allowing for comparisons between films. Moreover, for critics who do not rate the movie using a number, the content of the reviews are analyzed by multiple raters and a consensus rating is developed from the raters’ grades. Therefore, it is possible that there is some systematic variance stemming from metacritic raters in rating film reviews without numerical scores. Using multiple sources may help alleviate this problem. Like metacritic.com, RottenTomatoes.com houses an online database used to gather critical ratings and conducts qualitative analysis similar to that of metacritic.com for reviews that do not explicitly provide a score. This database has been used in previous research (e.g., Brewer, Kelley, and Jozefowicz 2009; Hening-Thurau, Huston, and Heitjans 2009).

**Customer Satisfaction.** Customer satisfaction is arguably the most critical customer-related outcome, as is it a measure of firm performance from the perspective of the customer. It is important to note that there is a fundamental difference between critical reviews and individual reviews (Holbrook 1999). Critical reviews, although correlated with end user reviews, are not an accurate reflection of general public preferences (Brewer, Kelley and Jozefowicz 2009), indicating discriminant validity between critic ratings and user ratings. This independence is noted in works such as Cronin, Brady, and Hult (2000), which demonstrate discriminant validity between service quality and customer satisfaction. In the present work, customer satisfaction is operationalized as imdbpro.com user ratings. Imdb.com is searchable database of more than 100 million data items, including more than 2 million movies, and is considered the number one film-
dedicated customer review website (www.imdb.com). With over 160 million online and web
visitors monthly, imdb.com is a relatively comprehensive source of moviegoer satisfaction.

Moreover, to ensure a more accurate measure of customer satisfaction and eliminate any
systematic variance from a single source measure, user ratings were gathered from an additional
database, metacritic.com. As mentioned previously, metacritic.com is another online database
used as a source of user ratings in the literature (Chen, Liu, and Zhang 2012). Taken together, the
proposed model (see Figure 1) is composed of network variables representing leader clout, team
cohesiveness and team connectedness, and variables representing product quality and customer
satisfaction. Although the model is far from exhaustive, it nonetheless includes key linkages
between network-based factors and important NPD outcomes. Table 2.1 shows the descriptive
statistics for the constructs in Stages 1.

Table 2.1: Descriptive Statistics of Team and Leader Network and Outcome Variables\textsuperscript{a}

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<th>(9)</th>
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<tr>
<td>(1) Team Connectedness</td>
<td>.967</td>
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<td>(2) Team Cohesiveness</td>
<td>.164</td>
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<tr>
<td>(3) Cohesiveness\textsuperscript{QUADRATIC}</td>
<td>.077</td>
<td>.925</td>
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<td></td>
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<tr>
<td>(4) Leader Clout</td>
<td>.204</td>
<td>-.110</td>
<td>-.086</td>
<td></td>
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<tr>
<td>(5) Financial Resources</td>
<td>.142</td>
<td>-.116</td>
<td>-.164</td>
<td>.393</td>
<td></td>
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<tr>
<td>(6) Product Quality</td>
<td>.223</td>
<td>.195</td>
<td>.087</td>
<td>.110</td>
<td>.228</td>
<td>.958</td>
<td></td>
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<tr>
<td>(7) Customer Satisfaction</td>
<td>.276</td>
<td>.271</td>
<td>.175</td>
<td>.077</td>
<td>.062</td>
<td>.644</td>
<td>.937</td>
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<tr>
<td>(8) Director Popularity</td>
<td>-.265</td>
<td>-.196</td>
<td>-.085</td>
<td>-.161</td>
<td>-.305</td>
<td>-.318</td>
<td>-.288</td>
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<tr>
<td>(9) Star Popularity</td>
<td>-.125</td>
<td>-.153</td>
<td>-.097</td>
<td>-.094</td>
<td>-.170</td>
<td>.213</td>
<td>.066</td>
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<tr>
<th></th>
<th>Mean</th>
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<td></td>
<td>.093</td>
<td>.116</td>
<td>.967</td>
<td>.958</td>
<td>.936</td>
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\textsuperscript{a} CR = Construct Reliability; AVE = Average Variance Extracted; The square roots of the average variances extracted for each construct are presented in bold on the diagonal of the correlation matrix.

