

JOURNALIST AS INFORMATION PROVIDER: EXAMINING THE ONE-VOICE
MODEL OF A CORPORATE SPORTS ACCOUNT

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While journalists were once viewed as gatekeepers, dispensing news and information via one-way communication channels, their role as information provider has evolved. Nowhere is this more apparent than on the social networking site Twitter, where information seekers have unprecedented access to information providers. The two-way communication that these information seekers have come to expect can be challenging for organizations such as ESPN who have multiple Twitter accounts and millions of followers. By designating one team of people as responsible for the organization's largest Twitter account, SportsCenter, ESPN has sought to establish manageable methods of interacting with this account's followers, while furthering the goals of the organization and providing sports news around the clock. This study provides a better understanding of the group responsible for ESPN's SportsCenter Twitter account: the motivation and strategies behind the group's Twitter use as well as the dynamics of this network, such as information flow and collaboration. Relying on the information seeking and communication model, this study also provides a better understanding of information exchanges with those outside the network, specifically a selection of the account's Twitter followers. Additionally, the role of journalist as information provider and certain themes that emerged from the content of the tweets are discussed. The research study employed social network analysis and exploratory, descriptive case study methods. The results of this study contribute to social network and information theory as well as to journalistic and information science practice.

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CHAPTER 1

INTRODUCTION

Background

While journalists were once viewed as gatekeepers, dispensing news and information via one-way communication channels such as newspapers, their role as information provider has evolved. Nowhere is this more apparent than on the microblogging and social networking site Twitter (<http://twitter.com>), where average information seekers have unprecedented access to their favorite athletes, celebrities, and news organizations. The two-way communication that these information seekers have come to expect can be challenging for organizations such as ESPN, founded as the Entertainment and Sports Programming Network, who have multiple Twitter accounts and millions of followers. By designating one team of people as responsible for the organization's largest Twitter account, SportsCenter, ESPN has sought to establish manageable methods of interacting with this account's more than 24 million followers, while furthering the goals of the organization and providing sports news around the clock, as its television network does.

This particular team is called the Social Production Group, and, at the time of this study, it was made up of eight individuals who work in the roles of producers, associate producers, creators, and production assistants at ESPN. Also at the time of this study, there were plans to add at least three more people to the team. They are all responsible for updating the SportsCenter Twitter account "24-7-365," tweeting about all the sports that ESPN covers, including football, basketball, and baseball. While they do not create content for other Twitter accounts at ESPN, they do have the responsibility of

monitoring and interacting with other accounts both inside and outside the organization, creating original images and video to appear in the Twitter timeline, and negotiating hashtags that are used to foster audience participation. This type of coverage necessitates multiple operators staffing the account while creating a single, even personal, “brand” under the SportsCenter name. The leader of the group has said, while some of the work is accomplished independently, these individuals collaborate in teams whenever possible to achieve their goals.

This environment provides multiple opportunities and justifications for analysis. Due to the rapidly evolving nature of the Internet in general as well as Twitter in particular, there is a need for ongoing sociological, communication, and information science research regarding the site as well as further study concerning the use of the site by journalists and the media. In addition, there have not been any studies found that have employed both social network analysis and case study methods to examine the use of Twitter by a nationally-televised sports show, nor have there been any located that address the implications of having multiple operators working as a team to present a common face under the banner of one account as in this situation. While this is a relatively common practice across industries, including information science industries, there has been little in the academic literature to examine how these teams actually work and recommend best practices for creating a unified voice on a single account. This dissertation will explore and describe a case study of this team of information providers and will contribute to social network and information theory as well as help validate the Information Seeking and Communication Model (Robson, 2013; Robson &

Robinson, 2013). This study will also inform practical application in the fields of journalism and communication.

Journalist as Information Provider

Both journalists and information professionals have had to reevaluate their interactions with information seekers in light of the democratization of information. These information seekers are no longer dependent on gatekeepers to provide them with news or access to many resources, and both fields have become increasingly user-centered in theory and practice (Larsson, 2013; Nahl, 2010). Additionally, Bates (1999) as well as Robson and Robinson (2013) linked the two fields on a theoretical basis. “Information behaviour in its widest sense also includes communication and provision of information” (Robson and Robinson, 2013, p. 169). Because of this type of link, Robson (2013) developed the Information Seeking and Communication Model that combines insights from both information science and communication in order to better understand information behavior.

Davies and Williams (2013) noted that the information behavior (IB) of information providers, in particular, needs further research. In their article for proposing a framework for researching this area, they consider journalists as information providers. They also cited Robson and Robinson’s (2013) article on the Information Seeking and Communication Model as providing “opportunities for further developing the concept of provider IB across LIS and communication disciplines” (p. 557). This model offers the chance to look at information providers and users individually and when they are in communication with one another.

Robson (2013) initially tested this model in the field of healthcare, which has also been influenced by the democratization of information, and there are further parallels between healthcare professionals and journalists as information providers. For instance, Robson examined a for-profit pharmaceutical company in the role of information provider, interacting with physicians as information users. Many of the companies communicated promotional materials and other information, as ESPN would do on Twitter, but, similarly, they were not guaranteed an interaction with information users or questions from information seekers. However, there were instances of two-way communication, and this study found many of these instances and analysis of them useful when examining the idea of journalist as information provider with social network and content analysis methods.

Social Network Research

At the core, social network theory and analysis examine relationships between entities as well as the patterns and implications of those relationships (Wasserman & Faust, 1994). These entities can be people, organizations, or institutions and are referred to as actors in the network (Haythornthwaite, 1996). Borgatti, Everett, and Johnson (2013) said that social networking sites such as Twitter “contain information that is inherently network-oriented” (p. 58). They said, in these networks, relationships could be measured through established ties between followers and the followed. Additionally, network analysis has frequently been applied to groups in a variety of work environments and has been used to demonstrate information exchange, resource

sharing, and effectiveness in teams and organizations (Cross & Parker, 2004; Haythornthwaite, 1996).

On one level, this study analyzed individuals as actors in a whole network and one-mode network format, since “all actors come from one set” (Wasserman & Faust, 1994, p. 29). This method was chosen rather than focusing on a single member of the Social Production Group as in an egocentric network study in order to focus on the overall team, not each person’s relationship with a particular person in the team. On another level, this study considered the SportsCenter Twitter account as a single individual in an egocentric analysis, while its Twitter followers were also considered as a single unit or information user. This allowed the research to center on the pattern of interactions, rather than individual responses due to both the volume of tweets generated and the relevance of particular tweets. Therefore, the study approached the analysis from both the egocentric and whole network points of view by focusing on the SportsCenter Twitter account as the main actor on one level of analysis but also examining relationships between all participants in the network of the team responsible for the account on another level of examination (Hanneman & Riddle, 1995; Haythornthwaite, 1996; Otte & Rousseau, 2002).

The sending and receiving of information is one of the types of relations that can be studied in social network analysis (Wasserman & Faust, 1994). Haythornthwaite (1996) said these information relationships “indicate what kinds of information are being exchanged, between whom, and to what extent” (p. 324). This can be measured through survey questions such as “How often do you provide information to or receive information from X?” and “How often do you turn to X to help think through a work-

related problem?” Cross and Parker (1994) said answers to these types of questions can describe organizational performance, strategy, and innovation (or lack thereof). In relation to the Twitter account, this can be viewed in terms of retweets, favorites, and replies since each individual information user could not be surveyed at this stage of research. This treats all Twitter followers as a single information user interacting with the account. All of this information can be useful on both a theoretical and a practical level.

Research Questions

Combining the idea of journalist as information provider with the methods of social network theory and analysis results in several related research questions. While their work centers on current technology, the members of the Social Production Group fall into a fairly traditional organizational structure that has been studied in social network analysis, so, through this research, network properties and patterns could be discerned and described based on the analysis of this team’s internal interactions (Cross & Parker, 2004). Further, the Information Seeking and Communication Model addresses elements that are not necessarily covered by social network theory and, in its formation, draws on already-established models of communication as well as information science theory.

1. To what extent does social network theory explain the operations of the social media team responsible for a selection of ESPN’s Twitter accounts?

1a. To what extent does this team exhibit network properties?

- 1b. How are these network properties influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?
 - 1c. How can information theory, specifically the Information Seeking and Communication model, explain or describe elements of the network relationship that are not covered by social network theory?
2. To what extent does social network theory explain Twitter interactions between the social media team and information users?
- 2a. To what extent can network patterns be assessed based on analysis of these interactions?
 - 2b. How are these network patterns influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?
 - 2c. How can information theory, specifically the Information Seeking and Communication model, explain or describe elements of the network relationship that are not covered by social network theory?

Research Approach

This research study used a combination of social network analysis and exploratory and descriptive case study methods to observe and gather data for analysis. Surveys, semi-structured interviews, and observation were used to assess the Social Production Group's interactions and patterns at one point in time. While Borgatti, Everett, and Johnson (2013) expressed skepticism concerning indicators of strength of

ties and other specific measurements of Twitter relationships, this study analyzed these relationships based on the number of retweets, favorites, and replies that tweets with particular hashtags received. boyd [sic], Golder, and Lotan (2010) noted that these types of exchanges, retweets in particular, “reveal what [users] value in specific messages and in Twitter as a conversational environment” (“Retweets as conversational practice,” para. 3). This hashtag selection also represented a form of purposive sampling as described by Lincoln and Guba (1985) and Teddlie and Tashakkori (2009). Analysis of the survey data used social network methods and techniques such as sociograms as well as content analysis methods in both the interview and Twitter analysis portions. Further, the interdisciplinary study seeks to help validate the Information Seeking and Communication Model (Robson, 2013; Robson & Robinson, 2013).

Summary

This study provides a better understanding of the group responsible for ESPN’s SportsCenter Twitter account: the motivation and strategies behind the group’s Twitter use as well as some of the dynamics of this informal network, such as information flow and collaboration. Relying on the Information Seeking and Communication Model (Robson, 2013; Robson & Robinson, 2013), this study also provides a better understanding of information exchanges with those outside the network, specifically a selection of the account’s Twitter followers. Additionally, the role of journalist as information provider and certain themes that emerged from the actual content of the tweets are all discussed. The research study employed social network analysis and

exploratory, descriptive case study methods to examine the use of Twitter by a group representing the nationally televised show SportsCenter and the implications of that use. The results of this study contribute to social network and information theory as well as to journalistic and information science practice.

CHAPTER 2

LITERATURE REVIEW

Introduction

This chapter provides a review of the literature that is related to the various elements of the study and that supports the need for further investigation into network patterns in relatively new technologies. Relevant information science theory is presented, in particular a proposed model connecting information and communication theory. Relevant aspects of the theories of diffusion of innovations and communities of practice are also noted. Additionally, there is a summary of social network theory and analysis that further provides a theoretical base for the research and that informs the appropriate methodology.

Background

The website Twitter (<http://twitter.com>) was created in 2006, and it has grown to include about 320 million active users (About Twitter, 2016). At one time, the site stated its users were sending up to 500 million tweets each day, and it now references one billion “unique visits to sites with embedded tweets” each month (About Twitter, 2016). The microblogging site is used by a range of people, from celebrities to news organizations, sports teams to average people, and aims to “give everyone the power to create and share ideas and information instantly, without barriers” (About Twitter, 2016). Hambrick, Simmons, Greenhalgh, & Greenwell (2010) said Twitter’s ability to offer average users access to their favorite professional athletes, politicians, and other public figures is part of the reason it can boast such rapid growth. Williams, Chinn, and

Suleiman (2014) agreed, noting that “Twitter gives fans something that other media cannot provide as easily — access to instantaneous information from both official and unofficial sources” (p. 36).

This growth has not been confined to Twitter itself; research interest in the site has also been increasing since 2009, with published items increasing by about 25 percent each year and citations of articles related to Twitter almost doubling every year, according to Web of Science. Research has been conducted on a variety of aspects of Twitter, and there has been some initial research related to the intersection of sports and Twitter from a few different perspectives.

For one, researchers have analyzed and categorized the content of athletes’ Twitter accounts (Doran, 2013; Foster, 2011; Hambrick et al., 2010; Shockley, 2010). Foster (2011) found that sports reporters are perceived as more credible than athletes in terms of sports news and information. While Shockley (2010) noted almost 20 different specific categories of athletes’ tweets, Hambrick et al. (2010), through content analysis, found six broad categories of types of tweets that athletes sent: interactivity, diversion, information sharing, content, promotional, and fanship, with most of the tweets falling into the interactive and diversion (or non-sports-related) categories. This would differ from an account such as SportsCenter because it does not post items that do not relate to sports, and the athletes in this study responded to followers on a more organic basis since many athletes follow and interact with personal friends on the network.

There has also been some amount of research from the perspective of the sports fan on Twitter. Williams, Chinn, and Suleiman (2014) examined the relationship

between the perceived value of tweets and a follower's identification with a particular sports team. They found that even following an account "implies that the content is important" to the fan and offers the potential for developing a further relationship (Williams, Chinn, & Suleiman, 2014, p. 41). Further, they suggest that sports organizations can strengthen relationships with fans by focusing on content that is relevant and meaningful to them (Williams, Chinn, and Suleiman, 2014, p. 46). While they were specifically discussing sports teams, this principle could logically extend to sports organizations such as ESPN. Similarly, Johns (2015) examined the link between Twitter interactions of sports fans and identification with a particular team, noting that this engagement can increase feelings of solidarity as well as actual behaviors. Vooris (2015) went one step further, developing a scale that examined users' motivations of interacting on Twitter and theorized that these motivations include a desire "to communicate, gather information, escape, receive a personal incentive, and even troll other SNS users" (p. 225).

Finally, significant research has also been conducted relating to the online presence of journalists (Cavalier, 2011; Genovese, 2010; Landis, 2011; Larsson, 2013; Lasorsa, Lewis, & Holton, 2012; Messner, Linke, & Eford, 2011; Nichols, Mahmud, & Drews, 2012; Noguera Vivo, 2013; Spezia, 2011; Vargo, 2011). The Larsson study, in particular, is relevant to this research and will be discussed in following sections. However, most agree that further research is needed in general in this rapidly evolving area, and there is a lack of literature that specifically employs social network analysis methods to examine the Twitter habits of sports journalists as information providers. There is also a clear gap in the literature as no studies were found that examine the

implications of employing multiple operators to manage an account with a singular public face, such as the SportsCenter account. This analysis can inform communication, information science, and social network theory and offer applicable insights for practitioners as well.

Users of the micro-blogging site type status updates that are called *tweets*, which are restricted to 140 characters and can be seen by the users' *followers*, who subscribe to them in a timeline format. Users are able to *retweet* another person's tweet, thus sharing it with their own followers, or *favorite* a tweet, which is communicated with the original sender and generally publically viewable. However, what is viewable depends on the user's privacy settings. The @ symbol directs a message to a particular person or organization, and private messages are available as well. Twitter also makes use of user-generated hashtags, conveyed with the # symbol, that offer further description to the original tweet. For example, a user might type #RollTide when discussing a University of Alabama football game or #parenting when tweeting about their children. Twitter, in real-time, shows which hashtags are "trending" or most-talked about; this gives users an overview of current news and information based on the hashtags. "Essentially, trending topics and the use of hashtags provide a live, constantly updating source of information that tells Twitter users what people are discussing the most" (Spezia, 2011, p. 4). Texts of tweets, users, and hashtags are all searchable, and the hashtags in particular are being used to aggregate and organize information on the site (Chang, 2011; Foss, 2012; Small, 2011; Veazey, 2011). Twitter's instantaneous nature, marketing possibilities, and common popularity have turned it into an influential force in media in general and sports journalism in particular (Hambrick et al., 2010; Shockley,

2010; Spezia, 2011).

