# Creative Team Networks and Innovation Outcomes: The Effects of Team Socio-Structural Factors in Creative Industries

# ABSTRACT

To thrive in uncertain and highly competitive environments, firms turn to team-based strategies for creative, knowledge-intensive projects. Against a backdrop of creative industries, the authors take a systems approach to explore the impacts of the socio-structural factors on team innovation and downstream product performance. Using a sampling frame that includes director teams of films released between 2002 and 2011 (accounting for 10,187 directors and 1,128 films), they conduct a two-stage study: 1) a longitudinal analysis of the network structures in Stage 1, and 2) a test of hypotheses in a structural equation model in Stage 2. Results reveal specific network structures that enhance product quality and increase likelihood of product purchase and customer satisfaction. Based on the results, the authors provide actionable strategies for managers and future avenues for scholarly research.

*Keywords: creative teams, social networks, new product performance, remote services, customer satisfaction* 

## Creative Team Networks and Innovation Outcomes: The Effects of Team Socio-Structural Factors in Creative Industries

Innovation is critical to firm survival (Anderson, Potocnik, & Zhou, 2014). As firms attempt to survive in uncertain and highly competitive environments, they are increasingly reliant on team-based strategies (Ahearne, MacKenzie, Podsakoff, Mathieu, & Lam, 2010), particularly in handling creative, knowledge-intensive projects. A survey of 962 firms revealed that 84% used teams to handle special projects, 51% used them for customer service innovation, and 74% employed functional teams that act as departments (The Ken Blanchard Companies, 2006). Despite this prevalence, teams fail to meet their stated objectives anywhere from 50% (Hackman, 1998) to as often as 90% of the time (Wang & He, 2008). Meanwhile, because teams are so commonplace, managers and employees may assume they are effective (Tannenbaum, Mathieu, Salas, & Cohen, 2012), or tolerate ineffective teams (Hackman, 2012).

Team ineffectiveness presents a significant threat – not only to the dynamics within the firm, but also beyond the boundaries of the firm. Systems theory suggests that the walls of the firm do not shield the market from team inefficiency or ineffectiveness. Rather, systems theory predicts that the internal social structures within organizations are likely to impact downstream organizational outcomes, such as customer satisfaction and financial performance, *even when consumers and teams do not interact directly*. Against this backdrop, it is perhaps surprising that little work has been done to understand the direct and indirect downstream ripple effects that teams may exert beyond the organization.

In an organizational setting, creative teams are similar to traditional work teams in that they are characterized by interdependence, shared responsibility, and common goals (Sundstrom, De Meuse, & Futrell, 1990). However, unlike traditional work teams that work on routine tasks, the common goal of a creative team is to produce innovations and their performance is measured by the quality of the creative output. In the tradition of systemic thinking, these creative teams can be viewed as micro-social systems (Hackman, 2012) embedded in macro-systems such as firms and industries that interact with downstream social and economic systems. In the present study, we conceptualize teams as made up of individuals embedded within local team networks that are embedded in global industry networks, and that the structure of the local and global networks ultimately impact the acceptance and successful market performance of an innovation.

Prior research on teams primarily has examined the effects of employee-level variables, such as educational achievement, race, gender, and functional role (e.g., Bantel & Jackson, 1989) on team outcomes, such as team performance (e.g., Ancona & Caldwell, 1992; Sparrowe, Liden, Wayne, & Kraimer, 2001) and job satisfaction (e.g., Baldwin, Bedell, & Johnson, 1997). However, less work has been done to connect socio-structural characteristics with team creative performance and, fewer still have linked these socio-structural factors with the subsequent adoption of resulting innovations. By conceptualizing the creativity-innovation-adoption by the domain as processes in a system of creative innovation, the primary objectives of the present study are: 1) to demonstrate that team creativity and subsequent downstream performance of an innovation are impacted by internal team social structures, and 2) to reveal the structures that enhance creativity and increase likelihood of acceptance of the innovation, thereby providing actionable strategies for managers and future avenues for scholarly research.

Systemic thinking is based on the premise that connections are the key to understanding many phenomena. Social networks are structural representations of connections (or ties) between individuals, groups, and organizations. The rationale behind the assumption that social ties serve as a proxy for measuring individual and group level characteristics (e.g., power, status,

reputation, access, influence, and other factors traditionally measured through the use of primary data collection) stems from the structuralist and related "connectionist" perspectives (Borgatti & Foster, 2003; Lin 2001). The structuralist perspective proposes that interactions between individuals indicate ties in the social network (Kimberly, 1976) and represent the structural dimension of social capital. Structuralists assert that variations in the typology of the social structure in which an individual, a group, or an organization are embedded lead to variance in focal outcomes (Kimberly, 1976). Structuralists and connectionists look to the social structure to explain variance in performance outcomes. It is a relational view from which social network research arises. The structuralist philosophy, though often set in opposition to individualists, actually compliments the individualist (or essentialist, atomistic) view of variation in performance outcomes (Borgatti & Foster, 2003). However, as social network researchers, we find that just as individual data provide insights without the presence of relational data, so too does structural data provide insights in the absence of individual data. It is this premise that underlies the use of network positions and characteristics as proxies for various social constructs, such as team cohesion or organizational status, in social network research.

When exploring the effects of socio-structural characteristics on team creative performance and subsequent outcomes, there are two levels of consideration that merit attention. First, one must consider the social structure within the team. Social resource theory (Lin, 1982, 1986) asserts that social networks have value due to the social resources embedded within the network; the social structure produces advantage and constraints based on access to these embedded resources. The theory suggests that social capital is the mechanism by which social network structures impact team creativity (Lin, 1999). Resources, such as knowledge and financial assets, are embedded within the web of social ties, and can be transmitted to an individual who, in turn, can apply the resources to a complex problem (Burt, 1997). In sum, the structure of the connections between individuals enhances or constrains access to the embedded resources (Lin, 1999), and the level of access constitutes the social capital of an individual in a given network. Previous research reveals two primary sources of social capital (Burt, 2005, 2009) that yield potential benefits to members of a network: cohesiveness (i.e., *network closure* among group members; Coleman, 1990) and connectedness (i.e., *structural holes* between individual nodes, Burt, 1997). Cohesiveness refers to the characteristics of the social ties *within* a group or team, the local network, whereas connectedness refers to the characteristics of social connections of members in a group to those *outside* the group, the global network. The two sources of social capital are illustrated in Figure 1, where *Person A* 's local network is comprised of *Persons 1 – 4*, while their global network is comprised of *Persons b – x*.

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**Insert Figure 1 about here** 

In the present study, we examine the impacts of both cohesiveness and connectedness on team creative performance. Moreover, although prior work has focused on one or the other of the network characteristics (Burt, 2009), we examine cohesiveness and connectedness simultaneously, providing novel insights about the interplay between the two types of social capital. In another departure from previous work examining the social network-team performance relationship (e.g., Reagans & Zuckerman, 2001), we move beyond the evaluation of the creativity of team performance to examine the downstream impact of the subsequent adoption of the innovation by the public domain. To do so, there is a second level of consideration that merits attention, which is the system by which creative products are introduced and adopted by a cultural domain. To link outcomes of creativity to the adoption of innovation, we employ the systems theory of creativity to guide the study. The fundamental premise of Csikszentmihalyi's (1988) systems theory of creativity is the assertion that creativity, and subsequent adoption of resulting innovations, is not the result of the efforts of single actors alone but rather as part of complex and interrelated social systems that provide evaluations of a creative effort. In other words, what is considered creative is essentially a social process heavily influenced by context (Csikszentmihalyi, 1988). However, most research on creativity has not recognized the social or contextual aspects of creativity (a notable exception is Perry-Smith & Shalley, 2003). Unlike static models of creativity, the systems theory of creativity provides an avenue for viewing innovation from a holistic perspective, where team characteristics can be linked to downstream outcomes.

In the present study, we link team socio-structural factors, not only to team creative performance, but also to downstream innovation outcomes. Specifically, we test the effects of team connectedness and team cohesiveness on creativity as measured by experts in the field and beyond the walls of the firm to the performance of the resulting innovation in the domain, linking team creativity to customer satisfaction and the financial performance of the innovation. In sum, the present study examines key relationships between team network structures, team creative performance, and innovation adoption. More specifically, we conducted a two-stage analysis using data on director teams from major film releases in 2002 to 2011 (inclusive) in the motion picture industry. In Stage 1, social network structures were assessed based on ten years of data, and then, in Stage 2, the hypothesized downstream relationships were modeled and tested in an independent 3-year sample. Figure 2 illustrates the system of hypotheses that link local networks, global networks, creativity, and innovation outcomes.

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Insert Figure 2 about here

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Motion pictures provide an ideal setting in which to study teams because they represent creative, knowledge-intensive projects that (1) are completed by teams, (2) have a short product lifecycle, (3) experience little price fluctuation, and (4) demonstrate relatively few brand effects. Therefore, the characteristics of films minimize potential confounds commonly found in other research contexts. Moreover, controls for film-specific variables (e.g., star popularity, genre, ratings) were included in the model to ensure generalizability to other domains. Contrary to common practice, results indicate that highly cohesive and/or connected teams are not always the optimal configuration for effective team design. Also, results support the idea that team social structures impact not only creativity, but also downstream innovation outcomes such as customer satisfaction and financial performance not only indirectly but also *directly* – a surprising result. More broadly, the results suggest that team-level socio-structural phenomena represent an important strategic consideration for organizational science practitioners and scholars alike.