Analysis

Partial Least Squares (PLS –SEM) was used to test the model (Ringle, Wende, and Will
2005). PLS-SEM was selected for four primary reasons. First, the objective of PLS is predictive
and focused on maximizing variance of the endogenous variables explained by the exogenous

52
variables (Hair, Hult, Ringle, Sarstedt 2014), which is appropriate for the objective of the current work. Second, the method is useful with sample sizes under n = 200 (Reinartz, Haenlein, and Henseler 2009), which is also appropriate for the sample used in the current study. Third, PLS does not require meeting the assumptions of normality for the data distributions (Hair, Sarstedt, Ringle, and Mena 2012). Given that the some data distributions are skewed and some are leptokurtic, PLS-SEM is an appropriate method because results are not adversely affected by the nature of the data. Finally, PLS is preferred for testing interactions because it does not inflate measurement error (Chin, Marcolin, and Newsted 2003).

The reliability and convergent and discriminant validity of the measures were assessed. Results indicated that all items load on their respective constructs, and composite reliabilities were greater than .7. Additionally, the average variance extracted (AVE) for each construct exceeds its correlations with other constructs in the model, indicating discriminant validity (Fornell and Larcker 1981). To test the hypothesized curvilinear effect of team cohesiveness on product quality, the quadratic term of team cohesion was included in the model (Ping 1996; Slotegraaf and Atuahene-Gima 2011). It should be noted that an inverted U-shaped relationship would manifest in a positive linear relationship and a negative quadratic relationship. To minimize multicollinearity, all indicators were mean-centered prior to calculating multiplicative terms. Table 1 displays the correlations and average variances extracted.

As a final step, the predictive relevance of the model is evaluated using Stone-Geisser’s $Q^2$ value (Geisser 1974, Stone 1974) and the blindfolding procedure in SmartPLS (Hair, Hult, Ringle, and Sarstedt 2014). When predictive relevance is demonstrated by the model, it indicates that the model accurately predicts the items in reflective measurement models of multi-item and single item endogenous constructs. $Q^2$ values for product quality and customer satisfaction were considerably above zero, indicating that the model has predictive relevance for the endogenous latent variables.

**Controls**

*Star popularity.* Although films are an appropriate context in which to examine business-related phenomena, there are factors unique to the film industry that should be controlled. Stars receive a disproportionate level of attention in the film industry, as well as in academic research (Elberse 2007; Simonton 2009). Star-related factors are proposed to account for 22% of the
variance in box office receipts (Elberse 2007). Until recently, measures of popular star appeal were difficult to find. However, IMDBpro.com now offers a measure of star popularity called StarMeter that scores popularity based on online searches. The highest StarMeter score among the title stars was used for the star popularity measure.

_Director popularity._ Similarly, box office results have been linked to directors’ prior mass popularity (Bagella and Becchetti 1999). Star directors have been demonstrated to have positive impact on a film’s honors and critical acclaim (Holbrook 1999, Simonton 2009). To control for star director popularity effects, the StarMeter score for the primary director prior to the film cycle was collected and added to the model as a control.

**Results**

Overall, the results of the structural model tests support the proposed model. Figure 2.3 provides a graphic representation of the results of the path analysis. The total and relevant indirect effects are listed in Table 2.2. The specific results of each analysis are discussed in the following sections.