ESPN is one of the media outlets making use of the micro-blogging site in general and the hashtags in particular. ESPN itself is a multi-media, multi-platform conglomerate with more than 4,000 employees, 50 business entities, and a massive online presence (ESPN Media Zone, 2016). There are hundreds of accounts connected with ESPN on Twitter, and the organization has developed and continues to refine a social media policy for its employees (Social Networking, 2011). The general ESPN account and the SportsCenter account are the two largest on Twitter with a total of about 48 million followers. Aside from these accounts, individual show accounts are categorized by sport (such as football, basketball, or baseball) and level (professional or collegiate). There are also individual accounts of anchors, reporters, and other employees. Many of these groups originally had their own structure, operating budget, and social media team responsible for content (even if that team was only one person), but this study was conducted at a time of transition where groups were being reorganized and unified. The Social Production Group primarily manages the SportsCenter account and, at the time of the study, was made up of eight people with one upper-level supervisor outside the group and two lower-level supervisors within the group.

This Social Production Group is responsible for presenting sports news and information “24-7-365,” according to personal interviews. The team also works to curate what they consider the most interesting news and information, some of that coming directly from viewers and followers on Twitter, and the group also creates original imagery and video in order to present the information in a creative manner. One goal for

the team is for the accounts they manage to be an extension of the shows that air on television with this original content. Another goal is to interact with fans on the platforms where the fans are gathering. Finally, an additional goal is to facilitate cross-platform integration, where one platform refers to another. For instance, a television show such as SportsCenter at times incorporates tweets on air, and a tweet might reference an article in the ESPN magazine. Perhaps the best example of this integration is the “SportsCenter Top 10” Twitter account and related hashtag (#SCtop10). Viewers and fans are encouraged to use the hashtag to nominate plays from high school, college, or professional sports to make the television show’s “Top 10” list. The SportsCenter and SCTop10 Twitter accounts then retweet a selection of these nominations, and there are other hashtags that serve similar purposes as well, such as #FanForum and #SC3Stars. Of course, Twitter users retweet and favorite these selections and at times interact with one another; although, the account itself typically does not interact with its followers beyond the retweets. The team monitors which tweets promote the most online engagement and how this engagement translates to viewing of the television shows. Questions remain concerning how to measure the effectiveness of the Twitter account in terms of meeting users’ information needs if these sports journalists are considered to be information providers.

Information Science Dimensions

Journalist as Information Provider

This study analyzed elements of the connection between the fields of information science and journalism, as defined by Bates (1999) in her work on the disciplinary

paradigm of information science. She classified journalism, like information science, as a “meta-field,” one that “cuts across, or is orthogonal to, the conventional academic disciplines” (Bates, 1999, p. 1044). While information science researchers examine “the universe of recorded information that is selected and retained for later access” and journalists focus on the “product of all the newsworthy areas of life,” Bates maintained that the two fields are similar in that both are research disciplines with “distinct professional cores” and both examine “the manipulation and transmission of knowledge” (p. 1044). Work by Larsson (2013) and Robson and Robinson (2013) supports this idea as well.

Larsson’s (2013) study illustrated the principle of journalist as information provider by examining the Twitter practices of a particular Swedish television show. Using social network analysis to assess the patterns of interactions between the journalists responsible for the show and the audience, Larsson (2013) noted that journalists have traditionally been viewed as gatekeepers, but that role has been changing with the evolution and expansion of technology and the introduction of venues such as Twitter that allow information users more direct access to the information they seek. In part because of these technological advances, information professionals, too, are known less as gatekeepers and more as “synergistic and equal” partners (Partridge, Lee, & Munro, 2010, p. 328). Williams, Chinn, and Suleiman (2014) noted that “both the accelerated delivery of information on mobile platforms via the internet and the ability to interact with that information is changing how fans consume content” (p. 36). This continued democratization of information influences information behavior and how

information providers interact with information seekers, particularly in terms of ease of access.

Robson and Robinson (2013) agreed and directly connected information behavior with information providers in the communication field. They related the two disciplines to one another on a theoretical basis by developing a conceptual model that illustrated how information seeking interacted with communication behaviors. The Information Seeking and Communication Model (ISCM) drew on established models in the fields of information behavior as well as communication, then linked information users to information sources and the users to the providers' products through communication factors.

The model also describes how information users and providers, operating in their respective contexts, connect both proactively and reactively, through information needs. Several of Robson and Robinson's (2013) definitions of information users, sources, and products relate to this study. Information users were described as "receivers of information, whether or not they actively use it," information sources as "experts and opinion leaders," and information products as "websites, blogs, and television and radio programmes" (Robson & Robinson, 2013, p. 185-186).

In terms of this study and the ISCM, then, an information provider such as ESPN, based on its organizational goals, could proactively send communication via a medium such as Twitter. The information user could then receive that information and, based on his or her needs, wants, goals, or perceptions evaluate the information's utility and credibility. The user could then reactively communicate with ESPN via an @ message or hashtag such as #SCtop10. Twitter retweets and favorites could also fit into the

model as relating to whether the communication is assessed, used, or ignored and could possibly even indicate whether the user's needs were ultimately satisfied. This idea needed to be further tested and verified, which would also help validate the ISCM since the ISCM had, so far, only been tested in relation to health care information provision.

While the ISCM is the most appropriate to use in this research study due to its incorporation of both information and communication behavior, there are two other information theories that are relevant as well: the Diffusion of Innovations and Communities of Practice theories. For instance, Chang (2011), in exploring information architecture in relation to hashtag use, directly connected the trending topics on Twitter with both information and communication, then also incorporated the theory of diffusion of innovations by classifying the hashtags themselves as types of innovations. Other studies have also similarly connected information behavior and communities of practice (Brown & Duguid, 1991; Davies, 2006; Wenger, McDermott, & Snyder, 2002).

Diffusion of Innovations

The diffusion of innovations theory is “essentially an information-seeking and processing activity” that can be used to inform whether communication is assessed, used, or ignored and the reasons behind users' evaluation of the information (Lajoie-Paquette, 2005, p. 118). Rogers (1995, 2003) developed the theory and defined communication as “the process by which participants create and share information with one another in order to reach a mutual understanding” (Rogers, 1995, p. 17). He said diffusion, a particular type of communication, is “the process by which an innovation is

communicated through certain channels over time among the members of a social system” (Rogers, 2003, p. 11), identifying the innovation, the communication channels, time, and the social system which the innovation affects as the four main elements of the diffusion process.

Robson and Robinson (2013) also used this theory to highlight the importance of opinion leaders in the communication and diffusion of information. “Opinion leaders, if favourably disposed towards the innovation, influence others to adopt it” (Robson & Robinson, 2013, p. 182).

Opinion leadership is the degree to which an individual is able to influence other individuals’ attitudes or overt behavior informally in a desired way with relative frequency...Opinion leadership is earned and maintained by the individual’s technical competence, social accessibility, and conformity to the system’s norms. When the social system is oriented to change, the opinion leaders are quite innovative...[and] serve as an apt model for the innovation behavior of their followers. Opinion leaders thus exemplify and express the system’s structure (Rogers, 1995, p. 27).

Further, this influence is even more effective if the opinion leaders or information providers are “homophilous” with the information users (Rogers, 1995; Robson & Robinson, 2013). This homophily exists within the Social Production Group, which will be discussed further. One example of this homophily is that all the members of the group are both sports and SportsCenter fans, as are, allegedly, the followers on Twitter. The Social Production Group also exhibits similar characteristics to a community of practice, which will be further outlined below.

Something such as the SportsCenter Twitter account would be classified, according to Rogers (2003), as a mass media channel since it has the ability to quickly reach a large number of followers, to create knowledge and spread information, and to perhaps even lead to changes in weakly-held beliefs or attitudes. Rogers (1995) argued that mass media channels have more of an effect on these weakly-held beliefs as well as on the “knowledge stage” of communication, while, he said interpersonal channels are, by contrast, more effective at persuading at the innovation-decision level or influencing strongly-held attitudes. With the advent of Web 2.0 forums, however, venues such as Twitter blurred the distinction between these two channels since they now “provide a two-way exchange of information” (Rogers, 1995, p. 194). Rogers acknowledged this increasing overlap in the 2003 edition of *Diffusion of Innovations* by noting the “interactive communication” possible on the Internet, and this interactivity has only increased since that publication.

This is also another example of how the role of information provider appears to be changing from gatekeeper to partner, as discussed earlier (Larsson, 2013; Partridge, Lee, & Munro, 2010). In terms of the ISCM, and according to Rogers (1995), this could increase the willingness of information users to assess the communication from information sources as suitable, useful, and/or credible. This could be especially true if Cavalier’s (2011) findings are correct that “If a media entity can provide content that meets a sports fan’s need for information, entertainment, and social interaction, the more likely a user will be to return to that outlet” and consider himself or herself part of a particular community (p. 14).

Communities of Practice

The theory of communities of practice is relevant to both the communication and information science fields (Brown & Duguid, 1991; Davies, 2006; Wenger, McDermott, & Snyder, 2002). “Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger, McDermott, & Snyder, 2002). Members are “in pursuit of a common practice [and] attuned to one another” (Davies, 2006, p. 104). Davies (2006) also noted that the theory works particularly well for researchers who are conducting qualitative research in the information science field.

Wenger, McDermott, and Snyder (2002) as well as Borgatti and Foster (2003) addressed homophily in communities of practice, saying commonalities between group members are expected, but homogeneity is not necessarily the ideal. Instead, a range of perspectives within a common interest can generate diversity that ultimately leads to “mutual engagement...richer learning, more interesting relationships, and increased creativity” (Wenger, McDermott, & Snyder, 2002, p. 35). This mutual engagement can also lead to “new practices and concepts,” although Borgatti and Foster maintained that more research is needed to support this idea (p. 997).

While Davies (2006) noted that a “rapid flow of information and propagation of innovation” (p. 105) is an indicator of a community of practice, Wenger, McDermott, and Snyder (2002) said extra vigilance and cultivation is required when combining communities of practice with technological innovations. Similarly, Brown and Duguid (1991), in their study on working, learning and innovation, maintained that, to capitalize

on technological innovations and to successfully navigate information exchange during these innovations, an organization must redefine itself as a “community-of-communities” (p. 53). These communities would be characterized by “constant adapting to changing membership and changing circumstances” and would “preserve and enhance the healthy autonomy of communities, while simultaneously building an interconnectedness through which to disseminate the results of separate communities’ experiments” (p. 54-55). An organization can use a site like Twitter to do just this, creating what could, in effect, be a virtual community of practice.

Barkley (2012) and Davis (2010) have discussed virtual communities of practice as related to social networking sites and, in particular, to learning within those sites and communities. Barkley, studying a group of school principals, noted that social media tools can be useful and empowering for both practitioners and users when working inside a virtual community of practice or affinity space. Davis, meanwhile, looking at a LinkedIn group, found that virtual communities of practice can be effective for improving learning and knowledge sharing, as long as “collaboration, communication, and interest” are all present (p. 6). Drawing on Lave and Wenger’s “situated learning model,” Barkley also confirmed the need for “joint enterprise, mutual engagement, and a shared repertoire of communal resources” (p. 16) to build a successful virtual community of practice.

While a group of Twitter users might not meet all the requirements for a community of practice (virtual or otherwise) there are still similarities in practice, such as a shared passion for a topic and ongoing interaction, and there are connections with information behavior, such as being a channel for information flow, as shown in the

ISCM. For example, in the same way that “situated learning” can naturally occur when participants simply “pursue various enterprises within a group,” information users can still receive information products from sources or providers without actively seeking it (Barkley, 2012; Robson & Robinson, 2013). Therefore, any information that ESPN, for instance, distributes via Twitter has the potential to reach its followers, even though they might not be searching for that information.

In further research on design principles for online communities and platforms, Spagnoletti, Resca, and Lee (2015) developed propositions that relate to information sharing, collaboration, and collective action. "Social interaction is at the heart of an online community" (Spagnoletti, Resca, and Lee, 2015, Supporting Online Communities, para. 1). While Twitter is typically an example of the "information sharing" type of online social interaction structure, if the specific #SCtop10 hashtag is considered (both nominations and collective votes for), elements of the collaboration and collective action structures form as well. "A set of general assumptions and values enables the members involved in social interactions to identify the interests of their community and recognize that those community interests overlap with their personal interests" (Theoretical Background, para. 3).

Finally, the user-centered paradigm shift that occurred in recent decades in information science is particularly relevant when conducting research concerning social networking sites, which are inherently user-oriented. Nahl (2010), when describing this paradigm shift, said the ideas of focusing on users, rather than systems, viewing users in their particular contexts or situations, and encouraging them to participate more fully in the research process have all contributed to the user-centered revolution. These

elements are all present when an organization, such as ESPN, interacts with a viewer or user, something that was not possible for a traditional broadcast outlet in the same way it is now. The users and their needs become the central feature not only in designing information systems, as Nahl pointed out, but the users and their needs are also now the central feature in Twitter interactions. This user-centered Twitter environment can be further examined using social network analysis and theory, which, Borgatti and Foster (2003) said works particularly well when developing these “relational, contextual, and systemic understandings” (p. 991).

Social Network Theory

A few fundamental definitions of concepts are in order when discussing social network theory. These concepts overlap with social network analysis as well, which will be further discussed in the following section.

The basics of social networks are straightforward: ‘actors’ maintain ‘relations’ with others which form the ‘tie’ between them. The collective set of actors and ties forms the ‘network’ of connections among all members of the particular social set. Analyses and visualizations of networks follow graph theory with the actors as the nodes and relations as lines between nodes.
(Haythornthwaite, 2010, p. 4838)

Wasserman and Faust (1994), in their classic reference work on social network analysis, offered several standard definitions of basic terms that many researchers agree upon; although, these at times do vary slightly. Wasserman and Faust defined a *social network* as “a finite set or sets of actors and the relation or relations defined on

them,” an *actor* or *node* as “discrete individual, corporate, or collective social units,” and a *tie* as something that “establishes a linkage between a pair of actors” (Wasserman & Faust, 1994, p. 17, 18, 20). Meanwhile, they said a *group* is a “collection of all actors on which ties are to be measured,” while a *relation* is the “collection of ties of a specific kind among members of a group” (Wasserman & Faust, 1994, p. 19, 20). Researchers can view networks as egocentric, where the research centers on only one actor. These studies “blend a network-theoretic perspective with conventional, individual-oriented methods of collecting and processing data” (Borgatti & Foster, 2003, p. 992). Conversely, networks can be studied as whole networks (also referred to as full, total, or global networks), where researchers “collect information about each actor’s ties with all other actors” (Hanneman & Riddle, 1995, “Sampling ties”), trying “to find all relations between the participants in the network” (Haythornthwaite, 1996; Otte & Rousseau, 2002, p. 4).