For scholars, the theoretically driven work provides new avenues of exploration in team design, team creativity, and innovation outcomes. In their "state-of-the-science" review on innovation and creativity in organizations, Anderson et al. (2014: 1318) identified cross-level and multilevel studies that "explain effects of variables at different levels of analysis" on creativity and innovation as one of the "most valuable avenues" to expand our understanding of related phenomena. In a similar vein, the present work adds to the limited body of work in applied social networks that accounts for the multidimensional nature of social capital (Moliterno

& Mahoney, 2011). Finally, the present study contributes to the ongoing dialogue in understanding how team social structure influences important downstream innovation outcomes.

For practitioners, understanding factors that contribute to and enhance team creativity is particularly valuable as organizations continue to rely more heavily on team-generated innovation (Anderson et al., 2014). The present study offers a feasible method for uncovering informal social structures, thereby making the implementation of network-based strategies an attainable goal. Social network based team design strategies allow practitioners to predict likelihood of important team climate variables, such as conflict and trust (Anderson et al., 2014) by using social structures as predictive mechanisms. In the next sections, we review the extant literature on creativity and teams, followed by the development of related hypotheses.

# THEORETICAL FOUNDATIONS AND HYPOTHESIS DEVELOPMENT Creativity

Creativity is viewed as a key driver of firm growth, performance, and valuation. According to a recent McKinsey Global Survey, tapping new ideas from within organizations is a top priority for new growth (Montag et al., 2012). The strategic priority has led to significant academic attention on workplace creativity, and specifically, on predictors and antecedents of workplace creativity (Baas, De Dreu, & Nijstad 2008; Montag et al., 2012), including personal and contextual factors (Zhou & Shalley, 2003), individual characteristics and psychological processes, and input and process antecedents to group creativity (George, 2007). The careful examinations of the broad range of literature suggest that the results regarding organizational creativity are inconclusive and lack utility for firms looking to optimize workplace strategies (Montag et al., 2012). Additionally, as scholars acknowledge and address the social side of creativity, notable efforts have been made to understand the socio-structural effects on creativity. For example, in their study of Broadway musicals, Uzzi and Spiro (2005) found that the impact of a small network structure on creativity exhibited an inverted U-shaped relationship. Perry-Smith (2006) and Perry-Smith and Shalley (2003) also examined structural effects on creativity, asserting that weak ties and closeness centrality have distinct effects on creative performance.

However, challenges remain in understanding creativity from the social perspective; further research is needed to shed light on the complex interplay between social networks and creativity (George 2007). For example, work that incorporates multilevel networks and examines the interaction between network positions at each level with creative outcomes is limited. Our study addresses this need. Second, rather than assuming simple main effects of network structures on creativity (George 2007), the work thus far has opened the door to examining interactive and mediational effects of network structures on creativity. Finally, Montag et al. (2012) suggested that creative studies need to distinguish between outcomes of creativity and innovation performance. Guided by the systems theory of creativity and social resource theory, the present study seeks to address these challenges.

### Teams

Like creativity, research on teams within organizations has experienced exponential growth (Kozlowski & Bell, 2001; Stewart, 2006), particularly in the field of organizational behavior. Teams impact customers both directly and indirectly, and therefore are an important subsystem for organizational science 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, & Tannenbaum, 1992: 4). 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, & Gilson, 2008). Teams have been explored in the context of innovation and new product development (e.g., Ahuja, 2000) and sales (e.g., Menguc, Auh, & Uslu, 2012). Furthermore, and more relevant to the present study, effective teams have been linked to group creativity (Paulus, 2000). Yet, teams and team environments have changed significantly (Tannenbaum et al., 2012), and work linking sociostructural characteristics of teams in the context of the system of creativity remains limited.

#### **Social Networks and Team Creativity**

We begin the exploration of the team network-creative performance relationship by turning to social resource theory to guide the development of hypotheses. Social resource theory suggests that valued resources are embedded in the social network of individuals (Lin, 1982; 1999). Access to those resources are allowed or constrained by the network of social ties that individuals have with others, known as their positions, within the network in which they are embedded (Burt, 2002; Lin, 1999). These resources amount to social capital individuals have at their disposal to apply to achieving goals. Social capital is defined as the assets that are accessible via social connections (Burt, 2002, 2001, 2005). Individuals are able to draw on the assets of their social connections when navigating a problem (Lin, 1999). These networks, however, do not exist in isolation. Organizations and markets are multilevel systems of nested networks, where networks at one level of the system impact other levels within the system (Moliterno & Mahoney, 2011). As a function of these multilevel networks, social capital is a multidimensional construct (Burt, 1992; Coleman, 1990; Lin, 1999; Putnam, 1995) whose dimensions operate at distinct levels of the organization (Burt, 2000; Reagans & Zuckerman,

2001). There is a clear distinction in the literature between two types of structural social capital, or capital derived from the social structure, which is relevant to the present study.

The first stream focuses on individuals and their non-redundant contacts as the relationships of interest. Unconnected individuals in a social network create "holes" in the structure of the network. Structural holes separate individuals and groups from one another in an otherwise connected network. An individual who serves as a single link between otherwise unconnected others is said to be bridging the "structural hole" (Burt, 1992; Figure 1 illustrates a structural hole between *Person f* and *Person r*, which is bridged by *Person A*). Bridging ties link these unconnected individuals and groups and allow bridging individual to access their knowledge and resources and broker information across the bridge. As such, these bridging links are measures of access to unique resources and novel information (Burt, 1992) because the unconnected others function in independent information and resource flows (Burt, 2001). The access to unique resources and knowledge, as well as the ability to control the flow of these resources between the unconnected others, is the source of this type of social capital.

The second type of social capital, known as network closure (Burt, 2002), focuses on the internal connections between individuals who make up a group. Network closure is focused on the number of connections between individuals within a group network (Burt, 2009; Lin, 1999; Putnam, 1995; Reagans & Zuckerman, 2001) and represents a measure of cohesion in a group (e.g., Reagans & Zuckerman, 2001). Importantly, the network closure perspective examines interconnected elements in 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) and team cohesion (Reagans & Zuckerman, 2001). Increased efficiencies manifest due to the effect of improved cohesiveness among group members, such as a shared definition of

a problem (Bettenhausen & Murnighan, 1985) and increased cooperation (Janz et al., 1997). In Figure 1, Person A's team, or local network, consists of Persons 1 - 4, and the ties between the members determines the network closure-based social capital the team, as a unit, enjoys.

The present study approaches the multilevel social capital by defining structural holebased social capital (connectedness) that is (1) a product of the global organizational network, and (2) represents access to non-redundant (additive) external resources that other members of the team do not have. At the team level, the more connected the individual members of the team are, the more bases of non-redundant resources the team has at its disposal, referred to as team connectedness. Conversely, we define network closure-based social capital, or team cohesiveness, as (1) a product of the local network, which (2) represents how efficiently teams protect and utilize their own resources.

### **Team Cohesiveness and Creative Performance: Accounting for Local Effects**

We begin by discussing team cohesiveness. Recent studies have reported conflicting results on the effects of cohesion on team performance (Reagans & Zuckerman, 2001; Sparrowe et al., 2001). These inconsistent findings suggest additional work is needed to understand the effect of team cohesion, particularly in highly creative contexts that have a high degree of uncertainty (Jehn, 1995). Team cohesion is a function of social relationships; the more that team members interact, the stronger their social ties become (Burt, 2000). These strong ties lead to increasingly positive perceptions of trustworthiness and increased trust (e.g., Krackhardt, 1992). Prosocial behavior is also likely to increase as ties become stronger (Beersma & De Dreu, 2005). These two factors are expected to demonstrate opposing effects on the team cohesivenesscreative performance relationship, such that team cohesiveness exhibits an inverted U-shaped effect on creativity. Therefore, the two factors (i.e., trust and prosocial behavior) form the theoretical grounds for the proposed curvilinear relationship between team cohesiveness and team creativity, and are discussed in detail in the next sections.

**Trust**. Trust is defined as the willingness to be vulnerable based on positive expectations about another's behavior or intentions (McEvily, Perrone, & Zaheer, 2003). Trust has been shown to increase as two individuals interact over time and expectations and obligations are met (e.g., Granovetter, 1985). Trust between team members can promote efficient problem solving (Bettenhausen & Murnighan, 1985), improve productivity (Reagans & Zuckerman, 2001), and increase cooperation (Janz et al., 1997). Trust serves as an organizing principle, particularly where what constitutes successful performance is ambiguous (McEvily et al., 2003). In sum, trust fosters the formation of a cohesive team, with a clear shared definition of the problem (Bettenhausen & Murnighan, 1985) and a strong sense of cooperation (Janz et al., 1997).

Importantly, creativity is inherently a risky endeavor because it requires challenging traditional approaches and habitual behaviors. If creative solutions fail, it's likely that the initiating team member would experience negative consequences (Zhou & George, 2001). Trust between team members lowers risk (Lin 1999), implying that individuals have a willingness to be vulnerable within the team, and to take risks by productively disrupting the status quo (McEvily et al., 2003). As such, teams with a higher level of trust should be more cohesive, and as a result, perform better in creative endeavors (Granovetter, 1985; Krackhardt, 1992).