*Indirect effects of team network characteristics on satisfaction.* The indirect effect of team connectedness on customer satisfaction was both positive and significant (indirect effect = .086; \( p < .05 \)), supporting H1a. Similarly, team cohesiveness impacted customer satisfaction positively and significantly (indirect effect = .376; \( p < .01 \)), supporting H1b. To test mediation, the current study adopts the method presented by Preacher and Hayes (2008) and Zhao, Lynch, and Chen (2010), as outlined by Hair, Hult, Ringle, and Sarstedt (2014). First, the direct relationship between team connectedness and customer satisfaction evaluations is positive and significant in the absence of the mediator, product quality (\( \beta = .183; p < .001 \)). Similarly, the direct relationship between team cohesiveness and satisfaction is also positive and significant in the absence of the mediator (\( \beta = .225; p < .001 \)). When the mediator is included, connectedness and cohesiveness independently have a positive and significant effect on product quality assessments (\( \beta = .136; p < .05; \beta = .598; p < .001 \) respectively). Product quality, in turn, positively and significantly impacts customer satisfaction (\( \beta = .579; p < .001 \)). Moreover, the direct paths from connectedness and cohesiveness to satisfaction are reduced in magnitude and significance (\( \beta = .114; p < .001; \beta = .130; p < .001 \), respectively). The variance accounted for (VAF) by the indirect effect is .409 and .728, respectively. Therefore, 40.9% of the total effect of
team connectedness on customer satisfaction evaluations is indirect, indicating that partial mediation via product quality assessments. Similarly, 72.8% of the total effect of team cohesiveness on customer satisfaction evaluations is indirect, indicating that partial mediation via product quality assessments. Therefore, H1a and H1b are supported.

Financial resources, cohesion, and product quality. H2 is unsupported; financial resources do not moderate the relationship between team connectedness and product quality ($p > .05$). However, as hypothesized, the relationship between team cohesiveness and product quality presents as an inverted U-shape, indicating a curvilinear relationship. Specifically, team cohesiveness has a positive and significant linear relationship to product quality ($\beta = .598; p < .001$), and has a negative and significant quadratic relationship to product quality ($\beta = -.346; p < .05$), supporting H3a and H3b.

Financial resources mediate leader clout-product quality relationship. Additionally, the hypothesized mediated relationship between leader clout and product quality (H4) is supported. Specifically, the direct relationship between leader clout and product quality is positive and significant in the absence of the mediator ($\beta = .268; p < .001$). When the mediator is included, leader clout positively and significantly impacts the financial resources available to the team ($\beta = .353; p < .001$), financial resources positively and significantly impact product quality ($\beta = .207; p < .001$), and the direct relationship between leader clout and product quality remains significant, but the magnitude is diminished ($\beta = .201; p < .001$). The variance accounted for (VAF) by the indirect effect is .266. Therefore, 26.6% of the total effect of leader clout on product quality assessments is indirect, indicating partial mediation via financial resources.

Leader clout, cohesiveness, and product outcomes. H5 is also supported; the interaction between team cohesiveness and leader clout result in a positive and significant effect on product quality ($\beta = .252; p < .001$). Similarly, support is found for the hypothesized positive and significant indirect relationship between leader clout and customer satisfaction ($\beta = .155; p < .001$; H6 is supported). Finally, to support the nomological validity of the model, the network constructs were embedded in the context of known theoretical constructs (Iacobucci, Saldanha, and Deng 2007). As expected, product quality loads significantly on customer satisfaction ($\beta = .630; p < .001$).

Assessing impact using $f^2$ effect sizes. As a final step, $f^2$ effect sizes were calculated to evaluate whether each exogenous construct has a meaningful impact on the outcome variables.
Specifically, the changes in $R^2$ of the endogenous variable were assessed when each exogenous variable was removed from the model (Cohen 1988). The results indicate that, for the product quality construct, connectedness and leader clout had small effect sizes ($0.02 < f^2 < 0.15$) whereas cohesion had a medium effect size ($0.15 < f^2 < 0.35$). For satisfaction, as expected, product quality has a large effect size ($f^2 > 0.35$) whereas leader clout has a negligible effect on customer satisfaction ($f^2 < 0.02$).