Ties can either be directed or undirected, weak or strong. Whether a tie is directed or undirected has to do with the reciprocity between actors or “the degree to which a relation is commonly perceived and agreed on by all parties to the relation,” while the weakness or strength instead refers to a tie’s intensity (Tichy, Tushman, & Fombrun, 1979, p. 508). Tichy, Tushman, and Fombrun (1979) used the social network approach to examine organizational settings and noted that multiplexity, or “the degree to which pairs of individuals are linked by multiple relations,” is also a factor in the nature of the links between actors (p. 508). Meanwhile, Haythornthwaite (2010), in her chapter on social networks and information transfer, defined a weak tie as “based on few relations of low intensity or significance” and characterized a strong tie as entailing

“reciprocal interaction” (p. 4838). She measured the tie by “the frequency, intensity, and importance of the exchange to the pairs involved” (Haythornthwaite, 2010, p. 4839). Similarly, Granovetter (1973), in his classic work on social network theory, measured a tie’s strength by “a combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie” (p. 1361).

Therefore, when applying social network theory to Twitter interactions, direction, reciprocity, and strength can all be measured. For instance, if a user sends a tweet to another user but does not receive a response, the tie is undirected. If two users communicate back and forth, the strength of the reciprocity of these directed ties can be evaluated based on the number of messages exchanged. Retweets and favorites can also inform the reciprocity and strength of ties between actors.

The concept of a bridging tie is important as well, where a particular tie is the only link between two groups. According to Granovetter (1973), all bridges are weak ties; however, not all weak ties are bridges. The weak ties that are bridges are the ones that are particularly useful in transmitting new information, and this theory will be further outlined below. Finally, Haythornthwaite (2010) noted that the content, or “what is exchanged, shared or experienced,” is also important when examining ties, and this content generally includes information or other resources (p. 4839).

Social networks also take into account structural properties as well as network composition. Structural properties refer to the size, density, and range of the network (Acock & Hurlbert, 1990). The measure of *density* indicates the level of connection among the actors (Acock & Hurlbert, 1990; Haythornthwaite, 2010; Otte & Rousseau,

2002). It can also be approached in mathematical terms as a proportion or “the number of actual links in the network as a ratio of the number of possible links” (Tichy, Tushman, & Fombrun, 1979, p. 508; Wasserman & Faust, 1994). Acock and Hurlbert (1990), when using social network analysis to study family structures, noted that *size* is the simplest measure of the network and is based on, in an egocentric network, “the sheer volume of ego’s contacts [and] the extent to which an individual is connected to the social structure,” (p. 249-250) while Tichy, Tushman, and Fombrun (1979), more simply, defined size as “the number of individuals participating in the network” (p. 508). *Range* can refer to the sparsity of a network or can represent “the number of relational contents contained in a network” (Acock & Hurlbert, 1990, p. 249-250). A network like the Social Production Group composed mainly of strong ties, for instance, can be said to have a limited range.

Acock and Hurlbert (1990) affirmed Granovetter’s (1973) theory that these networks “are thought to be less useful in instrumental action than those of greater range because networks of limited range offer redundant information; whereas, networks of wide range are thought to provide access to non-redundant information” (p. 249). In a wide-range network such as Twitter, where the size is almost unlimited, non-redundant information should theoretically abound. However, if analysis is limited to a particular field, such as sports, as well as a particular hashtag, such as #SCtop10, the network could reveal more redundant information. Density could also be approximated by analyzing the potential number of connections (with all Twitter followers of an account, for instance) to the actual number of interactions. These measures are also, of

course, applicable to a more stable, traditional network such as the Social Production Group.

Homophily and homogeneity are two additional measurements of network composition. As with communities of practice, these measures provide information about the similarities and differences between actors in terms of demographics and other determinable attributes (Acock & Hurlbert, 1990). Centrality measures of degree, closeness, and betweenness are also factors in network composition (Haythornthwaite, 1996; Otte & Rousseau, 2002). Otte and Rousseau (2002), in their work connecting social network analysis with information science, defined degree centrality as the number of ties an actor has, while they said closeness centrality refers to the distance between actors, and betweenness centrality is determined by the paths that actors must take to reach one another.

While these definitions apply both to social network *theory* as well as social network *analysis* (and many authors still use those terms interchangeably), it is useful to distinguish between the two. Bates (2005) noted that “a theory is a system of assumptions, principles, and relationships posited to explain a specified set of phenomena” (p. 2). More specifically, Salancik (1995) outlined characteristics a network theory in particular should have, saying it should either “propose how adding or subtracting a particular interaction in an organizational network will change coordination among actors in the network” or “propose how a network structure enables and disables the interactions between two parties” (p. 348). Further, Dixon (2005), in discussing Granovetter’s (1973) strength of weak ties theory, which will be described

below, said social network theory should be capable of relating micro-level findings to a macro scale.

Borgatti and Halgin (2011) agreed, distinguishing between the ideas of *network theory* and *theory of networks*, where “theory of networks refers to the processes that determine why networks have the structures they do,” but “network theory refers to the mechanisms and processes that interact with network structures to yield certain outcomes for individuals and groups” (p. 1). In other words, this could be described as the causes versus consequences of network structures (Borgatti & Foster, 2003).

Borgatti and Halgin disagreed with Otte and Rousseau (2002) and Salancik (1995) that network analysis is lacking in theory and pointed to two network theories in particular as examples: Granovetter’s strength of weak ties and Burt’s structural holes.

Strength of Weak Ties

In his 1973 article, Granovetter examined the importance of weak ties, in particular weak ties that serve as bridges between networks, maintaining that many weak ties can lead to greater information access and communication in a social system. Conversely, he maintained that having only a few strong ties results in a lack of new or useful information and can actually affect the structure and performance of the network itself. He illustrated this with two examples: how individuals within a certain group obtained job information and the failure of a particular community to mobilize against urban renewal.

More broadly speaking, he asserted that this analysis can be used to link “micro and macro levels of sociological theory,” offering a framework for why large-scale

networks operate as they do (Granovetter, 1973, p. 1360). Granovetter (1983) also went on, a decade later, to examine some of the literature that either directly tested his theory or had an indirect impact on it. He encouraged fellow social network scholars to continue to discuss and test this framework in order to contribute to more solid verifiability across disciplines, and Dixon (2005) concurred, saying it “has the potential to be a powerful explanatory tool for information behavior scholars,” particularly as it relates to information that is provided by authoritative sources but remains underused (p. 346).

Structural Holes and Bond Models

Similar to Granovetter’s ideas, Burt’s (1992) theory examines how structural holes, or nonredundant ties, can be more useful in connecting nodes with information and assisting with information flow. Borgatti and Halgin (2011) pointed out, however, that, while Granovetter (1973) stressed the importance of the strength of the tie, Burt (1992) instead focused on the nonredundant aspect of the tie. Borgatti and Halgin also noted that these differences were relatively minor, with both Granovetter and Burt giving importance to structure and position as these characteristics relate to outcomes. Doing this, Borgatti and Halgin said, ultimately meant both researchers were basing their theories “on the same underlying model of how networks work” (p. 5), the “network flow” model.

Borgatti and Halgin (2011) went on to describe this “network flow” model as a system where the distribution of information is the main operation of the network. “In effect, SWT [strength of weak ties] and SH [structural holes] rely on an underlying

model of a social system as a network of paths that act as conduits for information to flow” (Borgatti & Halgin, 2011, p. 5). This allows researchers to predict outcomes based on the network structure and to elaborate on “how a given network structure interacts with a given process to generate outcomes for the nodes or the network as a whole” (Borgatti & Halgin, 2011, p. 5-6). Conversely, their proposed bond model’s main feature is that “the network tie serves as a bond that aligns and coordinates action, enabling groups of nodes to act as a single node, often with greater capabilities” (Borgatti & Halgin, 2011, p. 7). Borgatti and Halgin argued that these bond models allow researchers to predict outcomes—particularly relating to power—and better understand, as Salancik (1995) described, “how network properties themselves generate the properties of organizations” (p. 349).

While Borgatti, Everett, and Johnson (2013) questioned whether the specific theory of structural holes could apply to Twitter, social network theory in general is found to be applicable in a study such as this and can be used to examine both structural and relational properties (Chen, 2009). Chen (2009) agreed with Borgatti and Foster (2003) that social network theory “is particularly useful in examining outcomes [and relationships] involving multiple actors” (p. 523). More specifics relating to the usefulness of social network theory and analysis in terms of the methodology will be outlined in that section.

While social network theory focuses on how networks actually work and function as a whole, social network analysis covers the particular methods used to investigate the behavior within these networks. There are, of course, commonalities and some degree of overlap between the two, such as terminology; however, understanding the

distinction between these two is fundamental to employing social network analysis from a theoretical base.

Social Network Analysis

Even though social network analysis is grounded in theoretical concepts, it focuses more on the actual analytic procedures than on the theory behind them (Otte & Rousseau, 2002; Wasserman & Faust, 1994). “The notion of a network of relations linking social entities, or of webs or ties among social units emanating through society, has found wide expression throughout the social sciences...Social network analysis also provides a formal, conceptual means for thinking about the social world” (Wasserman & Faust, 1994, p. 10, 11). Freeman (2004), meanwhile, defined the field as “the structural approach that is based on the study of interaction among social actors” and said it is “motivated by a structural intuition based on ties linking social actors,” relying on graphic imagery and mathematical models (p. 2, 3).” Traditionally, sociological and anthropological influences have been identified in social network analysis, but many have also pointed to mathematical influences such as graph theory as being equally fundamental to the discipline (Berry et al., 2004; Haythornthwaite, 1996; Otte & Rousseau, 2002).

Freeman (2004) extensively traced the history of social network analysis. While he noted that sociologists in the early 1900s were beginning to think in terms of social networks, he also identified Jacob Moreno’s 1934 introduction to sociometry as “a signal event in the history of social network analysis” (Freeman, 2004, p. 7). Others concurred, marking the development of Moreno’s sociometry, or “the measurement of interpersonal

relations in small groups,” as the beginning of both social network theory and social network analysis (Berry et al., 2004; Haythornthwaite, 1996; Wasserman & Faust, 1994, p. 11). Moreno, in his study of runaways at a girls’ school in the 1930s, was also the first to use the sociogram, a visual image “representing groups as collections of points connected by lines” (Berry et al., 2004, p. 540).

Freeman (2004) referred to the two decades after Moreno’s studies as the “dark ages” of social network analysis, but there were turning points in the field during this time, such as the continued development of graphs by Claude Levi-Strauss and increased interdisciplinary alliances at a variety of universities. Nevertheless, Borgatti, Mehra, Brass, and Labianca (2009), Freeman, and Otte and Rousseau (2002) all pointed to the late 1960s and early 1970s as the time when the recent explosive growth in the field began. Specifically, Milgram’s (1967) “small world” study gave rise to the idea of the now-popular six degrees of separation. This was followed by the work of Harrison White and others at Harvard, including Granovetter, who “produced an amazing number of important contributions to social network theory and research” (Carrington & Scott, 2011; Freeman, 2004, p. 8). Berry et al. (2004) and Otte and Rousseau identified this Harvard School, along with the Manchester Anthropological School, as the two main catalysts in the continued growth of and interest in social network analysis studies. Along with the growth in research, the field also continued to coalesce with the establishment of theory, such as the earlier described Granovetter’s strength of weak ties in 1973, and the founding in 1978 of a professional association, the International Network for Social Network Analysis. This group, started by Barry

Wellman, now publishes the peer-reviewed *Social Networks* and hosts an annual conference (Otte & Rousseau, 2002; Freeman, 2004).

In application, social network analysis has been described as “a strategy for investigating social structures,” where “the relations between actors become the first priority, and individual properties are only secondary” (Otte & Rousseau, 2002, p. 1, 3). Haythornthwaite (1996) agreed that what distinguishes social network analysis from other methods is its “focus on patterns of relationships, such as who works with whom or who exchanges information with whom” (p. 324). More specifically, Carrington and Scott (2011) noted that social network analysis applies graph theory by representing actors as points and relations as lines. This mathematical model formalizes the initial insights depicted in Moreno’s sociograms. “The theorems of graph theory provide a basis for analyzing the formal properties of sociograms...social network analysis is the analysis of systems of social relationships represented by networks” (Carrington & Scott, 2011, p. 4).

Freeman (2004) agreed that employing mathematical and/or computational models is one of the four foundational elements of the field. He identified the other three elements as: “being motivated by a structural intuition based on ties linking social actors,” “being grounded in systematic empirical data,” and “drawing heavily on graphic imagery” (p. 3). Tichy, Tushman, and Fombrun (1979) also noted the importance of mapping the network data visually in a graph or sociogram to illustrate the relationships studied. They then went on to identify three properties of networks that were mentioned in the previous section: transactional content (or what is exchanged, such as influence, information, or services); nature of the links (such as intensity or reciprocity); and

structural characteristics (such as size, density, and range). Haythornthwaite (1996) also further identified five principles generally used to study networks: cohesion, structural equivalence, prominence, range, and brokerage, saying these principles would allow network analysts to “explore relational properties of networks, such as how cohesive the group is or what subgroups of interconnected actors exist, and positional properties, such as who occupies what positions in a network” (Haythornthwaite, 1996, p. 330).

Analysts frequently use methods such as surveys, questionnaires, and observation to collect network data, but social network analysis methods have also been combined with textual content analysis as well (Hambrick et al., 2010; Haythornthwaite, 1996; Larsson, 2013; Wasserman & Faust, 1994). Then there are a variety of methods researchers use to decide on the population to study, based on whether they are focusing on an egocentric or whole network. The researcher then establishes which interactions to consider in which relationships and analyzes the patterns of these relationships (Borgatti & Halgin, 2011; Haythornthwaite, 1996; Wasserman & Faust, 1994).

It is not one’s membership in a particular class, ethnic group, gender, and so forth that makes the category of the group a useful construct, but the patterns of relationships to others within that group. The patterns reveal who one interacts with for receiving and forwarding information, and what exposure one has to information, new ideas, and opportunities. (Haythornthwaite, 1996, p. 325)

The research focus is on “at least one structural variable” or the similarities in behaviors that the group exhibits (Wasserman & Faust, 1994, p. 28). The results are then

generally presented in a visual format, such as a graph or matrix, using software such as NetDraw, Netlytic, or Gephi (Hanneman & Riddle, 2005; Haythornthwaite, 1996; Wasserman & Faust, 1994).

In relation to a study such as this, social network analysis can be employed to describe “how information moves around an environment, and how actors are positioned to facilitate or control the information flow” as well as to determine, through information relationships, “what kinds of information are being exchanged, between whom, and to what extent” (Haythornthwaite, 1996, p. 324). Similarly, as Hanneman and Riddle (2005) described, this research represents “how the whole pattern of individual choices gives rise to more holistic patterns” (Intro, para. 7). Social network analysis methods are also frequently employed in interdisciplinary pursuits such as this one. This research contributes to both theory and practice in the fields of journalism, communication, and information science.

Glossary

Before proceeding, it would be helpful to outline and define a number of terms used in the dissertation in a collected area. These definitions are basic summaries of the principles and information already included earlier in the chapter.