**Prosocial behavior.** Conversely, some prior research suggests that familiarity inhibits creativity (Kratzer, Leenders, & van Engelen, 2005). While acknowledging the potential benefits of cohesion, scholars also suggest that high levels of team cohesion lead to negative behaviors, such as diffusion of responsibility, de-individuation, group think, and conformity. These negative behaviors increase as unity increases within the group. We suggest that these behaviors are

driven by increasing prosocial orientation that emerges in teams as team cohesion increases. Prosocial behavior is defined as "other-focused" behaviors; prosocial individuals are focused on enhancing the welfare of others (Cote et al., 2011), even if it presents a cost to the self.

Prosocial behavior is dependent on a sense of community membership. Contextual cues may trigger team members in a cohesive team to develop a prosocial orientation (De Dreuet al., 2011). As a result, members may be willing to give in rather than push personal opinions and agendas for the benefit of the group. This can be problematic for creative endeavors. Markers of prosocial behavior, such as enhanced interpersonal relations and decreased likelihood of conflict (Beersma & De Dreu, 2005), may inhibit group creativity because functional conflict and dissatisfaction with the status quo can stimulate creativity (Beersma & De Dreu, 2005; Zhou & George, 2001). Cohesion promotes harmony and cooperation, while reducing conflict and distrust. We suggest that due to an expected rise in prosocial behavior in highly cohesive teams, individual team members feel pressure to conform or fall prey to groupthink, and therefore creative performance is stymied.

In sum, we suggest that trust increases as team cohesiveness increases, which in turn positively impacts team creative performance. However, the positive effects of trust are, at higher levels, overshadowed by a rise in prosocial behavior, which inhibits creativity by reducing conflict and increasing the risk of "rocking the boat." Given the opposing forces affecting the team cohesiveness-team creative performance relationship, we assert that:

*Hypothesis 1:* Team cohesiveness exhibits a curvilinear effect on team creative performance, assuming the form of 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 creative performance relative to their counterparts with both low and high team cohesiveness.

## Team Connectedness and Creative Performance: Accounting for Global Effects

Although teams are social systems in and of themselves, they also are embedded within broader social systems. Certain advantageous positions in the broader social system can provide "vision advantage" (Burt, 2010) from broad and early access to knowledge embedded in otherwise isolated parts of the network (Burt, 2000). Occupying what is referred to as a "broker" position in a social network is one advantageous position. Brokers bridge structural holes in a social network (Burt, 2000); that is, they connect otherwise unconnected individuals and groups. These ties enhance the permeability of group boundaries by facilitating information flow into a group from the global network (Stovel & Shaw, 2012), drawing in new, and non-redundant information for the team, the local network, to utilize. Because of their unique position, brokers control and facilitate information flow, which provide them with a measure of social capital (Burt, 2002). If members of a team have high connectivity within the global network, then it stands to reason that teams with high connectedness should have access to unique resources that improve creative performance. Therefore,

Hypothesis 2: High team connectedness increases team creative performance.

## **Converting Advantage to Performance: Systems Theory of Creativity**

Creativity is defined as "the development of original ideas that are useful or influential" (Paulus & Nijstad, 2003: 3). Individual creativity is the building block of organizational creativity and innovation and therefore an elemental force in firm performance and survival (Shalley & Gilson, 2004). Whereas few would deny the importance of the individual in the creative process, what is considered creative is essentially a social process (Csikszentmihalyi, 1988). The systems theory of creativity asserts that contextual and social elements condition the relationship between creative individuals and groups and the adoption of their creative output (Csikszentmihalyi, 1988, 1999). Therefore, the theory elevates the importance of context and the interaction between context and innovation performance, an important consideration in connecting internal team creative performance and subsequent innovative outcomes. Specifically, 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).

**Domain.** The domain represents the first component of the systems theory of creativity and is comprised of information, rules, and norms (Csikszentmihalyi, 1999). Creativity is not generalized or abstract but rather is domain specific (Csikszentmihalyi, 1999). The sum of domains, such as religion, academic disciplines, sports rules, and art, make up the dominant culture. Thoughts and actions are ordered and directed by the information individuals collect and internalize from the dominant 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 domain is where innovation outcomes manifest.

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: 124). Because ideas are constantly being conceived but few are worthy of implementation, gatekeepers are needed to avoid frivolous use of resources (Csikszentmihalyi, 1988). These experts serve as gatekeepers for the domain and protect the integrity of the field by controlling the criteria for what is considered creative (Csikszentmihalyi, 1999). Examples of gatekeepers include curators of museums in the domain of the visual arts and

peer reviewers and editors in academic disciplines. Similarly, film critics deter movie audiences from attending poor quality films (Moon, Bergey, & Iacobucci 2010), and vet films selected for industry awards. Critics, as informed third parties, help to alleviate the information asymmetry in judging the quality of creative output (Moon et al., 2010) by providing first-hand knowledge of the technical and subjective attributes that can signal quality (Suarez-Vazquez 2011). Gatekeepers determine which of the many innovative or original ideas are actually creative and facilitate the addition of those ideas and products to the domain. In sum, the field determines the creativity of an offering and guides the domain in the adoption decision.

The individuals. The third component in the systems theory of creativity is comprised of the individual(s). For creative tasks, these are the individuals involved in generating new, novel, useful ideas. 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 interaction with the social context (e.g., Bechtoldt, De Dreu, Nijstad, & Choi, 2010). This assertion expands creativity beyond the purview of a single individual and encompasses groups and teams. In sum, individuals and the groups to which they belong represent the source of creativity.

In exploring creative systems by employing social networks analysis, the present work develops hypotheses about the relationships between team creative performance and innovation outcomes. Specifically, we examine the linkages between the creative performance of teams, as determined by the field of expert gatekeepers, and the performance of the innovation in the market. This is an important and critical link often missing in current work, because gatekeeper assessment of creativity is not a guarantee of success. For example, studios invest millions of

dollars on movies that are critically acclaimed yet fail to connect with consumers. Similarly, academic articles vetted by reviewers and editors and deemed to be novel and useful often fail to be cited by other scholars or practitioners. Therefore, though the gatekeepers play a critical role in assessing the creativity of an offering, in the end, creative offerings are considered innovative and are socially adopted (or not) by customers (Sawyer, 2006), and a study of creative outcomes without this critical link is limited in the insights that can be gleaned from the results.

**Team networks, creativity, and innovation outcomes.** In the present study, we measure the adoption into the domain both subjectively and objectively once the innovation is introduced to the market. One obvious measure for acceptance of an innovation by a domain is the financial performance of that innovation. Intuitively, financial performance is expected to be impacted directly by team creative performance. Capon, Farley, and Hoenig (1990) revealed that 20 studies found a significant positive link between quality and economic returns. Given that quality assessments are synonymous with creativity in innovation, it is not surprising that we expect a highly creative product offering to lead to enhanced financial performance (Fornell et al., 1996).

However, although financial performance is an important metric, it is often confounded by other factors such as marketing-generated "buzz" that might have a short term effect, but will not guarantee acceptance into the domain. In creative industries, information on the cost of these marketing efforts is difficult to obtain (e.g., Simonton, 2009). For example, although all films generate revenue, many are unprofitable (Brewer et al., 2009; Simonton, 2009), which is which is why it is critical to use a second measure of innovation adoption: customer satisfaction. Customer satisfaction is arguably the most critical customer-related outcome, as it is a measure of adoption from the perspective of the consumer, rather than the firm. Customer satisfaction has been extensively studied in several fields, and has a wellestablished nomological network. Central to this network is a significant amount of support for quality as an antecedent of customer satisfaction (e.g., Anderson & Sullivan, 1993). In the development of the American Customer Satisfaction Index, Fornell and his colleagues (1996) found that customer satisfaction is more quality-driven than value- or price-driven. Cronin et al. (2000) found that the link between quality and satisfaction is robust and stable. In creative contexts, quality often is ambiguous and subjective (e.g., Suarez-Vazquez, 2011), leading the domain to rely heavily on the assessment of experts in determining the quality of a creative offering. There is a great deal of work in the marketing literature that supports the relationships between customer satisfaction, quality, and value (e.g., Cronin, Brady, & Hult, 2000; Spreng & Mackoy, 1996). Cronin, Brady, and Hult (2000) test competing models of the relationships between each of these constructs and demonstrate that the quality-satisfaction linkage is robust.

Having established the selection of focal innovation outcomes and articulated the intuitive link between team creative performance and those outcomes, we now turn back to the examination of the team socio-structures and, specifically, their effects on these innovation outcomes. Given the expected link between team socio-structural variables and creativity, and the relationship between creativity and satisfaction and innovation performance metrics, we expect team connectedness (in the global network) and cohesiveness (in the local network) to indirectly impact customer satisfaction and financial performance via team creative performance.

*Hypothesis 3*: Customer satisfaction is positively impacted indirectly by a) team connectedness and b) team cohesiveness via team creative performance.

*Hypothesis 4*: Innovation financial performance is positively impacted indirectly by a) team connectedness and b) team cohesiveness via team creative performance.