Controls. Control variables yielded significant effects on product quality and customer satisfaction. Specifically, the popularity of the director had a significant effect on budget ($\beta = -0.248; p < 0.001$) and product quality ratings ($\beta = -0.357; p < 0.001$), but not on customer satisfaction ($p > 0.05$). Similarly, star popularity had a significant effect on product quality ratings ($B = 0.467; p < 0.001$) but not on customer satisfaction ($p < 0.05$). It is important to note that in the StarMeter scores, a lower score indicates a higher level of popularity. Therefore, a negative path coefficient indicates a positive effect, while a positive path coefficient indicates a negative effect on the focal construct. Therefore, results indicate that the more popular a director, the higher the financial resources and product quality assessment by the gatekeepers. Conversely, the more popular the most popular star in the film, the lower the assessment of quality by the gatekeepers.

![Figure 2.3: PLS-SEM Path Coefficients](image-url)

Figure 2.3: PLS-SEM Path Coefficients: $^* p < 0.05; ^{**} p < 0.01; ^{*} p < 0.001$
The results of the study generally confirm our hypotheses that team dynamics, inferred from the social network structures of the teams and team leaders, impact key product outcomes. In the next section, the implications of the findings for both practitioners and scholars are discussed. The work closes with a discussion of the limitations, and the research opportunities they represent, and concluding thoughts regarding the research implications.

Table 2.2: PLS-SEM Results: Total Direct and Indirect Effects of Team and Leader Network Characteristics on Downstream Marketing Outcomes\textsuperscript{a,b}

| Team Connectedness | .136 | .193 (.086) |
| Team Cohesiveness | .598 | .467 (.376) |
| Team Cohesiveness\textsuperscript{QUADRATIC} | -.346 | (ns) |
| Leader Clout | .274 | .155 (.155) |
| Financial Resources | .206 | .119 |
| Connectedness * Financial Resources | (ns) | (ns) |
| Leader Clout * Cohesiveness | .252 | .146 |
| Director Popularity | -.408 | -.284 |
| Actor Popularity | .467 | .268 |

\textsuperscript{a} Bold values are significant at \( p < .01 \); non-bold values are significant at \( p < .05 \)

\textsuperscript{b} Values in parentheses are the indirect effects, remaining values represent total effects.

**General Discussion**

The annual benchmark study by the Product Development and Management Association (PDMA) states that “no set of variables is more clearly related to higher performance than team management… the use of team management practices is strongly related to company performance” in new product development (Markham and Lee 2013, p. 32). Marketers are increasingly tasked with leading specialized, autonomous NPD teams (Sethi 2000). In conducting this research, insights for those managers were uncovered through an enhanced understanding of team dynamics. Specifically, the current study explored the influence of NPD team network characteristics and leaders’ heavyweight organizational clout on gatekeepers reviews, satisfying customer needs, and ultimately, achieving new product success. In the next
section, the implications and limitations of these findings are discussed, and future avenues for research are explored.

**Implications, Limitations, and Future Research**

*Implications.* The NPD paradigm is shifting from formalized teams and formal development processes to dynamic, agile teams and informal development processes (Markham and Lee 2013). Often, like the squads at Spotify, these types of teams don’t rely on others for their work. The systems theory of creativity suggests that these leaders and their teams are significantly impacted by social context (Shalley and Gilson 2004). Their isolation, intended to improve creativity, may in fact cause them to become more cohesive as the product development process unfolds. Yet cohesion can inhibit the creative process (e.g. Kratzer, Leenders, and van Engelen 2005), a critical component of successful NPD.

The best firms are changing not only the configuration of teams, but also who leads them. Heavyweight leaders are leading this new breed of NPD team. The solution to the potential pitfall of specialized teams may be found in the heavyweight leaders’ influential contacts. Contacts can facilitate creative innovation (Burt 2000; Richter, Hirst, van Knippenberg, and Baer 2012), resulting in more successful NPD outcomes. Therefore, given the changing dynamics of NPD, the role of the team leader is evolving into that of a boundary spanner and resource gatherer (Shalley and Gilson 2004). Moreover, these leaders must be responsible for striking a balance in providing the appropriate level of necessary resources to facilitate creative work (Shalley and Gilson 2004). This work demonstrates that heavyweight leaders’ influential connections can be a source of both knowledge and financial resources, which can neutralize the downside of cohesion.