- Actor: a person or unit in a network
- ESPN: Entertainment and Sports Programming Network, founded in 1979
- Followers: Twitter users who see an account’s tweets in their own timeline
- Network: a group of actors with existing, defined ties
- Retweet: a copied message from one account to another’s timeline
- Social network analysis: study of networks and actors

- Sociogram: visual representation of a network
- SportsCenter: a sports-themed television show on ESPN
- Tie: a relation between actors
- Tweet: a status update or message sent on Twitter
- Twitter: a social networking site founded in 2006

Summary

This chapter presents a review of the literature as it relates to the research study. Further investigation is needed to observe network patterns connected to new and quickly evolving technologies, such as Twitter, and this study is an important early step in that investigation. Information science theory associated with the provision of information, diffusion of innovations, and communities of practice provides a partial theoretical base for this research, but the Information Seeking and Communication Model and social network theory are the primary theoretical foundations used for analysis related to the research questions. Social network analysis methods, in addition, inform the methodology that will be described in the following chapter.

CHAPTER 3

METHODOLOGY

Introduction

This study investigated the interactions of information providers using multiple observational approaches. It examined both network patterns and communication behavior within a team of sports journalists at ESPN as well as patterns between this team and a selected group of its online followers on the social networking site Twitter. The study also considered these interactions in light of a particular model, the information seeking and communication model (ISCM; Robson, 2013; Robson & Robinson, 2013). The study is exploratory and descriptive, using observations and interviews as well as online documentation to create a fuller picture of the research setting and contribute to a better understanding of the ISCM. Further data analysis involved social network analysis and content analysis methods to triangulate the data as much as possible.

Participants

One group of participants included the eight people who made up the Social Production Group at ESPN headquarters at the time of the study. Demographic data, such as gender and work experience, as well as meeting and communication habits, were obtained from the Social Production Group through surveys, interviews, and observations, as outlined in the research design section. This information will be further discussed in the following chapter. Initial access to the group was provided through a gatekeeper at ESPN, and a key informant was then identified as the leader of the Social

Production Group and provided access to the rest of the team members after a formal letter of introduction was sent and approved (Krathwohl, 2009). Regular personal communications were exchanged in order to better understand the history and context of the group before conducting the interviews. Institutional Review Board approval was also sought and received before beginning this research.

The second group of participants included a purposive sample of the followers of the SportsCenter Twitter account on the micro-blogging social media site. More specifically, the participants were identified as those who interacted with the account by retweeting, favoriting, and/or responding to tweets with the particular hashtag of #SCtop10. This selection met the criteria outlined by Teddlie and Tashakkori (2009) of a “relatively small number of units” that is able to “provide particularly valuable information related to the research questions under examination” (p. 25). This sample would also, as Lincoln and Guba (1985) stated, “detail the many specifics that give the context its unique flavor” (p. 201). Because the information was shared publicly online, and participants were not contacted directly, there was no reason to seek institutional approval for this second group. This number also varied based on the interaction of the followers, but it is estimated at 1,122, the mean of the average number of retweets and favorites during the time period of analysis.

As with any research study where human participants are involved, it is important to consider privacy concerns and other potential practical implications to the participants. While the Twitter information was public, the identities and responses of the members of the Social Production Group were protected. When coding, each member of the group was assigned a letter, and names were not used in any element of

the data analysis. I retained the key to the coding scheme as well as field notes, digital recordings, copies of the written surveys, and other records and stored these in a secure location.

Research Design

This research was approached from an exploratory and descriptive perspective, using a combination of case study, social network analysis, and content analysis methods. “Descriptive research...is conducted with the goal of exploring the attributes of a phenomenon or the possible relationships between variables” (Teddlie & Tashakkori, 2009, p. 23). Further, case studies give insights into particular corners of the world (Krathwohl, 2009). The research questions relate to a network of people who are interacting on two levels: within the Social Production Group itself and with the followers of the Twitter account that the group operates. Therefore, combining the social network analysis of these interactions with the case study methods of interviews and observations helps more fully describe any observed phenomena, relationships, or patterns.

The research took place in four stages. Stage I consisted of written surveys distributed in person to ESPN’s Social Production Group. Stage II consisted of semi-structured interviews with and observation of the Social Production Group. The interviews were partially informed by the initial discussions with the key informant and analysis and observation of the Twitter account, and they also developed during the on-site observations. Stage III of the research involved the analysis of interactions on Twitter between the SportsCenter account and its followers. This included a purposive

selection of tweets using the #SCtop10 hashtag and also included visual representations of the analysis. These three stages coordinated to help triangulate the data and ultimately provided a better overall understanding of the goals and operations of the information providers. Finally, Stage IV examined patterns from the first three stages of research in light of the information seeking and communication model (Robson, 2013; Robson & Robinson, 2013).

The four stages of research each contributed to different components of the research questions, which are outlined in Table 1.

Table 1

Research Questions and Research Design

Research Stage	Research Questions Answered	How research design connected with research questions
Written Surveys	RQ1, 1a, 1b	-Gathers raw data for use in social network measurements -Identifies network properties through measurements -Measurements contribute to evidence of information provider group members functioning as a single unit
Interview Analysis	RQ1, RQ1a, RQ1b, RQ2, RQ2a, and RQ2b	-Gathers raw data for use in social network measurements -Identifies network properties through measurements -Measurements contribute to evidence of both provider and user groups functioning as a single unit
Twitter Analysis	RQ2, RQ2a, and RQ2b	-Gathers engagement data for analysis -Measurements contribute to evidence of information users perceived as functioning as a single unit by information providers
Content Analysis with the ISCM	RQ1c and RQ2c	-Identifies themes from other analysis components -Determines if and how these themes are described by the ISCM

Data Collection

Stage I: Surveys

Written surveys were conducted in order to better assess the network structure of the Social Production Group. Cross and Parker (2004) as well as Wasserman and Faust (1994) concurred that surveys are typical, effective ways to collect information about how actors in a network interact. Cross and Parker (2004) also further identified four important types of relationships in networks and outlined questions that assist in revealing these relationships. The written surveys that were used in this research study were taken from these original questions and slightly modified from the surveys used and validated by Cross and Parker (2004). The full written survey is included in Appendix B.

These questions helped identify relationships that reveal collaboration in a network (Cross & Parker, 2004, p. 147) and primarily contributed to answering RQ1, RQ1a, and RQ1b:

1. To what extent does social network theory explain the operations of the social media team responsible for a selection of ESPN's Twitter accounts?
 - 1a. To what extent does this team exhibit network properties?
 - 1b. How are these network properties influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?

Cross and Parker (2004) said this type of network assessment involves communication, information, problem solving, and innovation in knowledge-intensive

settings. This type of setting as well as these specific tasks are all descriptive of both the Twitter environment and of the overall ESPN organization. The emphasis of this type of assessment on communication and information also complemented the validation of the Information Seeking and Communication Model (Robson & Robinson, 2013).

The surveys were distributed to the eight members of the Social Production Group at ESPN with the goal of identifying network patterns within this group. The key informant was an upper-level manager and did not have the same level of interaction as the other members of the group on a day-to-day basis. Therefore, during the on-site research, he did not fill out a survey and was interviewed only, which will be further discussed in the Results section. Each member of the group was listed and asked to rate how often they receive work information from the other members of the group, how often they provide work information to the other members of the group, how often they turn to the other members if they are facing a challenge at work, and how often they turn to the other members to discuss new and innovative ideas. Each member of the group was assigned a letter (coded A-H) to ensure their privacy, and the responses to the statements were ranked 1-5 to reflect the frequency of the interactions asked about in Statements 1-4:

Statement 1: I typically turn to this person for information about work-related topics.

Statement 2: I typically provide information to this person on work-related topics.

Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.

Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.

There was also a place on the surveys for participants to list anyone else at ESPN outside of the Social Production Group that they interact with in the above-mentioned ways. Demographic information, such as gender, length of time worked, and educational level, was also collected on these surveys. Finally, there was a space for any additional comments the participants wanted to include as well.

Data Representation

The relational data in this study was first represented in matrix format, which is the most common form of notation in social network analysis (Wasserman & Faust, 1994), and it is referred to as a sociomatrix. An example of a sociomatrix is shown in Figure 1.

	A	B	C	D
A	--	1	1	1
B	2	--	1	3
C	2	1	--	2
D	1	3	1	--

Figure 1. Sample matrix.

A sociomatrix was created for each of the four written survey questions to record the responses of the participants, and matrices were also created for Statements One and Two combined and for a portion of the interview analysis, which will be described in the next section. Each row and each column in the sociomatrix represents an individual

actor with the rows symbolizing the actors who are answering the questions (sending the tie) and the columns showing the actors to which the answer is referring (receiving the tie).

For example, Participant A would rate Participant B as a 1, 2, 3, 4, or 5 based on a response to each statement, and that response would be recorded at the intersection of the participants in the sociomatrix. Because the participants did not rate themselves, there is no ranking at the intersection of A and A, for instance, and this can be seen on the diagonal in the sample matrix.

Statements 1 and 2 are designed to be complementary. While Statement 1 (S1) depicts the work information coming to an actor from another actor, Statement 2 (S2) represents outgoing work information from an actor to the others. Therefore, the combination of Statements 1 and 2 (S1 + S2) symbolize the flow of information both to and from the actors. Statement 3 (S3) gives a slightly more hierarchical impression than Statement 1, indicating that the participant is asking for help, rather than just information. Conversely, Statement 4 (S4) is more democratic, indicating general collaboration and discussion rather than specific information sharing or seeking or providing help.

The rating choices were already coded into numeric values when the participants filled out the surveys as follows:

1 = Very often (on a daily basis)

2 = Often (At least once a week)

3 = Sometimes (Within the last month)

4 = Infrequently

5 = Never

Initially, it was planned for the group to receive the surveys via email and respond before the oral interviews took place, but, due to a variety of factors including scheduling conflicts of the team, organizational changes, and preferences of the management, the group members filled out the surveys during the same time period as when the oral interviews were conducted. The participants were given the surveys and filled them out while I made general notes and observations; we then proceeded with the oral interviews. This became a research limitation since the results from the surveys could not inform the interview questions. Nevertheless, the surveys were filled out by all of the team members, and the analysis of the results will be discussed in the next chapter.

Stage II: Semi-structured Interviews and Observation

After the written surveys were completed, semi-structured oral interviews were conducted with each member of the Social Production Group as well as with the key informant on-site at ESPN. The participants were told these interviews could take up to 60 minutes. While none of the interviews actually lasted for that entire length of time, having the option to talk for a longer period helped create a more pleasant and relaxed atmosphere during the discussion. Interview questions were designed in order to further explore the topics identified in the surveys related to communication, information, problem solving, and innovation (Cross & Parker, 2004). Additionally, goals of the

SportsCenter Twitter account were explored with the group and informed the research questions. Observation of the Twitter account also assisted in guiding the direction of the interview questions and helped to establish trust and rapport with the participants. The interviews took place in person over the course of three days and were digitally recorded for transcription and analysis. Since travel was involved, the time period for the research was quite limited, but all team members were available for interviews during this window. There was also time during the travel schedule to informally observe work operations of the Social Production and attend a staff meeting of the group. There was another meeting scheduled for all of the social media account managers at ESPN during the time I was there, but it was canceled at the last minute and was rescheduled outside of the travel window.

During the interviews, the respondents were asked to describe their jobs, using their own words, rather than official titles. They were also asked about the operations of the SportsCenter Twitter account both in relation to the television show SportsCenter and as its own platform at ESPN. Respondents were asked to comment on their information exchanges with other members of the Social Production Group, with the account's followers on Twitter, and with other workers and Twitter accounts at ESPN. Questions were included related to the organization's goals in terms of the Twitter account and whether the group member believed those goals were being met. Follow-up questions to participants' responses were asked as appropriate and in line with the semi-structured interview style. Finally, participants were asked whether there was any other relevant information they would like to discuss. See Appendix C for a sample of

the interview questions. This stage of analysis contributed to answering RQ1, RQ1a, RQ1b, RQ2, RQ2a, and RQ2b:

1. To what extent does social network theory explain the operations of the social media team responsible for a selection of ESPN's Twitter accounts?

1a. To what extent does this team exhibit network properties?

1b. How are these network properties influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?

2. To what extent does social network theory explain Twitter interactions between the social media team and information users?

2a. To what extent can network patterns be assessed based on analysis of these interactions?

2b. How are these network patterns influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?

Stage III: Twitter Analysis

The SportsCenter Twitter account is prolific, sending up to 50 tweets per day, so it was necessary to limit analysis to a manageable level. Narrowing selected tweets to those including the #SCtop10 hashtag was both logical and purposive. The #SCtop10 hashtag is included in the SportsCenter account's descriptive biography on Twitter, directly inviting followers to interact with the account by using this hashtag, and the

group puts out “calls to action” including this hashtag several times each week. Larsson (2013) conducted a similar study of a Swedish television show and also limited the analysis to tweets containing that show’s official hashtag, so this element of this study built on that research. However, there were multiple technological changes just in the years since Larsson’s research was conducted, both to the software Larsson used, which was actually discontinued, and to Twitter itself, so this study only built partially on that research.

This limitation to the #SCtop10 hashtag also fit the purposive sampling definitions that are found in Lincoln and Guba (1985) as well as in Krathwohl (2009). Lincoln and Guba noted that this type of purposive sampling “will maximize the investigator’s ability to devise grounded theory that takes adequate account of local conditions, local mutual shapings, and local values” (p. 40), while Krathwohl said purposive sampling simply allows the researcher to be better informed “regarding the current focus of the investigation” (p. 172). Limiting to this hashtag focused on information users who were intentionally interacting with the SportsCenter Twitter account at the request of the account operators and thus was initially thought to better reflect overall network patterns.

However, users send up to hundreds of tweets every day with the #SCtop10 hashtag, many of which are spam, irrelevant, or even offensive, so a study of all of these interactions is beyond the scope of this research and would shift the focus from the Social Production Group’s operations, as reflected in the research questions. As Bonini, Caliandro, and Massarelli (2016) noted in their examination of Twitter habits of “networked listeners” of public and private Italian radio stations, “audiences are making

more ‘noise’ than ever” (p. 42). Therefore, this Twitter analysis was limited to three weeks of tweets and selected resulting interactions sent from the SportsCenter Twitter account and containing the #SCtop10 hashtag. Similar to Larsson’s (2013) research, analysis includes visualization of these tweets, a selection of the content of the tweets, and the retweets and favorites by followers. All 45 tweets fitting this description were analyzed using the tools available on the website Netlytic, and the numbers of retweets, favorites, and replies to these tweets were recorded, described, and analyzed for content to identify major words and themes. Visualization of the 936 retweets and 1,309 favorites is included, and the replies ranged from 20 to more than 100. These will be further discussed in the Results chapter. Textual analysis shows this represents a cross-section of sports and fans and includes text-only tweets as well as those with images and videos.

This time period, August 9-29, 2015, also coincided with the time the written surveys, oral interviews, and observations were conducted as well as a week before and after the on-site observations. This allowed the on-site interviews and observations to inform the Twitter analysis and let me determine whether it was possible to differentiate between the authors or editors of the tweets based on the observations as well as compare the tweets before and after the observation to determine if there were any discernible differences. This stage of analysis contributed to answering RQ2, RQ2a, and RQ2b:

2. To what extent does social network theory explain Twitter interactions between the social media team and information users?