Moreover, we expect that the relationship is only partially mediated; we also expect that they will have distinct and direct effects on these innovation outcomes. We examine the direct effects of the team socio-structural characteristics in two ways. First, we assert that the 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. Prior research suggests that the more team members communicate with external others, the more effective those team members can be within the team (Ancona & Caldwell, 1992; Marrone, Tesluk, & Carson, 2007). Therefore, beyond indirect effects of team networks on innovation outcomes via team creative performance, we propose that team social structures have direct effects on innovation performance.

Specifically, we propose that team network characteristics 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 – importantly – 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 has focused on the end user and how product designers can use artifacts of user interaction to design better products (e.g., Stigliani, 2008). However, while adopting the concept of cognitive artifacts as sources of information available to influence product design, the present study reverses the flow of information. Specifically, we suggest that artifacts flow both ways, and relevant to this discussion, we focus on the flow of artifacts of functional team dynamics with the expectation that these artifacts flow to end consumers. We propose that consumers are sensitive to the artifacts of functional (dysfunctional) team dynamics, and the artifacts impact the consumer

experience with the product. In sum, we propose that when teams have access to unique information in the global network (high team connectedness) and carry that information to a cohesive team, that team is better able to realize the potential of that unique information. Effectively realizing the potential inherent in unique information results in a more polished product, which ultimately leaves customers more satisfied. Second, we suggest that there is a potential downside to highly connected teams. Building a team with desirable network characteristics comes at a price. For example, network ties have been correlated with advantages in salary negotiations (Ibarra & Deshpande, 2007). Moreover, access to unique resources also is associated with higher salaries (Seibert, Kraimer, & Liden 2001; Siedel, Polzer, & Stewart, 2000), suggesting that individuals who bridge structural holes are able to obtain higher levels of compensation, thereby negatively impacting innovation financial performance. Therefore,

*Hypothesis 5:* There is a positive interaction between team cohesiveness and team connectedness where the greater the team connectedness, the more team cohesiveness increases customer satisfaction.

*Hypothesis 6:* There is a negative relationship between a) team cohesiveness and b) team connectedness and the financial performance of an innovation.

#### **METHOD**

#### **Context, Design, and Sample**

The purpose of the present study is to establish the relationships between socio-structural team characteristics (i.e., team cohesiveness and connectedness), team creativity, and downstream innovation outcomes (i.e., customer satisfaction and product financial performance). The present study is set in the film industry. Films have been fertile ground for scholars examining service and experience goods (e.g., Hennig-Thurau, Houston, & Heitjans, 2009;

Moon et al., 2010). In films, quality is somewhat ambiguous and cannot be properly evaluated until after consumption (Suarez-Vazquez, 2011). Moreover, films are hypercompetitive environments (Lampel & Shamsie, 2003) 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 –generally are absent (Schmidt, Zayer, & Calantone, 2012).

Previous studies of teams in film (e.g., Reagans & Zuckerman, 2001) have conceptualized 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 creativity and innovation 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 cinematographers, casting directors, and 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, MetaCritic, and Box Office Mojo.

To ensure reliable and appropriate data, our sampling frame included wide-release films (shown on 600 screens or more) released between 2002 and 2011. Animated films, documentaries, musicals, and horror films were excluded from the sample due to the increased requirement for technical capabilities and additional specialized teams involved in their production. Films with a single director were also excluded since cohesion cannot be calculated on a single person. The sample included 10,187 directors – including assistant directors, first assistant director, and other supporting staff in a director role – of 1,128 films.

The study was conducted in two stages: Stage 1 consists of analysis of the social networks at the local and global levels as a means to calculate scores for connectedness and cohesion. Stage 1 uses nine years of interaction data (2002-2010) to derive the number of interactions between directors who worked on major releases in 2009-2011, which represent 283 wide release films with a release date between January 1, 2009 and December 31, 2011. This time period was chosen because it immediately follows the periods in which director socio-structural factors was measured (i.e., network measures were obtained from data between 2002 and 2010). Using seven year rolling windows, we used the interaction data from 2002-2010 to calculate connectedness scores in the global director network for *individual* directors who worked on major release films in 2009 to 2011, inclusive, and cohesiveness scores in a structural model and tests the relationships specified in the hypotheses.

### **Stage 1: Social Network Analysis**

**Social network data.** In step one of the social network stage, we constructed three symmetric, valued one-mode matrices using UCINET (Borgatti, Everett, & Freeman, 2002), where values indicate the number of film projects directors worked on together during three rolling seven-year periods. Specifically, to calculate the connectedness of directors working for 2009, social ties for years 2002-2008 were used; for 2010, social ties for 2003-2009 were used, and for 2011, social ties for 2004 to 2010 were used. We then aggregated the connectedness scores of the individual directors on the 2009-2011 teams to calculate the team connectedness

measure. Using the same interaction values from the 2002-2010 time period, we calculated cohesiveness for each of the director teams in 2009-2011.

An important consideration in social network studies, and one that has been largely ignored in prior research, is the proclivity for social ties to decay over time (Burt, 2001b). Specifically, Burt demonstrated that there is 50% chance that a social tie in year *t*-1 would be active in year *t*. To account for this, network ties were weighted such that  $w_{t-1} = .5w_t$ .

**Team connectedness.** Team connectedness was calculated using UCINET and is operationalized using Freeman's betweenness centrality, which is an indication of the degree to which individuals bridge structural holes in the social network (Hanneman & Riddle 2005; Wasserman & 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 & Riddle, 2005). 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.

**Team cohesiveness.** The cohesiveness of these 283 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). 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 & Faust, 1994). This normalization accounts for variance in team size. Table 1 shows the descriptive statistics for the constructs in Stage 1, as well as the Stage 2 variables.

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Insert Table 1 about here

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## **Stage 2: Structural Model**

The structural model was tested on the sample from January 2009 to December 2011 period, which is a separate sample from the interaction data used to construct the social networks (2002-2010). 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 Partial Least Squares 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 team creative performance, customer satisfaction, and innovation financial performance are examined. 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.

Team creative performance. Successful innovation in creative industries is difficult to assess (Stoneman, 2010). Novel innovations can be quickly forgotten (Henry, 2006) unless they are assessed as worthy by what Csikszentmihalyi (1999) termed "the field" comprised of individuals and groups empowered by the public to assess the quality of creative offerings introduced into the product domain. These individuals are considered "gatekeepers" in the domain. Although creativity has been measured in various ways in the film literature (Simonton, 2009), assessments of creativity in film have been primarily the domain of third party expert reviewers, known as movie critics, as the gatekeepers of the film domain. Critics, as informed third parties, help to alleviate the information asymmetry in judging the quality of output from creative industries (Moon et al., 2010) by providing second-hand knowledge of the technical attributes that can signal quality and creativity (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). 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 et al., 2009), indicating discriminant validity between critic ratings and user ratings.

The study operationalizes the team creative performance 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 et al., 2009; Hening-Thurau, Houston, & Heitjans, 2009).

**Innovation outcomes.** Financial performance was captured using data found in the boxofficemojo.com database. Customer satisfaction is operationalized as imdbpro.com user ratings. 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 databases, rottentomatoes.com and metacritic.com, sources used as a source of user ratings in prior literature (e.g., Chen, Liu, & Zhang, 2011). These ratings were added to improve measurement reliability and validity of the customer satisfaction construct.

**Control variables.** 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. For example, 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. In order to disentangle variance in downstream innovation outcomes resulting from star popularity, the StarMeter score for the top title star in each film was used for the star popularity construct.

Release and film specific factors not commonly found in other contexts also woer controlled for in the analysis. For example, theatrical release factors can vary; some films, for example, are shown for weeks, whereas others are quickly replaced (Brewer et al., 2009). Some scholars have suggested that duration does not guarantee success (Brewer et al., 2009), whereas others have found that theater release factors are related to critical evaluations, financial performance, and awards and nominations (Holbrook, 1999; Simonton, 2005). Thus, theater factors: duration and total number of screens on which the film was shown – were added as controls. Moreover, film genre and Motion Picture Association of America (MPAA) ratings have been proposed to impact film financial performance (Sawhney & Eliashberg, 1996), and were controlled for in the analysis. Finally, production time, team size, and budget were included as control variables. Taken together, the proposed model (see Figure 1) is composed of network variables representing team cohesiveness and team connectedness and variables representing team creative performance, customer satisfaction, and innovation financial performance. Although the model is far from exhaustive, it nonetheless includes key linkages between team socio-structural factors and important, downstream outcomes.

### **Data Analysis**

Partial Least Squares (PLS –SEM) was used to test the model (Ringle, Wende, & Will, 2005). Like covariance-based structural equation modeling, PLS allows for simultaneous evaluation of the proposed paths. Our interest lies in maximizing the variance explained in the dependent variables by the independent variables while minimizing error, which is the focus of Partial Least Squares SEM; our focus is on the predictive potential of socio-structural team factors in explaining variance in customer satisfaction and the financial performance of an innovation, making PLS an appropriate choice for this objective. Additionally, PLS-SEM offers high efficiency in parameter estimation, providing greater statistical power relative to covariance based structural equation modeling. Greater statistical power means that PLS-SEM is more likely to render a specific relationship significant when it is in fact significant in the population.