The results reveal that taking a social network-based approach to assessing team member and leader potential indeed provided interesting insights. First, to tackle the question of team performance, team network characteristics were found to directly impact product quality assessments performed by the gatekeepers in the domain. Specifically, team connectedness, or the level of non-redundant connections team members have to external individuals, influences team performance in the form of enhancing positive quality assessments from gatekeepers. Additionally, team cohesiveness is shown to have an optimal point, where teams with high and
low cohesion underperform relative to moderately cohesive teams; finding this “sweet spot” represents a challenge for management in configuring an effective NPD team.

However, results reveal that a heavyweight leader may offset the downside of cohesion, and allow teams to capitalize on the benefits of high cohesion without inhibiting creativity and innovation. The present work illustrates the symbiotic interaction between cohesive teams and heavyweight leaders, such that the downside to deploying heavyweight leaders and the inhibiting factors of high cohesion did not manifest in this study. Moreover, heavyweight leaders enhance product quality not only directly, but indirectly by attracting higher financial resources, which in turn, has a positive impact on the quality assessments of the gatekeepers. Additionally, the anticipated indirect positive effect of heavyweight leaders on customer satisfaction was found; heavyweight team leaders appear to boost quality assessments by the gatekeepers, which in turn, impact the satisfaction of the customers consuming the product. These findings suggest that well-connected NPD leaders provide an upside to the team NPD outcome. The present work, suggests this unexpected upside to employing a heavyweight leader results from establishing expectations by consumers when a well-known heavyweight leader is associated with a new product.

The NPD project leader, when selected, should consider past project participation and individual interactions in choosing their team. This is particularly true when an NPD leader with low or moderate organizational clout is selected. Homophilic effects often permeate team selection (McPherson, M, Smith-Lovin, and Cook 2001); leaders and team members alike prefer to work with individuals with whom they are familiar and similar. However, this heuristic may be detrimental to creativity and innovation in NPD processes. A NPD project leader with modest or low organizational clout may wish to avoid highly cohesive teams, and opt instead for a moderately cohesive team that is highly connected. Conversely, leaders with significant organizational clout may benefit from selecting a highly cohesive team and garnering the benefits of cohesion, while working to actively offset the negative effects of cohesion via their network connections.

Given the risk inherent in NPD (Atuahene-Gima 2005; Kumar, Pozza, Petersen, and Shah 2009; McNally, Akdeniz, and Calantone 2011), the insights offered by the current work are important to consider. Team leadership and configuration are controllable factors in the NPD process, and management appoints team leaders over 70% of the time (Griffin 1997), making the findings relevant as well as important.
Limitations and Future Research. The objective of the present study was to shed light on the role of leader and team networks on outcomes in the NPD process. While the effort yielded significant insight into these relationships, limitations within the study reveal areas for additional research. First, although not included in the present study, incorporating temporal decay of social ties may yield additional insight into the effects of team and leader networks on NPD outcomes. Second, additional insights also may be gleaned from considering past performance as an indicator of future performance. Third, another possible extension includes the use of individual-level attributes in conjunction with network variables. Finally, the present sample was derived from one domestic creative industry, limiting the generalizability of the results. Additional examination of these relationships in cross-national and cross-industry samples may yield additional insights, generating a greater understanding of the effects of leader and team networks in the NPD process.