2a. To what extent can network patterns be assessed based on analysis of these interactions?

2b. How are these network patterns influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?

Data Analysis

Stage IV: Content Analysis

In the development of the information seeking and communication model (ISCM), Robson (2013) used deductive content analysis to test the model, a method that he said had not previously been used in information science to test a new model. He produced a codebook of terms “representing the features of and factors affecting information behaviour shown in the ISCM” (Robson, 2013, p. 98), then analyzed the literature he studied in his research to discover whether those terms and themes fit with the codebook and whether any new terms needed to be added.

In inductive content analysis, researchers use “techniques for making inferences from text about sources, content, or receivers of information” (Schamber, 2000). Using inductive content analysis in this research study complemented Robson’s initial deductive content analysis and provided further validation of this relatively new model. As Schamber (2000) described, “content-bearing units” were identified in the texts; then broad categories were “derived inductively from the texts” (p. 735). These sections of

text were then compared with Robson's (2013) codebook and examined in light of the ISCM.

In testing the ISCM, Robson (2013) conducted research in the healthcare field and specifically examined pharmaceutical companies and a national health organization as information providers. He found that the roles of information providers and users, particularly in communication contexts, are often exchanged.

Communication can be a two-way process. An information provider may proactively communicate with an information user, who then communicates back to the provider...Each participant in the conversation may be an information user but each may take turns in acting as an information provider by answering questions and contributing information from his or her experience and knowledge.

(Robson, 2013, p. 89)

This type of relationship is also evident with the SportsCenter Twitter account and its followers in terms of @ messages, hashtag use, and retweets/favorites. Further, Boyd, Golder, and Lotan (2010) argued that retweeting invites users "to engage without directly addressing them" and "contributes to a conversational ecology in which conversations are composed of a public interplay of voices that give rise to an emotional sense of shared conversational context" (Intro., para. 4 and 6). Measuring this relationship through both social network analysis and content analysis methods gave additional support to the ISCM and, as Robson explained "will have practical value in helping users and providers to review and improve how they seek, use, and communicate information" (p. 207). This stage of analysis contributed to answering RQ1c and RQ2c:

1c. How can information theory, specifically the information seeking and communication model, explain or describe elements of the network relationship that are not covered by social network theory?

2c. How can information theory, specifically the information seeking and communication model, explain or describe elements of the network relationship that are not covered by social network theory?

Social Network Analysis

All the social network analysis measures and matrices were calculated using UCINET, and network drawings presented in this study were produced with an associated program NetDraw (Borgatti, Everett, & Freeman, 2002). When inputting the data into UCINET, each participant was assigned a letter, both to preserve anonymity and to facilitate data processing. This code was used in both the analysis of the written surveys as well as the on-site interviews.

For the surveys, a sociomatrix was created for each of the four statements as well as for Statement 1 and Statement 2 combined, for a total of five matrices, “where the rows and columns refer to the actors making up the pairs” (Wasserman & Faust, 1994, p. 70). Each participant’s letter was listed in both the first row and the first column of the sociomatrix, and their responses to each statement were recorded in the subsequent corresponding rows and columns. A sample matrix is included in the Results chapter.

These matrices represent both the relational tie, how the actors are linked to one another, and the strength of that tie (Wasserman & Faust, 1994). For instance, one

actor, Participant A, might state that they collaborate with another actor, Participant B, on a daily basis. However, if Participant B states that they only collaborate with Participant A on a monthly basis, Participant B perceives the tie to be weaker than Participant A does. Nevertheless, both participants agree that they do collaborate; therefore, the tie is reciprocated. The calculations of reciprocity demonstrate how balanced the network is as a whole (Wasserman & Faust, 1994).

For some social network measures in this analysis, it was necessary to dichotomize the data to reflect only whether a tie was present and not consider its strength or value. “Dichotomous relations are coded as either present or absent, for each pair of actors” (Wasserman & Faust, 1994, p. 44). Wasserman and Faust, as well as Borgatti, Everett, and Johnson (2013) note that dichotomizing data is generally practical for several basic social network analysis measurements, but it can also be helpful to dichotomize at different levels to “reveal insights into the network structure” (Borgatti, Everett, & Johnson, p. 78). Haythornthwaite (1996) concurred, saying “This is done by deciding that a relationship does not provide a sufficient link unless present in a certain quantity or frequency” (p. 327). This dichotomization at different levels was done during the data analysis and will be discussed in that section.

Network density is one of the measurements that requires dichotomization. Density, which is the ratio of links that are possible to those that are actually present, reflects the connectedness of the actors in the network, how quickly information diffuses, and potentially how strong the relationships between actors are (Hanneman & Riddle, 2005). Similarly, the degree of a node, or how many nodes are adjacent to it, can also inform the activity of a network (Wasserman & Faust, 1994). While a fully

connected network, where every person is connected to every other one and all possible ties are present, might be rare in some cases, in a small group such as the Social Production Group, it is easier to see how complete saturation might be likely or even expected. This high level of connection could indicate a number of situations, including frequent communication and close collaboration, mandatory meetings and interactions enacted by the management, a subgroup of actors who function as bridges between all ties, or even workers who frequently ask for assistance. Therefore, the size of the network as well as the on-site interviews are necessary to complete the analysis and provide a fuller picture of the organizational context of the Social Production Group in particular.

Other applicable social network measurements include transitivity and distance, which both indicate how close the actors are to one another. With transitivity, for example, if both Participant A and Participant B are connected with Participant C, then Participant A and B are also connected to each other. "A friend of a friend is a friend" (Wasserman & Faust, 1994, p. 150). Meanwhile, the distance between two nodes is simply "the length of any shortest path between them" (Wasserman & Faust, 1994, p. 110). Distance measurements also help inform whether and where subgroups are present and can indicate centrality indicators for particular actors as well. The most globally central actor in a network can be found by calculating the shortest paths between each actor, then finding the actor with the lowest sum of these distances (Haythornthwaite, 1996).

Haythornthwaite (1996) also indicated that measures of centrality highlight how information flows or diffuses within a network and where power or influence might lie.

“The actor with the most lines, that is, the highest degree, is most central”

(Haythornthwaite, 1996, p. 334). This position of centrality affords the actor “a great deal of access to information,” both to and from other actors, and the position also allows the actor to decide how to use that information, such as whether to send it to others or even to prevent it from being sent (Haythornthwaite, 1996, p. 334). However, with this great power comes great responsibility, and it is again necessary to revisit the organizational context to determine how the actors with the greatest centrality function in that environment.

This is also where the measurements of indegree and outdegree can come into play. “The outdegrees are measures of expansiveness, and the indegrees are measures of receptivity, or popularity” (Wasserman & Faust, 1994, p. 126). These measurements can also be used to identify four types of nodes in a network: isolate, transmitter, receiver, and carrier. An isolate is an actor with no connections in the network, while the latter three terms denote the roles different actors might play within the network in terms of how information flows (Haythornthwaite, 1996; Wasserman & Faust, 1994).

In this study, structural equivalence is also worth considering. “Actors are considered to be structurally equivalent if they fill the same role with respect to members of the same network” (Haythornthwaite, 1996, p. 334). While certain conditions must be met to determine whether actors are exactly equivalent, the similarity to others in a network can inform how cohesive the group is (Haythornthwaite, 1996).

This study adopted a number of social network analysis methods to measure data for the written surveys and interview responses. This data combined to form matrices for rich analysis representing patterns of network behavior and information flow, and sociograms representing these matrices also provided a helpful visual component to analyzing the network. The sociograms allowed different features of the network measurements to be highlighted visually and considered further. All of these social network analysis measurements contributed to answering RQs 1, 1a, 1b, 2, 2a, and 2b.

Methodological Issues: Social Network Analysis

Assumptions

There were two primary assumptions in this study: a high rate of participation and access to information. Because there were only eight members of the Social Production Group, it was necessary for as many as possible, and preferably all, of the members to participate in order to accurately assess network patterns of the group. A gatekeeper (another employee at ESPN) and the above-mentioned informant were instrumental in ensuring this participation. Team members were not required to participate, but they all stated they were happy to assist with the research. Also, while there are parts of Twitter's inside technical data that are not public, the Twitter stream itself is generally publically accessible (unless the user's account is "private"). Since the SportsCenter Twitter account is public, all the tweets and interactions with followers were available for this research, especially since the period to be studied was relatively recent, and no archived data was required.

Validity

While Wasserman and Faust (1994) noted that a concept with validity simply “measures what it is intended to measure” (p. 57), Teddlie and Tashakkori (2009) substituted the term “credibility” instead of validity and added an additional component as well for qualitative studies. Drawing on Lincoln and Guba (1985), they said, when establishing credibility or validity, researchers should also be sure their reconstructions are accurately capturing the constructions of the research participants. In other words, do the observations of the researcher match the observations of the participants? Wasserman and Faust also said that validity is “seldom tested in a rigorous way” in social network research (p. 58). In this study, the survey data concerning relationships between the actors is corroborated and compared with the semi-structured interviews, leading to validity through triangulation of the data.

Further, the survey questions were based on validated questions used frequently in this type of analysis of networks in the workplace by Cross and Parker (2004). Purposive sampling, or “selecting units based on specific purposes associated with answering a research study’s questions,” also reduces threats to validity in studies such as these even though it potentially limits the representativeness or generalizability of the sample (Krathwohl, 2009; Teddlie & Tashakkori, 2009, p. 170), which is not as great a concern in qualitative studies. Since the sample is relatively small, another potential threat to validity would be mortality or organizational change. Limiting the research period helped to reduce this risk, but there is a high rate of turnover within the Social Production Group. From the time of the dissertation proposal to the time the research was conducted to the time this dissertation was actually submitted, the group underwent

several staff changes as well as changes on an organizational level. However, there are still common organizational themes and patterns to be noted, and these are further discussed in the Results section.

Finally, there are threats to validity concerning the accuracy of self-reporting and, similarly, the observer effect (Teddlie & Tashakkori, 2009). To counteract the observer effect, it was necessary to achieve a level of trust with the participants, which I attempted to do by corresponding with the key informant before meeting them in person, treating them with respect and courtesy, and displaying a familiarity with their work. Freeman, Romney, and Freeman (1987) found that, in terms of informant accuracy, long-term patterns, such as the ones studied in social network analysis, are better recalled than specific short-term memories. Therefore, this type of threat should not be a negative factor in this study. Member checking can also be used to ensure “that the report has captured the data as constructed by the informants,” further helping to establish the credibility of the research (Krathwohl, 2009; Lincoln & Guba, 1985, p. 236).

Reliability

Wasserman and Faust (1994) said that many traditional measurements of reliability, such as test-retest reliability, are problematic and ineffective for social network analysis since many social patterns do not remain static. There is also a recognition that the actors’ perceptions of the network could potentially change over time, even though only one survey was conducted. Similarly, in a study such as this, the results would not be able to be replicated. However, by detailing the research, analysis,

and interpretation methods, other researchers could duplicate the processes used in this study. As mentioned, triangulation techniques are also used to help ensure reliability.

Wasserman and Faust (1994) did note that “questions using ratings or full rank orders are more reliable than fixed choice designs in which just a few responses are allowed” (p. 59). Also, aggregate measures of the whole network, such as the popularity of a particular actor, are more reliable than responses by individual actors. In this study, some information is aggregated from individual responses in order to reflect network pattern measures such as prominence.

Methodological Issues: Content Analysis

Validity

When discussing validity in relation to content analysis, Schamber (2000) noted that external validity is not a major concern in studies such as these with a purposive sample where the goal of generalizability is not claimed (even though results could potentially apply to other contexts). However, she identified five elements of methodology that can be used to demonstrate high content validity in this type of research: data “elicited directly from users describing their own situations,” a coding scheme that includes “definitions, examples, and rules intended to define the concepts in considerable detail and improve consistency in coding,” concepts that are “clearly understood and consistently applied” through frequency and redundancy, general redundancy of criterion mentions across respondents, and “shared understandings of criterion meanings” (Schamber, 2000, p. 743).

In order to demonstrate this high content validity, this study drew on Schamber's guidelines as interpreted by Macpherson (2005, p. 58-59):

- The elicitation of data was gathered directly from participants using semi-structured interviews, with their own words and expressions recorded on a digital audio recorder.
- The coding scheme was developed directly from the interview transcripts and will include definitions, examples, and rules to ensure and enable consistency.
- The frequency and redundancy of the participants' responses was compared to demonstrate understanding and consistent use of concepts across the participants.

Reliability

Teddlie and Tashakkori (2009) said that reliability in qualitative research is determined by whether a measurement is repeatable over time and/or through repeated measurements. One way to ensure this is through interrater reliability, which "provides information about the degree to which ratings of two or more rates are consistent" and is tested "by calculating the correlation between two sets of ratings produced by two individuals who rated an attribute in a group of individuals" (Teddlie & Tashakkori, 2009, p. 212). In this research study, an external observer was recruited to analyze the text as well; then that agreement was measured, as described by Schamber (2000), where "the number of agreements between two independent coders" is "divided by the number of

possible agreements” (p. 742). Since this was an exploratory study, the goal of establishing a minimum of 80% agreement was sought and met.

Summary

Several observational approaches were combined to investigate and analyze the social network patterns and communication behavior of the two networks included in this research study: the Social Production Group at ESPN as well as the SportsCenter Twitter account the group is responsible for and a selection of its followers. The research used a combination of written surveys, social network analysis, semi-structured interviews and observations, and content analysis to examine pertinent information. Since this study was exploratory and descriptive, the process of triangulating the data, as described above, was accomplished through this combination of methods. The information seeking and communication model (Robson, 2013; Robson & Robinson, 2013) was also a central element in the research, and this study contributes to its validation as well.

CHAPTER 4

RESULTS

Introduction

This chapter presents the results of the research study in four sections. The first section responds to RQ1, RQ1a, and RQ1b and details the social network analysis of the survey of the members of the Social Production Group. The second section details the results of the semi-structured interviews and identifies themes that emerged from the content of the interviews and also contributes to answering RQ1, RQ1a, RQ1b, RQ2, RQ2a, and RQ2b. The third section describes the Twitter analysis of the SportsCenter Twitter account, specifically the use of the #SCtop10 hashtag, and provides results for RQ2, RQ2a, and RQ2b. Finally, content analysis is used to examine the results of the first three sections in light of the information seeking and communication model (ISCM) and to provide results for RQ1c and RQ2c. While these four parts might initially seem somewhat disparate, when examined together they provide a more complete, in-depth picture of a particular social network and contribute to validating the ISCM.

The research questions are restated:

1. To what extent does social network theory explain the operations of the social media team responsible for a selection of ESPN's Twitter accounts?
 - 1a. To what extent does this team exhibit network properties?
 - 1b. How are these network properties influenced by a multi-operator organizational design where multiple people are responsible for one Twitter

account?

1c. How can information theory, specifically the information seeking and communication model, explain or describe elements of the network relationship that are not covered by social network theory?

2. To what extent does social network theory explain Twitter interactions between the social media team and information users?