Finally and importantly, network data tends to be heavily skewed. As Table 1 demonstrates, the present study is no exception – several variables are significantly different from zero indicating significant deviations from normality, particularly the network variables. This is theoretically expected given that advantageous network positions are considered advantageous because they are not common. For example, there would be few structural holes to span if all employees were connected to everyone else, and there would be no structural hole to bridge if more than one person spanned a connection (Burt 2002). Therefore, by definition, we anticipate and find that the network variables are skewed and exhibit significant kurtosis, making PLS an appropriate methodology.

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 & Larcker, 1981; see Table 1). Additionally, all indicators were mean-centered prior to calculating multiplicative terms to mitigate any multicollinearity.

## RESULTS

Overall, the results of the structural model tests supported the proposed model. Table 2 illustrates the total effects, as well as the direct and indirect effects. Both parts of Hypothesis 1 are supported; team cohesiveness has a positive effect on team creative performance ( $\beta = .37$ ; p < .01), while the quadratic term has a negative and significant effect on team creative performance ( $\beta = .27$ ; p < .05), demonstrating that the relationship between team cohesiveness and creativity is curvilinear, with an inverted U-shape. Similarly, the effect of connectedness on team creative performance performance is positive and significant ( $\beta = .11$ , p < .05, one-tailed), supporting Hypothesis 2.

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Insert Table 2 about here

Team cohesiveness has a positive and significant indirect effect on both customer satisfaction ( $\beta = .27$ ; p < .01) and the financial performance of an innovation ( $\beta = .03$ ; p < .05, one-tailed) supporting hypotheses 3a and 4a. However, team connectedness only has a positive and significant indirect effect on customer satisfaction ( $\beta = .08$ ; p < .05, one-tailed), supporting hypothesis 3b, but has no effect on financial performance; hypothesis 4b is unsupported. Hypothesis 5 is also not supported. Specifically, team cohesiveness and team connectedness do not interact to positively impact customer satisfaction. Rather, the results indicate that team cohesiveness has a positive and significant direct effect on customer satisfaction ( $\beta = .13$ ; p <.05, one-tailed). The results of both the direct and indirect effects suggest that team creativity only partially mediates the impact of team cohesiveness, while team creativity fully mediates the effect of team connectedness. Finally, both team socio-structural factors negatively impact the financial performance of innovations directly (cohesiveness:  $\beta = -.12$ ; p < .05; connectedness:  $\beta$ = -.11; p < .05, one-tailed), supporting hypotheses 6a and 5b.

**Control variable results.** Control variables yielded significant effects on team creative performance, customer satisfaction, and innovation financial performance. Genre (whether a comedy, drama, action-adventure, or other), MPAA rating, and star popularity (but not team size) had significant effects on team creative performance and customer satisfaction, but only MPAA rating and star popularity had an effect on financial performance. Production time, release duration, and total theaters also impacted financial performance. The results of the controls are also found in Table 2.

#### DISCUSSION

### **Contributions and Implications**

The objective of the present study was to assess the effect of team connectedness and cohesiveness on team creative performance, customer satisfaction, and the financial performance of resulting innovations as key organizational outcomes. Films are an ideal context to study innovation and creativity because it is devoid of many of the confounding factors found in other contexts, such as brand effects and price volatility. Moreover, we can study multiple generations of product offerings while reducing environmental confounds such as economic conditions, due to the short lifecycle of a film. However, although the context of the present work was film, examples of creative teams can be found in more traditional organizations.

For example, Spotify, a popular commercial music streaming service, employs "squads" that have ownership over specific product areas for extended periods of time. 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 & 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 team structures. IDEO, an innovative new product development and design consulting firm, claim they "reject titles and big offices because they impose mental and physical barriers between teams and individuals" (Kelley & Littman, 2001: 243). Instead, IDEO established relatively self-governing "hot" or temporary teams in a flat and flexible structure (ABC, 1999). These creative teams are becoming more and more commonplace as organizations rely more heavily on innovation to survive in highly competitive marketplaces, making the present work both timely and applicable to the current climate of creativity.

Moreover, 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. The study offers a few surprising results. Specifically, although it's not surprising that team creative performance impacts customer satisfaction and the financial performance of the innovative offering, what is surprising is *how* socio-structural characteristics impact downstream innovation outcomes.

For example, contrary to common practice and scholarly thought, results indicate that there is a downside to highly cohesive and/or connected teams – these teams are not always the optimal configuration for effective team design when innovation is the goal. The direct effect of team cohesiveness on both creativity and indirectly and directly on customer satisfaction is positive and significant. This supports commonly held beliefs by practitioners that cohesive teams are better performers. However, this study demonstrates that the effects of team cohesiveness on creativity are curvilinear in an inverted U-shape, implying that there is an optimal level of cohesion between team members beyond which creativity suffers. This curvilinear effect carries over to indirectly impact customer satisfaction, which shows that the downstream customer experience is also negatively impacted by teams that are either too cohesive or not cohesive enough, while moderately cohesive teams are able to engender a more satisfactory customer experience. Moreover, theoretically, this supports the proposal that while customers do not interact with the team, the artifacts of the level of team cohesiveness remain in the resulting innovation, generating downstream effects.

Second, again, contrary to popular belief, utilizing teams that are highly cohesive or that include highly connected members may not be worth the financial capital it takes to acquire them; these highly connected individuals garner higher salaries than their less well-connected peers (Seibert et al., 2001; Siedel et al., 2000). For example, while the indirect effect of team cohesiveness on financial performance is positive and significant, the overall effect of team cohesiveness is negative, indicating that the boost to creativity may not be worth the premium that a firm might pay to hire a highly cohesive team. Similarly, while team connectedness has a positive direct effect on creativity, the total effect on financial performance is negative. Since financial resources for projects are often limited, it is possible allocating funds to salaries may reduce the funds available for implementation of innovations and solutions to complex issues, reducing the effectiveness of the resulting innovation.

Clearly, there are trade-offs inherent in the team design process. However, trade-offs regarding specific socio-structural characteristics has received little attention in the extant literature, a rift we address with this work. An important advantage of using structural models is the ability to simultaneously test both direct and indirect effects, allowing researchers to draw conclusions using the total effects of constructs on outcomes of interest. Similarly, the present work reveals both the total effects and the source of inaccurate beliefs practitioners may hold regarding highly cohesive teams or highly connected team members.

Moreover, as organizations continue to rely more heavily on team-generated innovation (Anderson et al., 2014), understanding factors that contribute to and enhance team creativity is particularly valuable. Yet, while we know that social context influences creativity, managers pay little attention to the social context because it is difficult to quantify, and collecting data can be challenging and time intensive (Cross & Parker, 2004). The present study offers a feasible method for uncovering informal social structures through prior project interaction, thereby making the implementation of network-based strategies an attainable goal.

Specifically, we address 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. Social network based team design strategies allow practitioners to predict likelihood of important team climate variables that impact team creative performance, such as conflict, prosocial behavior, and trust (Anderson et al., 2014; Beersma & De Dreu, 2005) by using social structures as predictive mechanisms. Most importantly, given the inseparability of social structures and the firm, the competitive advantage from social capital is sustainable (see Adler & Kwon, 2002; Burt, 1992; Kogut, 2000). Therefore, understanding and leveraging social structure may provide a source of sustainable competitive advantage.

For academic scholars, the present work not only opens new avenues for exploration but also address the need for cross-level and multilevel studies that "explain effects of variables at different levels of analysis" on creativity and innovation, as stated in Anderson et al.'s (2014: 1318) "state-of-the-science" review on innovation and creativity in organizations. Additionally, we contribute to the limited body of work in applied social networks that accounts for the multidimensional nature of social capital, a pressing need in the social network literature (Moliterno & Mahoney, 2011); by accounting for both global and local network structures, the present work addresses the need for multilevel approaches to empirical social capital research (Payne et al., 2011). The present study also adds to the ongoing dialogue in understanding organizational systems by uncovering how team social structure influences important downstream innovation outcomes. Specifically, the present work employs systemic thinking to elaborate on the interconnections between firm elements (teams) 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 an organizational context. By conceptualizing teams as nested social systems, within organizational systems, within the broader market place, we expand the application of systemic thinking beyond what is captured empirically 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 organizational outcomes. By linking organizations and teams to key downstream outcomes, the current study answers the call to examine supply-side factors in exploring important organizational outcomes (Moon et al., 2010). Relatedly, 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, where customers and teams do not directly interact. Prior research (e.g., Brady & Cronin, 2001) has identified the understanding of the quality-satisfaction and quality-profitability framework in remote services as a gap in the literature. Using the concept of cognitive artifacts in a novel way, we expose the mechanism for the indirect impact of team dynamics.

Finally, although the line of research is of general interest and applicability, the study of the film industry has intrinsic value due to its considerable economic impact (Moon, Bergey, & 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, 2012). However, film admission ticket sales have been on a downward trend in recent years (MPAA Theatrical Statistics Summary, 2011), and 60 - 70 % of films are unprofitable (Brewer, Kelley, & Jozefowicz, 2009). As a result, investors and other stakeholders in the industry struggle to determine which films to support (Eliashberg, Elberse, & Leender, 2006), leading one private-equity firm manager to surmise, "The business model within films is broken" (*The Economist*, 2013). Therefore, we novel insights into team-based sources of variation in film creative quality and subsequent customer satisfaction scores – an important concern for the film industry (Brewer et al., 2009).