Conclusions

This research provides an important step in understanding contextual factors in the creative processes of NPD and how they are influenced by network characteristics. Through network-based team configuration strategies, marketing practitioners can reduce the risk inherent in new product development. Moreover, the core findings alert scholars to additional areas of research employing the systems theoretic lens. Further research can expand the findings of this research, providing increasingly clear insight into team dynamics in the context of new product development.
CHAPTER FOUR

CONCLUSIONS AND TOTAL RESULTS

“There can be little doubt that the concept of social systems is central to marketing if we are … increasingly enmeshed in hybrid networks of social, ecological, and informational systems. Yet it is surprising to find such a paucity of marketing and consumer research addressing it.” (Giesler 2003)

Systems theory provides a unique perspective on organizational phenomena, wherein its macro-level approach encourages interdisciplinary research in areas that are traditionally siloed research domains. Social networks, the structural artifacts of social systems, are inherently multilevel and multi-dimensional in nature, and offer a novel source of information in exploring the interrelated facets of organizational phenomena. Marketing researchers are just beginning to explore network effects on their respective key outcomes.

This dissertation contributes to the exploration into social networks in organizations and suggests that the exploration should extend beyond the boundaries of the firm. The social structures within the firm create ripples into the marketplace that impact outcomes critical to marketing practitioners and of interest to marketing scholars. Employing the systems lens, this research provides an important step in understanding contextual factors in creative internal processes such as new product development. Through network-based team configuration strategies, marketing practitioners can reduce the risk inherent in creative endeavors.

The results confirm that internal social structures do indeed have a ripple effect beyond the boundaries of the firm. Team configuration, therefore, becomes a major concern for marketers and practitioners, suggesting a partnership both in practice and research, between management and marketing scholars. Further research can expand the findings of this research. For example, examining the antecedents to network positions is an area that should receive further attention. Additionally, examining dynamic networks and accounting for the decay and evolution of social ties can provide important insights in future research.
APPENDIX A

CALCULATING NETWORK METRICS

Notations

\( i \) := an individual actor in the network

\( I \) := a set of individuals (filmmakers), indexed \( 1 \leq i \leq n = |I| \);

\( T \) := a set of all teams (movies), indexed in chronological order as \( 1 \leq t \leq m = |T| \);

\( I^t \) := the set of individuals, \( I^t \subseteq I \), on team \( t \), where \( n^t = |I^t| \) is the number of individuals on team \( t \) (for \( 1 \leq t \leq m \));

\( A \) := an \( n \times m \) network matrix with elements \( a_{it} = 1 \) if individual \( i \) was on the director team for movie \( t \) and \( a_{it} = 0 \) otherwise, for all \( i \in I \) and \( t \in T \);

\( P^t \) := an \( n^t \times n^t \) team participation submatrix with elements, \( p_{ij}^t \), defined as follows for all \( i \in I^t, j \in I^t \) and \( t \in T \):

\[
p_{ij}^t = \begin{cases} 
0, & \text{if } i = j \\
1, & \text{if } i \neq j \text{ and } \{i, j\} \in I^t \text{ for any } s < t \\
0, & \text{if } i \neq j \text{ and } \{i, j\} \notin I^t \text{ for any } s < t 
\end{cases}
\]

\( \delta^t \) := a team cohesiveness (density) measure

\( g_{jk} \) := the total number of geodesic paths between individuals \( j \) and \( k \) in network matrix \( A \), for all \( 1 \leq j < k \leq n \);

\( g_{jk}^t \) := the total number of geodesic paths between individuals \( j \) and \( k \) in network matrix \( A \) that contain individual \( i \), for all \( 1 \leq j < k \leq n \) and \( i \in I : i \neq j \) and \( i \neq k \);

\( C_B(i) \) := a betweenness centrality measure for individual \( i \);

\( \beta^t \) := a team connectedness (betweenness centrality) measure;

\( C_E(i) \) := an eigenvector centrality measure for individual \( i \);

\( x_j \) := the degree centrality of actor \( j \), which is defined as the number of edges incident upon node \( j \);

\( \lambda \) := a constant;

\( m_{ij} \) := 1 if actor \( i \) is linked to actor \( j \) in the network, or, conversely, 0 if the two actors are unconnected.
Metrics