2a. To what extent can network patterns be assessed based on analysis of these interactions?

2b. How are these network patterns influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?

2c. How can information theory, specifically the information seeking and communication model, explain or describe elements of the network relationship that are not covered by social network theory?

Demographics

There were two women and six men in the Social Production Group, and the average age of the team members was 26. The length of time at ESPN ranged from one year to eight years, with an average of two years and eight months. The length of time working in the Social Production Group in particular ranged from two months to four years with an average of 13 months. Six of the eight members of the group had been on the team for less than a year.

Social Network Analysis: Surveys

The research study began with the introduction and distribution of the surveys to each member of the Social Production Group, and participation was voluntary. Surveys were conducted in person at ESPN, and all eight members of the group responded to all four questions rating the interactions with each of the other team members: whether they typically turn to this person for information about work-related topics; typically provide information to this person on work-related topics; typically turn to this person for help in thinking through a challenging problem at work; and typically collaborate or discuss new or innovative work-related ideas with this person. Again, each member of the group was assigned a letter (coded A-H) to ensure their privacy, and the responses to the statements were ranked 1-5 to reflect the frequency of the interactions asked about in Statements 1-4:

Statement 1: I typically turn to this person for information about work-related topics.

Statement 2: I typically provide information to this person on work-related topics.

Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.

Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.

For some of the social network analysis measurements, the data had to be dichotomized, and that information will be outlined further below.

Size, Density, Degree, and Connectedness

The size of the Social Production Group is 8 actors or nodes ($n = 8$), with the potential of 56 unique ordered pairs of actors ($n * n-1$). The density shows what proportion of ties are actually present among all possible ties and contributes to the assessment of cohesiveness of the group (Wasserman & Faust, 1994). Because this group is relatively small, there is a logical expectation of high density and cohesiveness among the members.

Because density measurements require dichotomized data, the values were reset in the UCINET software to indicate a measured tie if the respondent had ranked a 1, 2, or 3 (communicated at least within the last month) on each of the four statements. Because dichotomization typically reflects only whether a tie is present, not the strength of the tie, it is helpful to examine the measurements at different dichotomization rankings (Borgatti, Everett, & Johnson, 2013). For the first dichotomization measure, only a ranking of 4 or 5 (never or very infrequently) was marked as a “0,” while the others were labeled as a “1.” For the second measure, 3, 4, and 5 (sometimes, very infrequently, and never) were marked as a “0,” while 1 and 2 rankings (very often or often) only were dichotomized to a “1.”

For both higher and lower dichotomization levels, the density measurements for all four statements show this network is very well connected, and the average “connected” measurement for each statement is a complete 1. More specific density measurements are included in Table 2. Visually, this high density is also conveyed in sociograms that were created for each statement as well as the combination of Statement 1 and Statement 2 on the surveys. These sociograms show both

directed and undirected ties, and all visually indicate an extremely high connectivity among the group. Specifically, the sociogram for Statement 1, Figure 2, indicates extremely high density in the group. The majority of the ties are reciprocated and shown in blue.

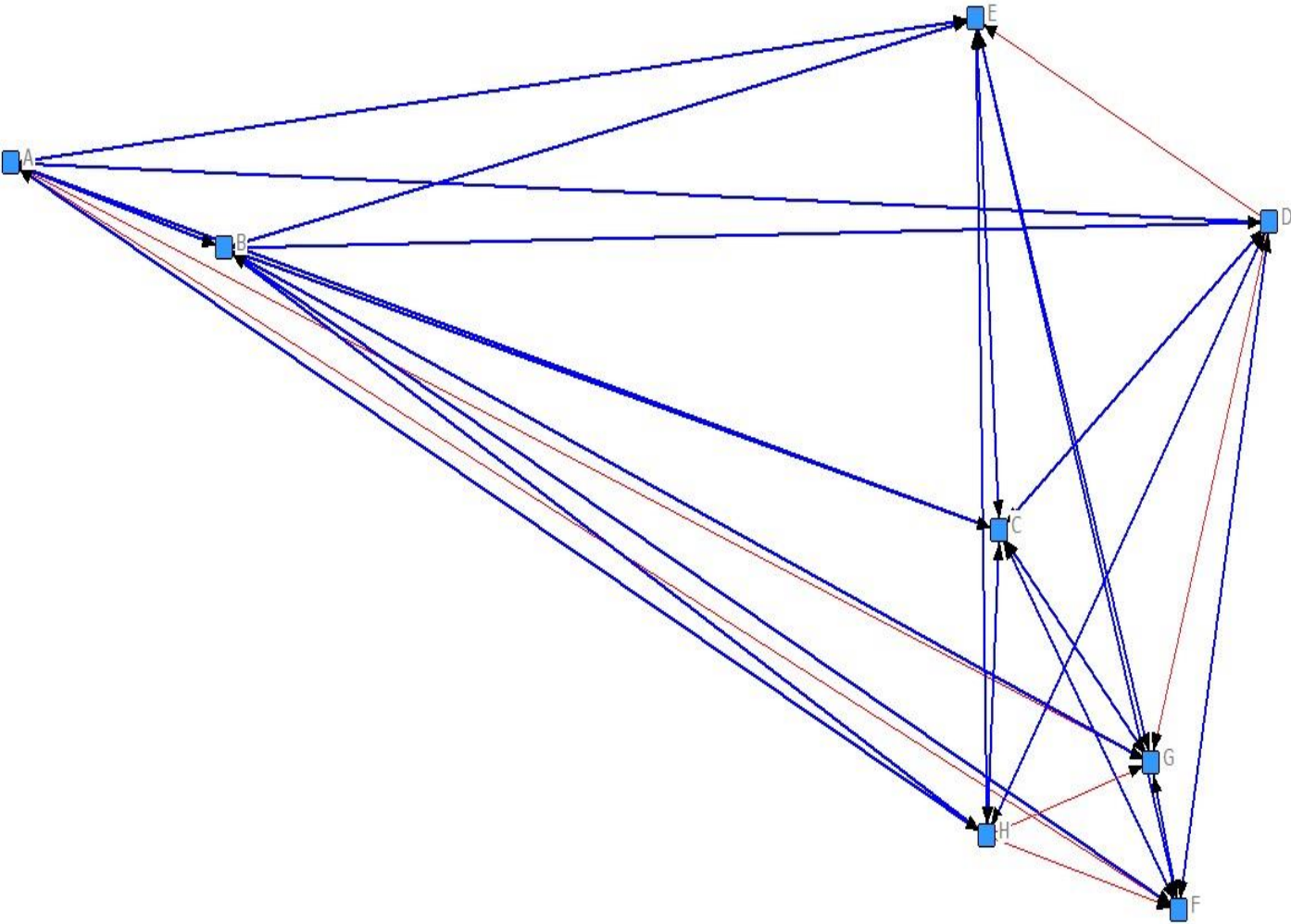


Figure 2. Statement 1 responses, dichotomized, with reciprocated ties in blue.

Table 2

Density for Statements 1, 2, 3, and 4

	Density, Dichotomized where 1, 2, 3 = 1; 4, 5 = 0	Density, Dichotomized where 1, 2 = 1; 3, 4, 5 = 0
Statement 1: I typically turn to this person for information about work-related topics.	0.892857	0.660714
Statement 2: I typically provide information to this person on work-related topics.	0.910714	0.785714
Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.	0.732143	0.535714
Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.	0.857143	0.607143
Statements 1 and 2	0.768	0.786

As seen in Table 2, Statement 2 had the highest density percentage on both measurements. This could be because the participants perceive that they assist others more than they perceive being assisted themselves. This measurement could also be an indicator of the frequent communication that the group discussed in the interviews. Rather than asking for information or assistance, they could perceive themselves as willingly offering it due to the organizational context and normal operations of the group. Figure 3 notes both the high density in general of the group and the specific strength of each tie, with the strongest ties in blue. Finally, the question

could have also been viewed as reporting information to others, including low-level superiors, about any type of work-related tasks; whereas, Statements 3 and 4 were more specific in nature and could point to the incidence of subgroups rather than the group's density as a whole.

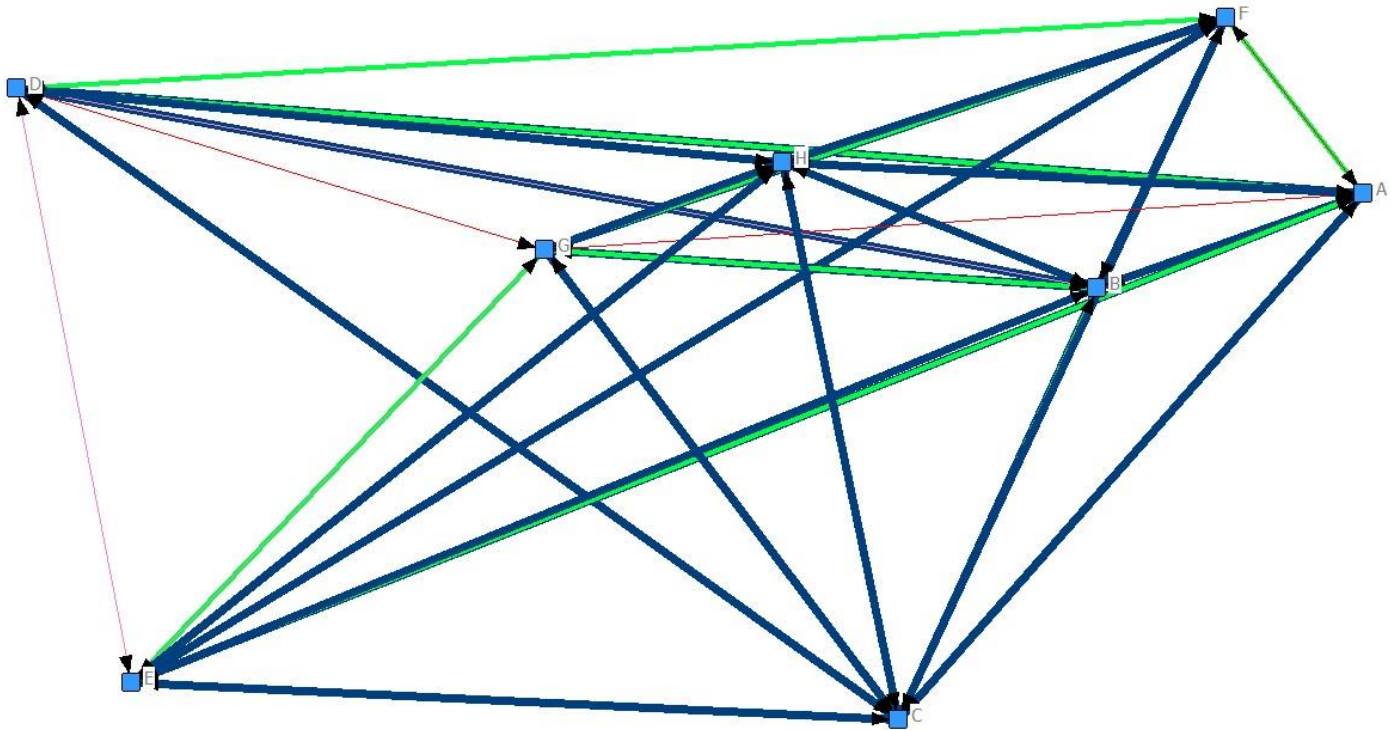


Figure 3. Statement 2 responses, with tie strengths in different colors.

Statement 3, in fact, was the lowest-ranked density in the measurements, indicating that the individuals in the group either did not face many challenging problems or that they did not seek help as frequently as when they had simple information to share. The participants might also have been reluctant (whether consciously or subconsciously) to acknowledge the frequency of challenging problems at work.

While the density of Statements 1 and 2 combined (with dichotomization reset to reflect the addition of the numbers) was similar to the other results in terms of high connectivity of the group as a whole, the mean of the responses to these statements show more detail about some of the individual actors in the network. Both sent and received ties can be examined by evaluating the responses to Statements 1 and 2. These results are displayed in Table 3.

Table 3

Mean of Responses to Statements 1 and 2 Combined

Participant	Mean Statement 1	Mean Statement 2
A	2.42857	2.14286
B	1.71428	1.85714
C	1	1
D	2.57143	1.85714
E	1.71428	1.57143
F	2.28571	1.57143
G	2.42857	1.71428
H	2.57143	2.14285

The mean is a measurement of the actual ties divided by all possible ties, giving an indication of an actor's influence and/or power in relation to the other actors. The closer the mean is to 1, the greater the influence of a particular actor on the others. Three actors stand out as being slightly more influential and centrally positioned in the

network as a whole, likely because of their formal and informal leadership roles in the group. Actor E had a newly formed, less formal role within the group, and Actor B had a formal leadership role. Meanwhile, the actor who received a “1” on both the means of Statement 1 and Statement 2 was the other of the two leaders of the Social Production Group and acknowledged in the interviews to be the person who manages more of the day-to-day operations, rather than the bigger picture or creative vision of the team, as Actor B did. All team members are in frequent communication with Actor C in particular, and this actor is also the most central in an already highly dense, connected network. This actor is seen at the top of Figure 4, with multiple arrows in this node’s direction. In this sociogram, the strongest ties are, again, indicated in blue.

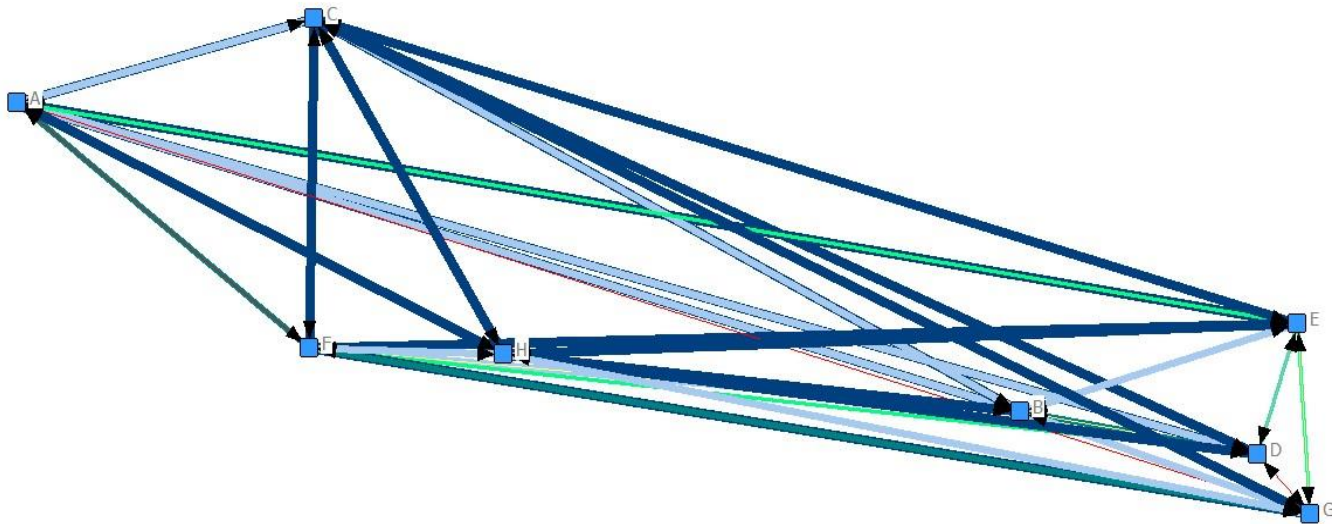


Figure 4. Statements 1 and 2, with tie strength illustrated.