## **Limitations and Future Research Directions**

The current research study offers many insights. However, like any study, it has limitations that open the door to future research opportunities. First, we briefly mention the complexities of understanding financial inputs and outputs as they relate to creativity, and our study is limited in that it was not able to capture, for example, marketing "buzz" effects. Future research could explore the interplay between financial resources and creativity. Also, 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.

Additionally, an interesting hierarchical extension to the present study is to explore the relationship between network structures and firm-level outcomes. Firms introduce multiple products into the market, and firm outcomes are a result of cumulative performance of each product offering. Another limitation that reveals an area of future research is the opportunity to

capture, either through qualitative or quantitative methods, the artifacts of team dysfunction as interpreted by customers. Finally, the present study analyzes domestic innovation performance, but future research could explore international markets as well.

## Conclusion

The present work also offers some important insights into the changing topology of organizational structures. Traditional organizations are becoming flatter and demanding higher levels of collaboration, and when combined with increased mobility within and between teams, traditional views of organizations become obsolete. "Hidden socio-structural characteristics are increasingly influential in "getting work done," yet few managers understand how to leverage or even measure those hidden networks (Cross & Parker, 2004). The present work shows that using prior interactions can provide a feasible way to predict the effects of these socio-structural characteristics. Moreover, systems theory provides a unique perspective on organizational phenomena, blurring the lines between siloed research streams.

The present study suggests that multidisciplinary research is essential to understand the systems in which organizational 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. These social structures create ripples into the marketplace that impact outcomes critical to management practitioners and scholars alike. Clearly, exploration into social networks in organizations should extend beyond the boundaries of the firm.

### REFERENCES

- ABC Nightline. 1999). The Deep Dive: Innovative Design to Improve the Shopping Cart. *Nightline*, New York: American Broadcasting Company (ABC News Home Video N 990209-01).
- Adler, P. S., & Seok-Woo Kwon, S.-W. 2002. Social capital: Prospects for a new concept. Academy of Management Review, 27(1): 17-40.
- Ahearne, M., MacKenzie, S., Podsakoff, P., Mathieu, J., & Lam, S. 2010. The role of consensus in sales team performance. *Journal of Marketing Research*, 47(3): 458-469.
- Ahuja, G. 2000. Collaboration networks, structural holes, and innovation: A longitudinal study. *Administrative Science Quarterly*, 45(3): 425 - 455.
- Ancona, D.G., & Caldwell, D.F. 1992. Bridging the boundary: External activity and performance in organizational teams. *Administrative Science Quarterly*, 37(4): 634–665.
- Anderson, N., Potočnik, K., & Zhou, J. 2014. Innovation and creativity in organizations a stateof-the-science review, prospective commentary, and guiding framework. *Journal of Management*, 40(5): 1297-1333.
- Anderson, E.W., & Sullivan, M.W. 1993. The antecedents and consequences of customer satisfaction for firms. *Marketing Science*, 16(2): 129-45
- Baas, M., De Dreu, C. K., & Nijstad, B. A. 2008. A meta-analysis of 25 years of mood-creativity research: Hedonic tone, activation, or regulatory focus? *Psychological Bulletin*, 134: 779.
- Baldwin, T. T., Bedell, M. D., & Johnson, J. L. 1997. The social fabric of a team-based MBA program: Network effects on student satisfaction and performance. *Academy of Management Journal*, 40(6): 1369-1397.
- Bantel, K.A. & Jackson, S.E. 1989. Top management and innovations in banking: does the composition of the top team make a difference? *Strategic Management Journal*, 10: 107.

- Bare, R. L. 2000. *The film director: Updated for today's filmmaker, the classic, practical reference to motion picture and television techniques.* New York: Wiley.
- Bechtoldt, M., De Dreu, C., Nijstad, B., Choi, H., 2010. Motivated information processing, social tuning, and group creativity. *Journal of Personality and Social Psychology*, 99 (S): 622-637.
- Beersma, B., & De Dreu, C. K. W. 2005. Conflict's consequences: Effects of social motives on post-negotiation creative and convergent group functioning and performance. *Journal of Personality and Social Psychology*, 89: 358-374.
- Bettenhausen, K., & Murnighan, J. K. 1985. The emergence of norms in competitive decisionmaking groups. *Administrative Science Quarterly*, 30(3): 350-372.
- Borgatti, S. P., Everett, M. G., & Freeman, L. C. 2002. Ucinet for windows: Software for social network analysis. Harvard, MA: Analytic Technologies.
- Borgatti, S. P., & Foster, P. C. 2003. The network paradigm in organizational research: A review and typology. *Journal of Management*, 29(6): 991-1013.
- Box Office Mojo, [available at: boxofficemojo.com].
- Brady, M. K., & Cronin Jr, J. J. 2001. Some new thoughts on conceptualizing perceived service quality: a hierarchical approach. *Journal of Marketing*, 65(3): 34-49.
- Brewer, S. M., Kelley, J. M., & Jozefowicz, J. J. 2009. A blueprint for success in the US film industry. *Applied Economics*, 41(5): 589-606.
- Burt, R. S. 1992. *Structural holes: The social structure of competition*. Cambridge, MA: Harvard University Press.
- Burt, R. S. 1997. The contingent value of social capital. *Administrative Science Quarterly*, 42(2): 339-365.

- Burt, R. S. 2000. The network structure of social capital. *Research in Organizational Behavior*, 22: 345-423.
- Burt, R. S. 2001. Structural holes versus network closure as social capital. In R. Burt (Ed.), *Social Capital: Theory and Research*: 31-56. New York: Aldine de Gruyter.
- Burt, R. S. 2001b. Attachment, decay, and social network. *Journal of Organizational Behavior*, 22(6): 619-643.
- Burt, R. S. 2002. The social capital of structural holes. In M. F. Guillen, R. Collins, P. England,
  & M. Meyer (Eds.), *The new economic sociology: Developments in an emerging field:*148–189. New York: Russell Sage Foundation.
- Burt, R. S. 2005. Brokerage and closure: An introduction to social capital. Oxford: OUP.
- Burt, R. S. 2009. 2. Network duality of social capital. In V. O. Bartkus, & J. H. Davis (Eds.), Social capital: Reaching out, reaching in: 39. Edward Elgar Publishing.
- Burt, R. S. 2010. *Neighbor networks: Competitive advantage local and personal*. NY: Oxford University Press.
- Capon, N., Farley, J. U., & Hoenig, S. 1990. Determinants of financial performance: a metaanalysis. *Management Science*, 36(10): 1143-1159.
- Chen, Y., Liu, Y., & Zhang, J. 2012. When do third-party product reviews affect firm value and what can firms do? The case of media critics and professional movie reviews. *Journal of Marketing*, 76(2): 116-134.
- Coleman, J. S. 1990. *Foundations of social theory*. Cambridge: Belknap Press of Harvard University Press.
- Côté, S., Kraus, M. W., Cheng, B. H., Oveis, C., Van der Löwe, I., Lian, H., & Keltner, D. 2011. Social power facilitates the effect of prosocial orientation on empathic accuracy. *Journal of Personality and Social Psychology*, 101(2): 217.

- Cross, R. L. & Parker, A. 2004. *The hidden power of social networks*. Cambridge, MA: Harvard Business School Press.
- Csikszentmihalyi, M. 1988. Society, culture, and person: A systems view of creativity. Cambridge: University Press.
- Csikszentmihalyi, M. 1999. 16 implications of a systems perspective for the study of creativity. In R. J. Sternberg (Ed.), *Handbook of creativity*: 313-338. Cambridge: University Press.
- De Dreu, C. K., Nijstad, B. A., Bechtoldt, M. N., & Baas, M. 2011. Group creativity and innovation: A motivated information processing perspective. *Psychology of Aesthetics, Creativity, and the Arts*, 5(1): 81.
- Elberse, A. 2007. The power of stars: Do star actors drive the success of movies? *Journal of Marketing*, 71(4): 102-120.
- Eliashberg, J., Elberse, A., & Leenders, M. 2006. The motion picture industry: Critical issues in practice, current research, and new research directions. *Marketing Science*, 25: 638-661.
- Fornell, C., Johnson, M. D., Anderson, E., Cha, J., & Bryant, B. 1996. The American customer satisfaction index: nature, purpose, and findings. *Journal of Marketing*, 60(4): 7-18.
- Fornell, C., & Larcker, D. F. 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1): 39-50.
- George, J. 2007. Creativity in organizations. The Academy of Management Annals, 1: 439-477.
- Granovetter, M. 1985. Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, 91(November): 481-510.
- Hackman, J. R. 1998. Why teams don't work. In R. S. Tindale et al., (Eds.), *Theory and research* on small groups: 245-267. New York: Plenum.