**Team density** $\delta^t$ was computed as follows for all $t \in T$:

$$
\delta^t = \frac{1}{(n^t(n^t-1)/2)} \sum_{\{i<j\} \in T^t} p^t_{ij}
$$

**Betweenness centrality** at the individual level, $C_B(i)$, is computed as follows for all $i \in I$:

$$
C_B(i) = \frac{1}{g_{jk}} \sum_{(j<k):x \neq j, i \neq k} g^i_{jk}
$$

The **team** measure of **betweenness centrality** is computed as follows for all $t \in T$:

$$
\beta^t = \frac{1}{n^t} \sum_{i \in T^t} C_B(i)
$$

**Eigenvector centrality** is proportional to the sum of the centralities of the nodes connected to a focal node $i$, and can be calculated as follows for all $i \in I$:

$$
C_E(i) = \left(\frac{1}{\lambda}\right) \sum_{j=1}^{n} m_{ij}x_j;
$$

Converting Two-mode Networks into One-mode Networks for Analysis

Two-mode networks are comprised of two levels of analysis, usually actors (level 1) and events (level 2). A common method for evaluating two-mode networks (also known as affiliation networks) is by converting them into one-mode networks. Multiplying the actor-event network by its transpose results in an actor-by-actor matrix where the strength of the tie between the two actors is determined by the number of times the dyad jointly participated in events – a count of co-occurrence. For example, in the case of the director-movie two mode network, director $i$ and director $j$ both worked on movie $x$ and movie $y$. Therefore, the actors would have a tie of value 2 in the actor-by-actor matrix that results when multiplying the director-movie matrix by its transpose. The UCINET function, Affiliation (convert 2-mode data to 1-mode), will convert the actor-by-event matrix to an actor-by-actor matrix (Borgatti, Everett, and Freeman 2002; Hanneman and Riddle 2005; Wasserman and Faust 1994).
APPENDIX B

HUMAN SUBJECTS APPROVAL: EXEMPTION MEMORANDUM

The Florida State University
Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673, FAX (850) 644-4392

EXEMPTION MEMORANDUM

Date: 5/19/2014

To: Cinthia Satomino

Address: Rovetta Business Annex, 821 Academic Way, P.O. Box 3061110, Tallahassee, FL, 32306-1110
Dept.: MARKETING

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
Creative Systems, Social Networks, and New Product Development: Two essays examining the impact of connected teams and heavyweight leaders on marketing outcomes

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and one member of the Human Subjects Committee. The proposed research protocol is Exempt from human subjects regulations as described in 45 CFR Â§ 46.101(b)4.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to
weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This memorandum does not replace any departmental or other approvals, which may be required.

The Committee expects that all relevant subject protection measures and ethical standards will be followed, as outlined in your proposal. No continuing review is required unless the nature of the project changes and it would affect the project exemption status.

You are advised that any change in protocol for this project that would affect the exemption status must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is FWA00000168/IRB number IRB00000446.

Cc: Michael Brady, Advisor
HSC No. 2014.12783
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BIOGRAPHICAL SKETCH

Cinthia B. Satornino is a doctoral candidate at Florida State University and earned an MBA from the University of Florida. She has a co-authored publication accepted by Psychometrika on the development and testing of a new tabu search heuristic for multiobjective blockmodeling. Cinthia defended her dissertation in June of 2014. She has presented her work at several conferences since 2010. She has also taught over 1000 students Principles of Marketing in the last three years, was nominated for a university-wide teaching award, and served as the course manager for the first online class offered by the Marketing Department at FSU. Cinthia has served as vice president and president for the PhD Project Marketing DSA (2010 – 2013). She is a McKnight Associate Fellow, a Business Dean’s Fellow, a Graduate School Dean’s Fellow, a Stith Fellow, a UF Matherly Scholar, and a recipient of the Valuing Diversity Scholarship from the AMA Foundation. Her professional experience includes 15 years in strategic planning and CRM. In her personal time, Cinthia spends time with her husband and sons, creates various forms of art, and wanders the beach. Cinthia joins the faculty of Northeastern University in Boston beginning in the summer of 2014.