Reciprocity and Transitivity

When examining directed data, ties can be reciprocated both ways, sent in one direction or another, or not connected at all. Hanneman & Riddle (2005) outline four examples: A/B (not connected); $A \rightarrow B$ only; $B \rightarrow A$ only; $A \leftrightarrow B$. A greater reciprocated rate generally indicates a more equal or stable network (Hanneman & Riddle, 2005).

For Statement 1, only 23% of the responses corresponded about the degree of interaction between team members. For instance, Team Member A ranked that she turned to Team Member E “very often (on a daily basis)” for information about work-related topics. However, Team Member E responded that he only turned to Team Member A “sometimes (within the last month)” for information about work-related topics. Also, there were 6 responses of “never (very infrequently)” turning to another team member for information about work-related topics, but none of these responses corresponded. For example, Team Member G responded that he never (very infrequently) turned to Team Member D, but Team Member D indicated that he turned to Team Member G sometimes (within the last month).

For Statement 2, there was a 43% agreement among the rankings, but disparities still existed. There were also two opposite rankings, where Team Member H noted that he “very often (on a daily basis)” provided information to Team Members F and G on work-related topics, but they ranked that they “never (very infrequently)” provided information to Team Member H.

Statements 1 and 2 are complementary, so there is an expectation of agreement among the rankings. For instance, Team Member A ranked that she turned

to Team Member B “very often (on a daily basis)” for information, so it would seem likely that Team Member B would rank that he provided information to Team Member A at the same rate. However, there was only a 26% correspondence rate among these answers.

There was only a 16% agreement rate on Statement 3 and a 17% agreement rate on Statement 4. Statement 3 asked the participant to reflect whether: “I typically turn to this person for help in thinking through a challenging problem at work,” so the disparity could be explained by the formal and informal hierarchy among the team. Two team members are tasked with management and oversight of the team, so they might not consider themselves as asking for help when talking with people who directly report to them. Additionally, another team member has been assigned more informal leadership responsibilities, so his role could factor into perceptions as well.

While Statement 3 had the lowest-ranked reciprocity rate, there is still a great deal of reciprocal communication within the group, as seen in Figure 5. It is visually clear that there are no outliers in this group, no team members who are not connected at all to other members, and no weak or bridging ties. They are all connected with each other, again, as would be expected from an eight-member team who works on a single social media account.

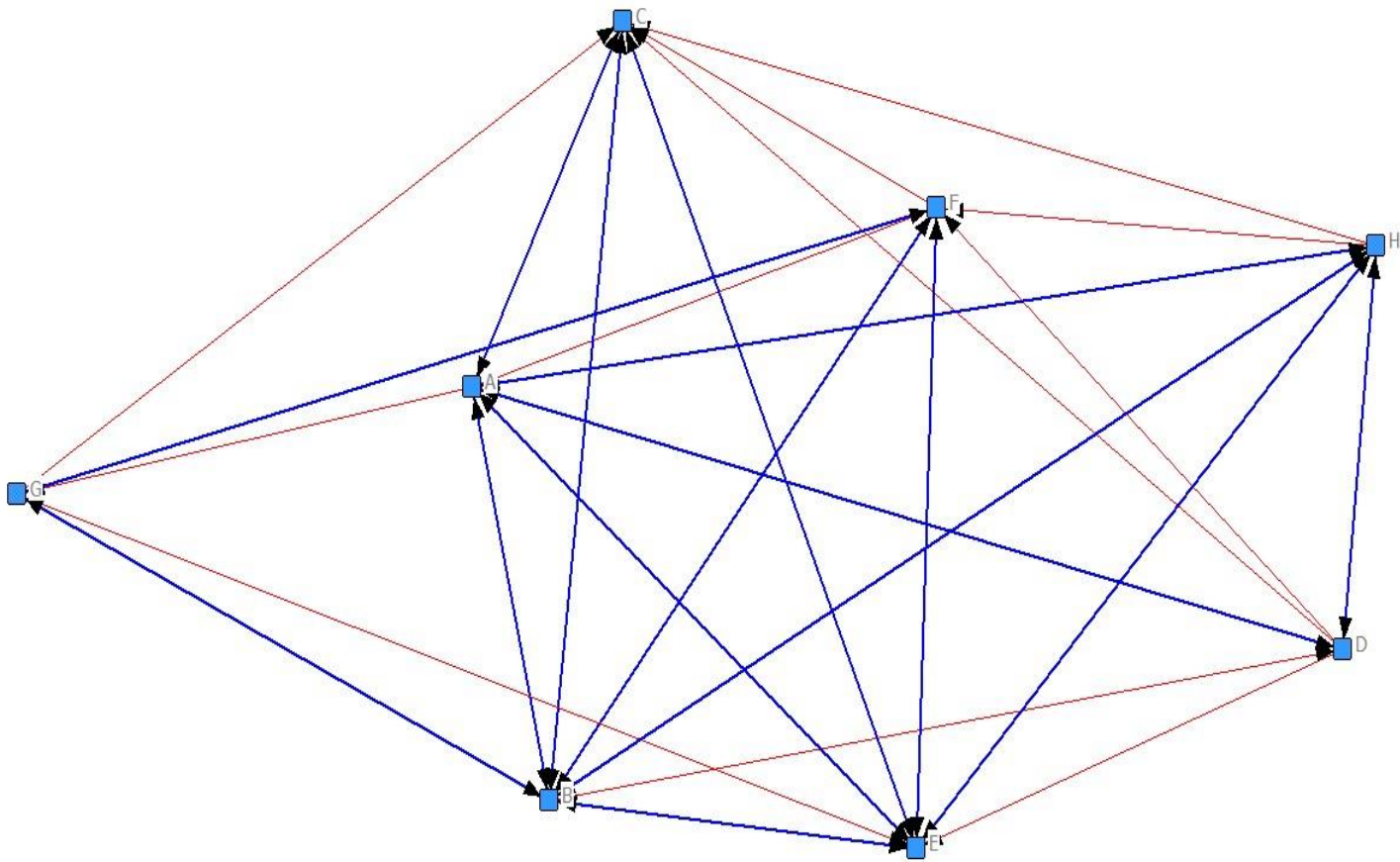


Figure 5. Statement 3, dichotomized, with reciprocated ties in blue.

However, Statement 4 addressed collaboration and discussion on new and innovative ideas. As the interview portion will discuss, all participants indicated a high level of collaboration and teamwork, particularly when it came to problem solving and creativity. In both Statements 3 and 4, there were also complete opposite answers where one team member said they collaborated with another on a daily basis, while the other team member reported collaborating almost never. Further reciprocity measurements are indicated in Table 4.

Table 4

Reciprocity for Statements 1, 2, 3, and 4

	Reciprocity, Dichotomized where 1, 2, 3 = 1; 4, 5 = 0	Reciprocity, Dichotomized where 1, 2 = 1; 3, 4, 5 = 0
Statement 1: I typically turn to this person for information about work-related topics.	0.786	0.609
Statement 2: I typically provide information to this person on work-related topics.	0.821	0.760
Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.	0.577	0.429
Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.	0.778	0.417
Statements 1 and 2	0.792	0.571

Further, Borgatti, Everett, and Johnson (2013) describe the transitivity of networks. “For many social relations we might expect that if A is related to B and B is related to C then there would be a relationship from A to C. When this is the case we say the triad is transitive” (Borgatti, Everett, & Johnson, 2013, p. 155-156). As with reciprocity, transitivity generally indicates stability in a network (Hanneman & Riddle, 2001). Also, the high transitivity measurements in UCINET indicate that the network is

extremely close-knit where all nodes are connected to all other nodes. For instance, A is related to both B and C in every case.

For Statement 1, there were parallels between how participants rated how frequently they turned to other team members and the shifts they worked. For instance, those working the morning shift noted that they more frequently turned to others working the morning shift for information than those working the night shifts. This type of information exchange is logical. Also, rankings were divided along managerial lines as well. The two top managers only ranked each other as people to whom they very frequently turn for information.

Similarly, on Statement 2, there were again correspondences between a “very often” ranking and which shifts were worked. On this question, the two managers also reported they “very often” provided information to the other group members on work-related topics, while the newest members of the group did so much less frequently. Therefore, the question might have been perceived as relating to more of a hierarchical status rather than just providing general information.

For Statement 3, even fewer respondents reported “very often” turning to other members of the group for help thinking through a challenging problem; although, in the semi-structured interviews, many of them indicated doing just that on a regular basis. Again, this could be an issue related to how the survey question was perceived since Statement 4 received somewhat higher frequency rankings when asking about collaborating or discussing innovative ideas.

Distance

The shortest path between two points in a network is the geodesic distance (Borgatti, Everett, & Johnson, 2013). This indicates how many paths it would take for one actor to access another and how long those paths are. Hanneman and Riddle (2001) note that when a network is dense, it makes it likely that geodesic distances are also short, and this is certainly the case in this network, as indicated in Table 5.

Table 5

Distance for Statements 1, 2, 3, and 4

	Distance, Dichotomized where 1, 2, 3 = 1; 4, 5 = 0	Distance, Dichotomized where 1, 2 = 1; 3, 4, 5 = 0
Statement 1: I typically turn to this person for information about work-related topics.	1.107	1.339
Statement 2: I typically provide information to this person on work-related topics.	1.089	1.214
Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.	1.268	1.554
Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.	1.143	1.446
Statements 1 and 2	1.232	1.214

It is worth noting that, for Statement 3, the distance is the greatest at both dichotomization levels, and this statement also had the least dense measurements. This inverse relationship is to be expected. Again, the denser the network, the shorter the distance between participants. For the statement where the network is least dense, participants would have to, in essence, travel farther to seek the help or information they need. While this might be more numerically apparent in a larger group, it is worth noting even in a small group such as this one where people on different shifts still meet at least once a week and often meet on a daily basis. Overall, this measurement would suggest that communication is conveyed quickly in this network.

Degree, Closeness, and Betweenness Centrality

“Centrality is a property of a node’s position in a network...the structural importance of a node” (Borgatti, Everett, & Johnson, 2013, p. 164). There are different measures of centrality in a network, including the most common of degree, closeness, and betweenness. Degree centrality is the number of ties that a node has, while closeness centrality is generally calculated as the sum of geodesic distances from any particular node to the others (Borgatti, Everett, & Johnson, 2013). The measurements for the average degrees for this network were calculated in UCINET and are indicated in Table 6.

Table 6

Average Degree for Statements 1, 2, 3, and 4

	Degree, Dichotomized where 1, 2, 3 = 1; 4, 5 = 0	Degree, Dichotomized where 1, 2 = 1; 3, 4, 5 = 0
Statement 1: I typically turn to this person for information about work-related topics.	6.25	4.625
Statement 2: I typically provide information to this person on work-related topics.	6.375	5.5
Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.	5.125	3.75
Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.	6	4.25
Statements 1 and 2	5.375	5.5

Meanwhile, betweenness centrality shows how frequently a node is located on the shortest path between two other nodes (Borgatti, Everett, & Johnson, 2013). These betweenness measurements for the members of the Social Production Group are shown in Table 7.

Table 7

Betweenness Measurements for Participants

	A	B	C	D	E	F	G	H
A		1.583	1.583	1.25	1.783	0	0	1
B	1		1	1	1.2	1.5	2	1
C	1	1		1	1.2	1.5	2	1
D	1.2	1.533	1.533		0	2.033	0	1.2
E	1	1	1	1		1.5	1.667	1
F	1	1	1	1	1.2		1.333	1
G	1	1	1	1	1	1		1
H	1	1.583	1.583	1.25	1.783	0	0	

Overall, centralization measurements characterize the network as a whole (Borgatti, Everett, & Johnson, 2013). However, the outdegree and indegree measurements in particular can contribute to a somewhat deeper understanding of the influences of individual actors. The outdegree influence for Statements 1 and 2 is slightly more than the indegree influence, as outlined in Table 8, again suggesting that participants view their giving of information as more frequent than receiving or needing information from other participants. Borgatti, Everett, and Johnson (2013) also noted that “social desirability bias” can play a role in the outdegree measurement in particular and should, therefore, be weighed in context with other measurements (p. 176). As a whole, however, all of the centrality measurements indicate a high degree of connectedness among the actors.

Table 8

Overall Centralization Measures

	Centralization Outdegree	Centralization Indegree
Statement 1: I typically turn to this person for information about work-related topics.	0.7143	0.5510
Statement 2: I typically provide information to this person on work-related topics.	1.2857	0.4694
Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.	1.0612	1.0612
Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.	0.7959	0.7959

Collaboration and Environment: One Voice

The sociogram for Statement 4, Figure 6, indicates every element of the previously discussed social network analysis measurements: a high density, connectedness, reciprocity, and centralization of the Social Production Group. Visually, it demonstrates the success of the team and is an exemplar of what could be called the one voice model. It highlights the features typical of the group, which will be discussed in detail in the following section: a common understanding of organizational tone and culture as well as a high level of communication, both formal and informal, between the team members. This is the ultimate picture of collaboration.

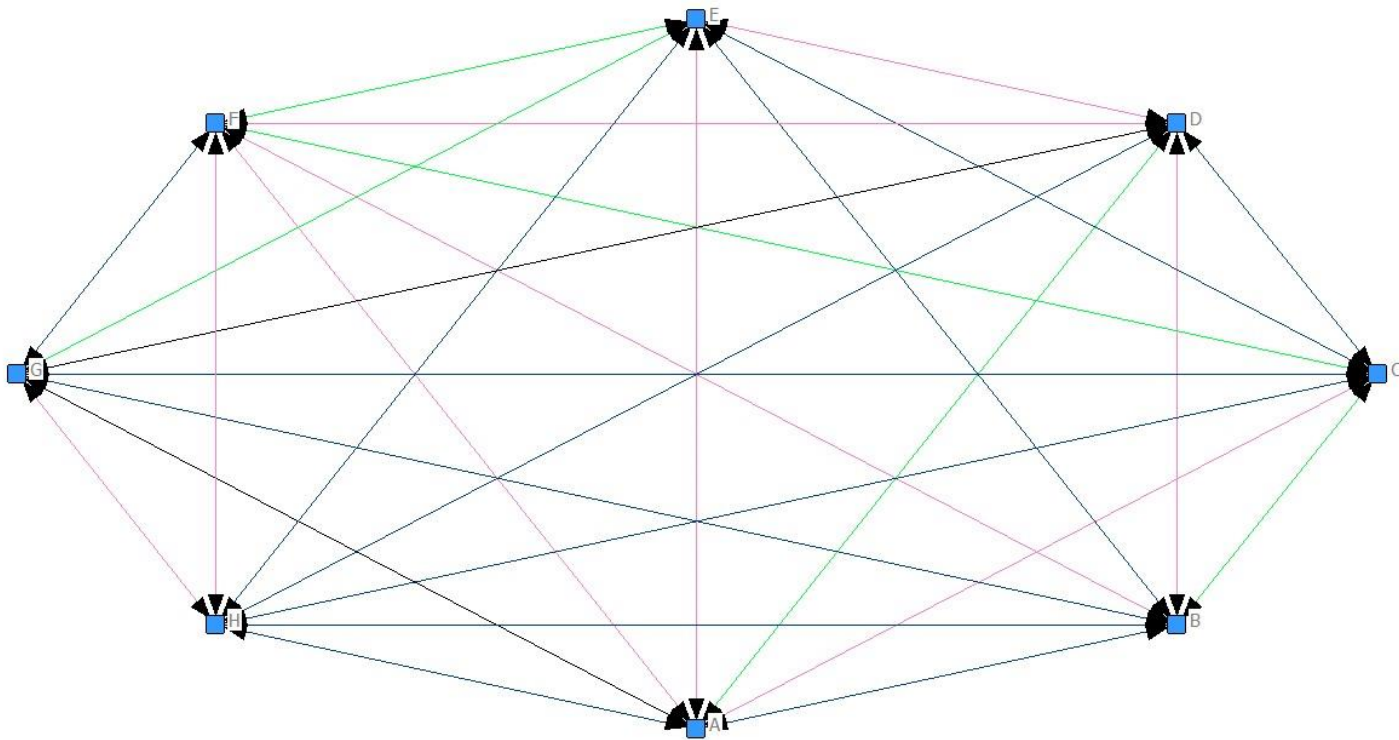


Figure 6. Statement 4, with strongest ties in blue.