- Hackman, J. R. 2012. From causes to conditions in group research. *Journal of Organizational Behavior*, 33(3): 428-444.
- Hanneman, R. A., & Riddle, M. 2005. Introduction to social network methods. Riverside, CA: University of California, Riverside. http://faculty.ucr.edu/~hanneman/.
- Hennig-Thurau, T., Houston, M. B., & Heitjans, T. 2009. Conceptualizing and measuring the monetary value of brand extensions: The case of motion pictures. *Journal of Marketing*, 73(6): 167-183.
- Henry, J. (Ed.) 2006. Creative management and development. Thousand Oaks, CA: Sage.
- Holbrook, M. B. 1999. Popular appeal versus expert judgments of motion pictures. *Journal of Consumer Research*, 26(2): 144-155.
- Ibarra, H., & Deshpande, P. H. 2007. Networks and identities: Reciprocal influences on career processes and outcomes. *Handbook of Career Studies*, 61(2): 268-282.
- Janz, B. D., Colquitt, J. A., & Noe, R. A. 1997. Knowledge worker team effectiveness: The role of autonomy, interdependence, team development, and contextual support variables. *Personnel Psychology*, 50(4): 877-904.
- Jehn, K. A. 1995. A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40(2): 256-282.
- Johnson, M. D., & Fornell, C. 1991. A framework for comparing customer satisfaction across individuals and product categories. *Journal of Economic Psychology*, 12(2): 267-286.
- Kelley, T. & Littman, J. 2001. *The art of innovation: Lessons in creativity from IDEO, America's leading design firm.* New York: Currency Doubleday.
- Kimberly, J. R. 1976. Organizational size and the structuralist perspective: a review, critique, and proposal. *Administrative Science Quarterly*, 21 (4): 571-597.

- Kniberg, H. & A. Ivarsson. 2012. Here's how Spotify scales up and stays agile: It runs 'squads' like lean startups. (Blog post by: Ingrid Lunden). *Techcrunch*.
- Kozlowski, S. W. J. & Bell, B. F. 2001. Work groups and teams in organizations. In W. C.
  Borman, D. R. Ilgen & R. J. Klimoski, (Eds.), *Handbook of psychology (Vol. 12): Industrial and organizational psychology*: 333-375. New York: Wiley-Blackwell.
- Krackhardt, D. 1992. The strength of strong ties: The importance of philos in organizations. In
  N. Nohria and R. Eccles (Eds.), *Networks and organizations: Structure, form, and action:*216-239. Boston: Harvard Business School Press.
- Kratzer, J., Leenders, R. T. A., & Van Engelen, J. M. 2005. Informal contacts and performance in innovation teams. *International Journal of Manpower*, 26(6): 513-528.
- Lampel, J. & Shamsie, J. 2003. Capabilities in motion: New organizational forms and the reshaping of the Hollywood movie industry. *Journal of Management Studies*, 40: 2189.
- Lin, N. 1982. Social resources and instrumental action. In P. Marsden & N. Lin (Eds.), *Social structure and network analysis*: 131-145. Beverly Hills, CA: Sage.
- Lin, N. 1986. Conceptualizing social support. In N. Lin, A. Dean, & W. Ensel (Eds.), *Social support, life events and depression*. New York: Academic Press.
- Lin, N. 1999. Building a network theory of social capital. *Connections*, 22(1): 28-51.
- Marrone, J. A., Tesluk, P. E., & Carson, J. B. (2007). A multilevel investigation of antecedents and consequences of team member boundary-spanning behavior. *Academy of Management Journal*, 50(6), 1423-1439.
- Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. 2008. Team effectiveness 1997-2007: A review of recent advancements and a glimpse into the future. *Journal of Management*, 34(3): 410-476.

- McEvily, B., Perrone, V., & Zaheer, A. 2003. Trust as an organizing principle. *Organization Science*, 14(1), 91-103.
- Menguc, B., Auh, S., & Uslu, A. 2013. Customer knowledge creation capability and performance in sales teams. *Journal of the Academy of Marketing Science*, 41(1): 19-39.
  MetaCritic [available at: metacritic.com].
- Moliterno, T. P., & Mahony, D. M. 2011. Network theory of organization: A multilevel approach. *Journal of Management*, 37(2): 443-467.
- Montag, T., Maertz, C. P., & Baer, M. 2012. A critical analysis of the workplace creativity criterion space. *Journal of Management*, 38(4): 1362-1386.
- Moon, S., Bergey, P. K., & Iacobucci, D. 2010. Dynamic effects among movie ratings, movie revenues, and viewer satisfaction. *Journal of Marketing*, 74(1): 108-121.
- Movie Database [available at: imdb.com].
- MPAA Theatrical Statistics Summary. 2011.
- Norman, D. A. 1991. Cognitive artifacts. In J. M. Carroll (Ed.), *Designing interaction: Psychology at the human-computer interface*. New York: Cambridge University Press.
- Paulus, P. 2000. Groups, teams, and creativity: The creative potential of idea-generating groups. *Applied Psychology*, 49(2): 237-262.
- Paulus, P. B. & Nijstad, B. A. 2003. Group creativity: Innovation through collaboration. New York: Oxford University Press.
- Perry-Smith, J. E. 2006. Social yet creative: The role of social relationships in facilitating individual creativity. *Academy of Management Journal*, 49: 85-101.
- Perry-Smith, J. E., & Shalley, C. E. 2003. The social side of creativity: A static and dynamic social network perspective. *Academy of Management Review*, 28(1): 89-106.

- Putnam, R. D. 1995. Bowling alone: America's declining social capital. *Journal of Democracy*, 6(1): 65-78.
- Reagans, R., & Zuckerman, E. W. 2001. Networks, diversity, and productivity: The social capital of corporate R&D teams. *Organization Science*, 12(4): 502-517.
- Richter-Reichhelm, J. 2013. Using independent teams to scale a small company: A look at how games company Wooga works. *The Next Web*.
- Ringle, C.M., Wende, S., & Will, S. 2005. SmartPLS 2.0 (M3) Beta, Hamburg, http://www.smartpls.de.
- Salas, E., Dickinson, T. L., Converse, S. A., & Tannenbaum, S. I. 1992. Toward an understanding of team performance and training. In R. Swezey & E. Salas (Eds.), *Teams: Their training and performance:* 3-29. Norwood, NJ: Ablex Publishing Corporation.
- Sawhney, M. S., & Eliashberg, J. 1996. A parsimonious model for forecasting gross box-office revenues of motion pictures. *Marketing Science*, 15(2), 113-131.
- Sawyer, K. 2006. *Explaining creativity: The science of human innovation*. Oxford: Oxford University Press.
- Schmidt, J. B., Zayer, L. T., & Calantone, R. J. 2012. Grumpier old men: Age and sex differences in the evaluation of new services. *Journal of Product Innovation Management*, 29(1): 88-99.
- Seibert, S. E., Kraimer, M. L., & Liden, R. C. 2001. A social capital theory of career success. Academy of Management Journal, 44(2): 219-237.
- Seidel, M. D. L., Polzer, J. T., & Stewart, K. J. 2000. Friends in high places: The effects of social networks on discrimination in salary negotiations. *Administrative Science Quarterly*, 45(1): 1-24.

- Shalley, C.E. & Gilson, L.L. 2004. What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *The Leadership Quarterly*, 15.
- Simonton, D. K. 2005. Cinematic creativity and production budgets: Does money make the movie? *The Journal of Creative Behavior*, 39(1): 1-15.
- Simonton, D. K. 2009. Cinematic success criteria and their predictors: The art and business of the film industry. *Psychology & Marketing*, 26(5): 400-420.
- Sparrowe, R. T., Liden, R. C., Wayne, S. J., & Kraimer, M. L. 2001. Social networks and the performance of individuals and groups. *Academy of Management Journal*, 44: 316-325.
- Stewart, G. L. 2006. A meta-analytic review of relationships between team design features and team performance. *Journal of Management*, 32(1): 29-55.
- Stigliani, I. 2008. Artifacts and creativity: The role of artifacts during the creative process in a product design firm. *Academy of Management Proceedings*, 1: 1-6.
- Stoneman, P. 2010. *Soft innovation: Economics, product aesthetics, and the creative industries.* New York: Oxford University Press.
- Stovel, K., & Shaw, L. 2012. Brokerage. Annual Review of Sociology, 38, 139-158.
- Suárez-Vázquez, A. 2011. Critic power or star power? The influence of hallmarks of quality of motion pictures: an experimental approach. *Journal of Cultural Economics*, 35: 119-135.
- Sundstrom, E., De Meuse, K. P., & Futrell, D. 1990. Work teams: Applications and effectiveness. *American Psychologist*, 45(2): 120.
- Tannenbaum, S. I., Mathieu, J. E., Salas, E., & Cohen, D. 2012. On teams: Unifying themes and the way ahead. *Industrial and Organizational Psychology*, 5(1): 56-61.

The Economist. 2013. Split screens: A tale of two tinseltowns. (accessed February 2013).

- The Ken Blanchard Companies. 2006. The critical role of teams. [available at: www.kenblanchard.com/img/pub/pdf\_critical\_role\_teams.pdf].
- U. S. Department of Labor. 2012. May 2012 National industry-specific occupational employment and wage estimates, NAICS 512100 - Motion Picture and Video Industries.
- Uzzi, B., & Spiro, J. 2005. Collaboration and creativity: The small world problem. *American Journal of Sociology*, 111(2): 447-504.
- Wang, S., & He, Y. 2008. Compensating nondedicated cross-functional teams. Organization Science, 19(5): 753-765.
- Wasserman, S. & Faust, K. 1994. Social network analysis: Methods and applications. Cambridge, UK: Cambridge University Press.
- Zhou, J., & George, J. M. 2001. When job dissatisfaction leads to creativity: Encouraging the expression of voice. *Academy of Management Journal*, 44(4): 682-696.
- Zhou, J., & Shalley, C. E. 2003. Research on employee creativity: A critical review and directions for future research. *Research in Personnel and Human Resources Management*, 22: 165-218.

# Table 1

# Correlations, Descriptive Statistics, and Adjusted $R^2$

|                              | (1)   | (2)  | (3)   | (4)   | (5)   | (6)   | (7)   | (8)   | (9)   | (10)  | (11)  | (12)  | (13)  | (14)  | (15)    |
|------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| (1) IV-Team Cohesiveness     |       |      |       |       |       |       |       |       |       |       |       |       |       |       |         |
| (2) IV-Team Connectedness    | 56    |      |       |       |       |       |       |       |       |       |       |       |       |       |         |
| (3) MED-Creativity           | .11   | .01  |       |       |       |       |       |       |       |       |       |       |       |       |         |
| (4) DV-Customer Satisfaction | .11   | .02  | .81   |       |       |       |       |       |       |       |       |       |       |       |         |
| (5) DV-Financial Performance | 02    | .18  | .20   | .28   |       |       |       |       |       |       |       |       |       |       |         |
| (6) CTRL-Financial Resources | 01    | .32  | .02   | .07   | .68   |       |       |       |       |       |       |       |       |       |         |
| (7) CTRL-Genre_Action-Adv    | 03    | .24  | 04    | 06    | .47   | .22   |       |       |       |       |       |       |       |       |         |
| (8) CTRL-Genre_Comedy        | 37    | 18   | .03   | 23    | 24    | 04    | 30    |       |       |       |       |       |       |       |         |
| (9) CTRL-Genre_Drama         | .31   | 18   | .01   | .30   | 23    | 02    | 34    | 33    |       |       |       |       |       |       |         |
| (10) CTRL-Production Time    | .10   | 05   | .32   | .08   | .03   | 08    | .04   | .02   | .02   |       |       |       |       |       |         |
| (11) CTRL-RatedR             | .15   | 14   | 05    | .20   | 23    | 06    | 03    | .01   | .06   | 03    |       |       |       |       |         |
| (12) CTRL-Release Duration   | .41   | .54  | .09   | .38   | .27   | .05   | 02    | 06    | 01    | .02   | 18    |       |       |       |         |
| (13) CTRL-Star Popularity    | .27   | .41  | .12   | .20   | .32   | .06   | .20   | 24    | 03    | .09   | 03    | .24   |       |       |         |
| (14) CTRL-Team Size          | 02    | .02  | .05   | 04    | .05   | 09    | 05    | 02    | .08   | .12   | 04    | 06    | .00   |       |         |
| (15) CTRL-Theaters           | 04    | .59  | .06   | 10    | .64   | .23   | .28   | 01    | 32    | .07   | 16    | .24   | .29   | .05   |         |
| Mean                         | .34   | .15  | 49.00 | 6.032 | 68.72 | 54.34 | .40   | .45   | .44   | 1.52  | .32   | 92.38 | .14   | 9.38  | 2750.16 |
| Standard Deviation           | .50   | .12  | 21.36 | 1.307 | 78.37 | 49.70 | .49   | .50   | .50   | .77   | .47   | 38.93 | .25   | 5.45  | 785.09  |
| Avg. Skewness (z-score)      | 5.15  | 8.50 | (ns)  | (ns)  | 25.14 | 12.29 | 2.85  | (ns)  | (ns)  | -3.64 | 5.42  | 7.91  | 17.87 | 11.01 | -5.38   |
| Avg. Kurtosis (z-score)      | -4.60 | 5.23 | -2.58 | (ns)  | 76.30 | 10.13 | -6.38 | -6.81 | -6.73 | -4.80 | -4.82 | 12.40 | 21.00 | 9.15  | (ns)    |
| Average Variance Extracted   | -     | .96  | .97   | .86   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -       |
| Composite Reliability        | -     | .98  | .99   | .95   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -       |
| Adjusted R <sup>2</sup>      |       |      | .18   | .69   | .66   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -       |

# Table 2

| Latent Variable 1                                   |               | Latent Variable 2               | Direct<br>Effects | Indirect<br>Effects | Total<br>Effects |
|---|---------------|---------------------------------|-------------------|---------------------|------------------|
| IV-Team Cohesiveness                                | $\rightarrow$ | MED-Creativity                  | .37 ***           |                     | .37 ***          |
| Quadratic: IV-Team Cohesiveness                     | $\rightarrow$ | MED-Creativity                  | 27 **             |                     | 27 **            |
| IV-Team Connectedness                               | $\rightarrow$ | MED-Creativity                  | .11 *             |                     | .11 *            |
| MED-Creativity                                      | $\rightarrow$ | DV-Customer Satisfaction        | .73 ***           |                     | .73 ***          |
| MED-Creativity                                      | $\rightarrow$ | DV-Financial Performance        | .09 **            |                     | .09 **           |
| IV-Team Cohesiveness                                | $\rightarrow$ | DV-Customer Satisfaction        | .13 *             | .27 ***             | .40 ***          |
| IV-Team Connectedness                               |               | DV-Customer Satisfaction        | .11 (ns)          | .08 *               | .19 **           |
| Interaction Effect: Connectedness x<br>Cohesiveness | →             | DV-Customer Satisfaction        | _ (ns)            |                     | _ (ns)           |
| Quadratic: IV-Team Cohesiveness                     | $\rightarrow$ | DV-Customer Satisfaction        |                   | 20 **               | 20 **            |
| IV-Team Cohesiveness                                | $\rightarrow$ | <b>DV-Financial Performance</b> | 12 **             | .03 *               | 08 *             |
| IV-Team Connectedness                               | $\rightarrow$ | <b>DV-Financial Performance</b> | 11 *              | .01 (ns)            | 10 *             |
| Quadratic: IV-Team Cohesiveness                     | $\rightarrow$ | <b>DV-Financial Performance</b> |                   | _ (ns)              | 02 (ns)          |
| CTRL-Financial Resources                            | $\rightarrow$ | DV-Financial Performance        | .44 ***           |                     | .44 ***          |
| CTRL-Genre_Action-Adventure                         | $\rightarrow$ | DV-Customer Satisfaction        | 07 *              |                     | 07 *             |
| CTRL-Genre_Action-Adventure                         | $\rightarrow$ | DV-Financial Performance        | _ (ns)            |                     | _ (ns)           |
| CTRL-Genre_Comedy                                   | $\rightarrow$ | DV-Customer Satisfaction        | 20 ***            | 075 *               | 28 ***           |
| CTRL-Genre_Comedy                                   | $\rightarrow$ | DV-Financial Performance        | _ (ns)            | _ (ns)              | _ (ns)           |
| CTRL-Genre_Comedy                                   | $\rightarrow$ | MED-Creativity                  | 10 *              |                     | 10 *             |
| CTRL-Genre_Drama                                    | $\rightarrow$ | DV-Customer Satisfaction        | .01 (ns)          | .194 ***            | .20 ***          |
| CTRL-Genre_Drama                                    | $\rightarrow$ | DV-Financial Performance        | _ (ns)            | .023 **             | _ (ns)           |
| CTRL-Genre_Drama                                    | $\rightarrow$ | MED-Creativity                  | .26 ***           |                     | .26 ***          |
| CTRL-Production Time                                | $\rightarrow$ | DV-Financial Performance        | 07 **             |                     | 07 **            |
| CTRL-RatedR   | $\rightarrow$ | DV-Customer Satisfaction        | .01 (ns)          | .145 ***            | .16 ***          |
| CTRL-RatedR   | $\rightarrow$ | DV-Financial Performance        | .03 (ns)          | .017 *              | .05 *            |
| CTRL-RatedR   | $\rightarrow$ | MED-Creativity                  | .20 ***           |                     | .20 ***          |
| CTRL-Release Duration                               | $\rightarrow$ | DV-Financial Performance        | .32 ***           |                     | .32 ***          |
| CTRL-Star Popularity                                | $\rightarrow$ | DV-Customer Satisfaction        | .08 **            | .123 ***            | .20 ***          |
| CTRL-Star Popularity                                | $\rightarrow$ | DV-Financial Performance        | .14 ***           | .015 *              | .15 ***          |
| CTRL-Star Popularity                                | $\rightarrow$ | MED-Creativity                  | .17 ***           |                     | .17 ***          |
| CTRL-Team Size                                      | $\rightarrow$ | DV-Customer Satisfaction        |                   | _ (ns)              | _ (ns)           |
| CTRL-Team Size                                      | $\rightarrow$ | DV-Financial Performance        |                   | _ (ns)              | _ (ns)           |
| CTRL-Team Size                                      | $\rightarrow$ | MED-Creativity                  | _ (ns)            |                     | _ (ns)           |
| CTRL-Theaters                                       | $\rightarrow$ | DV-Financial Performance        | .24 ***           |                     | .24 ***          |

# Direct, Indirect, and Total Effects with Significance

*p* < .01

*p* < .05

p < .05 (one-tailed)

not significant



An Illustration of Global and Local Networks



# Figure 2

# Model of Team Networks Structure, Team Creative Performance,



# and Innovation Adoption