Summary

All of the social network analysis measurements of the written surveys indicate that all of the actors in the Social Production Group are very well connected to all of the other actors. The nature of the work, the physical environment, the organizational structure, and the frequent use of technology have all contributed to a highly dense, closely connected, centrally located, and tightly functioning group. Because of this closeness in the organizational context, it is more easily possible for them to speak as a single voice on the Twitter account and function almost as a single unit, rather than as individuals.

There are several additional possibilities that could contribute to the earlier mentioned discrepancies in reported team collaboration on the written surveys. As noted in the Methodology chapter, the surveys were initially sent via email but, due to scheduling difficulties and management preferences, were not actually filled out until I was on site. The participants did not appear to be rushed, but they could have been giving perfunctory responses without paying a great deal of attention to the questions. For instance, on the written surveys, no one indicated that they interacted with anyone else at ESPN outside of the Social Production Group. However, in the semi-structured interviews, every participant reported interacting and collaborating with other people and groups, at times naming the individuals who could have been named on the written surveys.

As Wasserman and Faust (1994) stated, “People are not very good at reporting on their interactions in particular situations” (p. 57). Borgatti, Everett, and Johnson (2013) agreed there were potential data error issues in terms of informant accuracy as well. Therefore, the semi-structured interviews and observations were a necessary contribution to ensuring the accuracy of the findings and providing as full a picture as possible of the daily operations of the Social Production Group. Additional information from the key informant, both before and after the interviews, also provided a more complete perspective of the situation. It would have been useful to have the results of the written surveys before conducting the semi-structured interviews in order to ask direct questions related to respondents’ answers, further clarify some of these discrepancies, and be better informed in general about the operations of the team on a day-to-day basis.

Ultimately, however, despite the discrepancies in participants' reporting and the delay in receiving the surveys, the actual social network analysis measurements still conveyed a highly dense, connected network, which is the impression also given during the interviews and observations. Both the measurements and the interviews point to a functionally stable network with very little variance or positions of power or hierarchy, suggesting that, despite high staff turnover, the Social Production Group functions basically as one communicator or information provider: the SportsCenter Twitter account.

Interview Analysis

Because the Social Production Group only consisted of eight members, it was imperative to conduct face-to-face interviews with each member of the team as well as with the team's upper-level manager, the key informant. The interviews were conducted over the course of two days in August 2015, at the convenience of each member of the team based on their particular work schedules. I was also able to attend one team meeting of the Social Production Group and was scheduled to attend a second larger meeting of all people in charge of social media accounts at ESPN. However, this larger meeting was canceled at the last minute. While the participants were prepared for the interviews to last up to 60 minutes each, the interviews actually ranged in length from 10 to 22 minutes and averaged 16 minutes for a total of two hours and 45 minutes. The interviews were recorded with a digital recorder, and I also took written notes during and after the interview process.

Most of the interviews were conducted in ESPN's "War Room" adjacent to the desks of many of the members of the Social Production Group. While the main area has individual cubicles in one large room, this room had several white boards for brainstorming and sharing ideas, large calendars with the dates of upcoming events, and countdowns to these events. Both spaces were filled with information and inspirational quotes and were conducive to collaboration. Other interviews were conducted in spaces convenient to members of the team. There were few interruptions; although, due to the fast-paced environment of a newsroom and media center, the team, at times during the interviews, had to check the news, answer a question, or watch a segment of a show to which they had contributed. Overall, however, the interview environment was relaxed and pleasant.

The interviews were transcribed and edited for purposes of confidentiality and analysis. The team member's individual code replaced his or her name, and other team members' names were replaced by their individual codes as well. For the sake of clarity, words such as "uh" and "um" were removed. The transcripts were read and examined multiple times during which the text was broken into meaningful units and analyzed using a constant comparison technique as described in Lincoln and Guba (1985). In this, the text was read repeatedly and divided into logical sections or portions. After the text was broken down, codes based on Robson's (2013) codebook were identified, appointed, defined, edited, and reviewed. These themes, combined with the information from the survey responses, will be further discussed in section four of this chapter related to the ISCM.

Interview Responses

The participants were first asked to describe their current job, in their own words, rather than just list their official job description (Interview Item Q1). Most of the participants described a typical workday and agreed that there is a great deal of variety from day-to-day due both to the nature of the journalism industry and to their specific area of responsibility in social media. The two team managers had additional responsibilities within their job descriptions, but the rest of the team's days, on average, consisted of team meetings, maintaining the news and social media feeds, and covering any sports events or breaking news. They described smaller informal meetings between subgroups of the Social Production Group, formal group meetings with all team members present, meetings between all social media account managers and representatives across the company, and meetings with the producers of the television show SportsCenter, which airs several times in the morning and twice at night at 11 p.m. and midnight.

The midnight SportsCenter show, participants indicated, is particularly centered on social media and is where the #SCtop10 results are announced. In those meetings, the Social Production Group makes producers aware of online content that might translate well to the television show. Two participants described their roles and gave insight into the roles of all of the team members:

P: I'm a production assistant on SportsCenter social handle. I come in typically 4:00 in the afternoon, 3:30 on meeting days, and I look for some of the cool social trends that happened throughout the night. I go to the SportsCenter meetings, one 11:00 meeting and 12:00 midnight meeting, so those meetings are

around 5:00 and 5:30 respectively. The 5:30 meeting for the midnight SportsCenter is more about social stuff, so it's really kind of like our show. They're looking for the coolest videos or trending videos, so I look for that.

P: I'm starting out for the Sportscenter social accounts. And I work on the nights, so that's more like doing updates with games, you know, live tweeting the games, more of the events. Whereas in mornings, they do more stories and other things like that. So the main thing that I do is just kind of help watch the Twitter feed, see if any news or games are ending and then just post something about that game or event whenever it's over.

When asked to evaluate how the group worked together as a whole (Interview Item Q2), all participants stressed the importance of over-communication and communicating through a variety of methods. They chat informally if they are in the same room, alerting others when they are putting out a tweet, so no one else will immediately tweet something since they rarely use a scheduler for the tweets due to the frequency of breaking news. They also rely on texts and the office messaging system, particularly when they are in a different part of the building or on the road. While most agreed that the Social Production Group needs more staffing, the small size and close nature of the group seems to have contributed to the ease of communication since there are, at times, only two or three people working together in one office area that is adjacent to the "War Room".

P: That goes back to it being a smaller group where it's easier to communicate face-to-face. Cause we're usually just right here in this little office area; whereas,

a lot of communication at ESPN is done through email because it's such a big place. But with us, you know, we're able to do more things face-to-face, which obviously helps in any workplace, I think. Even more so here, we have to communicate with other departments too, which is through email. In the video teams or video clearances and stuff, but within the actual social group, we're always together in one group, and it makes workflow quicker because we don't have to get on the phone or email someone. We're all usually together, which definitely helps.

P: One thing that I've really liked about this group, especially...it's a much more smaller team where everyone's trying to help out the other person I think. I think they do a good job of making everyone comfortable with, if you've not normally worked in mornings, they do a good job of helping you with that. And, with the meetings, we have two meetings every week, and they do a really good job of letting ideas flow freely, which is, I think, good in the social group because you know you have to try to make yourself stand out as a social account, not just, "Here's the end of a game. Here's what happened."

The small size of the group also facilitates the practice of frequently bouncing ideas off each other, even for what might seem to be an average tweet.

P: So in terms of collaboration, conversations are like, "Hey did you see this story? Would you want to click on it? What do you think about sharing this? Is it cool?" kind of stuff like that. And then we kind of think of a way to sell it to the fan

and be like, "Would you click on this if this is what it said?" And we kind of proofread each other's words, that kind of thing. That's on a daily basis.

Both the team leaders and the upper management have stressed the importance of constant communication via any method that works in the moment. The team uses emails, text messages, instant messaging, and hand-off and recap notes as the "shifts" change from the morning to the night crew.

P: Our morning crew might not see our night crew, but they all meet here at the pass-off time, and they all talk to each other, which is very valuable, face-to-face.

P: Overcommunication is great...When we took this group from, you know, not a priority at the company to "OK it's a priority" of people, and we made it from 10 million fans to 30 million fans in 2 1/2 years, we did that by working tirelessly.

While the Social Production Group has a heavy amount of within-group interaction, communication with SportsCenter followers is much more controlled. With more than 24 million followers, there is not a realistic way to interact with the majority of the @ messages the account receives on a minute-by-minute basis. These messages might range from a supportive comment to a vague opinion to constructive feedback to the inevitable trolling comments noted accounts frequently receive. Many in the group acknowledged that increasing interaction with followers might be useful, but they were not convinced that it was necessary. While the SportsCenter account directly interacts with other ESPN accounts, verified teams, and verified athletes, the primary way it

interacts with the average follower is through what participants refer to as a “call to action.”

Specifically, the #SCtop10 hashtag on Thursday and Friday nights gives the SportsCenter account a chance to hear from viewers, who can submit nominees for a best play of the week or vote on a specific question the group publishes (i.e. “Which NFL quarterback had the best play of the week?”). The group uses a software called Spreadfast that helps them search the nominees for #SCtop10, filtering out profanity (either in the content of the tweet or the handle itself) or other problematic handles that would not be allowed to be shown on television, highlighting tweets that might be more interesting to air, and measuring the votes that particular plays get for the #SCtop10 nomination.

P: The #SCtop10 hashtag is probably our most interactive one because it gives people a chance to submit their ideas.

While the Social Production Group generally confines direct interaction from the SportsCenter Twitter account to the other verified accounts and to particular hashtags, the group does measure indirect engagement with followers through retweets and favorites of individual tweets. These measurements will be further discussed in the next section.

P: One of our goals is to have #SCtop10 be one of the top used hashtags in all of sports.

P: It's right there in front of your face whether it's retweets or comments or Instagram likes. Like you have it all right there, and you can tell if something worked or it didn't work, if fans liked it or didn't like it.

The members of the group have been strategic with their goals, and the group works to hit a balance between the account being seen as an authority figure and a fellow sports fan (Interview Item Q7).

P: Just to be the cool version of sports...you want people to understand, "OK, this is where I can go get my news. If I can't turn on SportsCenter, but I'm out and about, I could just look on the SportsCenter feed and say, 'Hey what's going on in sports today? Who won that game?'"

P: SportsCenter's a little older and a little more buttoned up. They still have a ton of fun, and we speak like a rabid sports fan, but we're not using emojis, and we're giving the news and information, and stats and serving sports fans in different ways that others area.

P: The main goal of the SportsCenter Twitter account is to be the front page of ESPN honestly. When a news story breaks, we want the SportsCenter Twitter account to be the first place fans go to see the story. I think you know people are not always in front of their TV, but they are always, most of the time, I would say 99 percent of people are with their phone.

P: I think the goal is to be authentic and be a friend, not just sort of like this big automaton. And I think sometimes regardless of whether or not we tried to

always be a friend, it sort of came across like we didn't have sort of the human touch, and we got some of that feedback from folks.

P: Being authentic to the space is really important. And...it sort of feels like one of the fans, not just sort of an automaton with a faceless voice.

Methods and practices have also evolved and continue to be developed that allow the team to organically engage and interact with other accounts while still broadcasting content in a more traditional method.

P: We try to have one goal for each tweet. One of them might be on platform engagement. One of them might be show tune in to a lesser extent. One of them may be to click and watch a video or read an article on espn.com. But sometimes it is just to have cool shareable content on Twitter. Just to go back to ESPN's mission statement to serve sports fans everywhere, and that includes on Twitter, where we're not always thinking it needs to lead to something else. There are fans on here who are engaging with this platform, so we want to serve them on that platform.

The success the team has had with growing the account by almost 20 million followers in the past two years has helped it to be seen as a company priority in the view of upper management, and participants noted the relationship with ESPN as an organization has been a productive one in terms of assistance and support for the efforts of the social media accounts. The team, in turn, works to make sure the account is "extending the brand" with its innovative thinking and creative content.

P: We treat it as a front page for ESPN and SportsCenter specifically where we're trying to share the biggest stories, the coolest stories, the most interesting and fun. Shareable is the buzzword. Those sorts of things where we're trying to, you know, share what's cool with our fans and stuff that they're gonna care about.

P: You always want more followers. You want to engage, and you want to promote SportsCenter in the best way possible. You want people to tune in, you want people to see what we're doing, and you want people to see the most interesting content...That's why they love sports.

P: At the end of the day we're producers in our production order chart. So we want them, our people, to look and be like, "What did I create today? What was something I innovated? What did I do differently?" Finding new apps to create cool content.

Social Network Analysis Measurements

In the oral interviews, the members of the Social Production Group also referred to other team members by name when discussing collaboration, information sharing, and problem solving. This data was then recorded and put into a sociomatrix similar to the ones used for the written surveys, as seen in Table 9. The data was then analyzed using the UCINET and NetDraw software. Again, each team member's code letter was listed on both the rows and columns, and, when they specifically mentioned interacting with another team member by name, a one was placed in the corresponding intersection.

Table 9

Interview Responses Sociomatrix

	A	B	C	D	E	F	G	H
A	X	1	1	1	0	0	0	0
B	0	X	1	0	0	0	0	0
C	0	1	X	0	0	0	0	0
D	0	0	0	X	0	0	0	0
E	0	0	1	0	X	0	0	0
F	0	0	1	0	0	X	1	0
G	0	1	1	0	1	1	X	0
H	1	1	1	1	1	0	0	X

From the sociomatrix and the corresponding visual sociogram, Figure 7, it is evident that Team Member C, one of the two team leaders, is again a central figure in the network. All but one of the participants mentioned him by name in the interview portion of the research. However, as with the written surveys, this information on its own, would not provide a thorough or sufficient description of the collaboration and communication of the group as a whole and the way it functions as a social network. The surveys, interviews, and observations all work together to better inform the research.

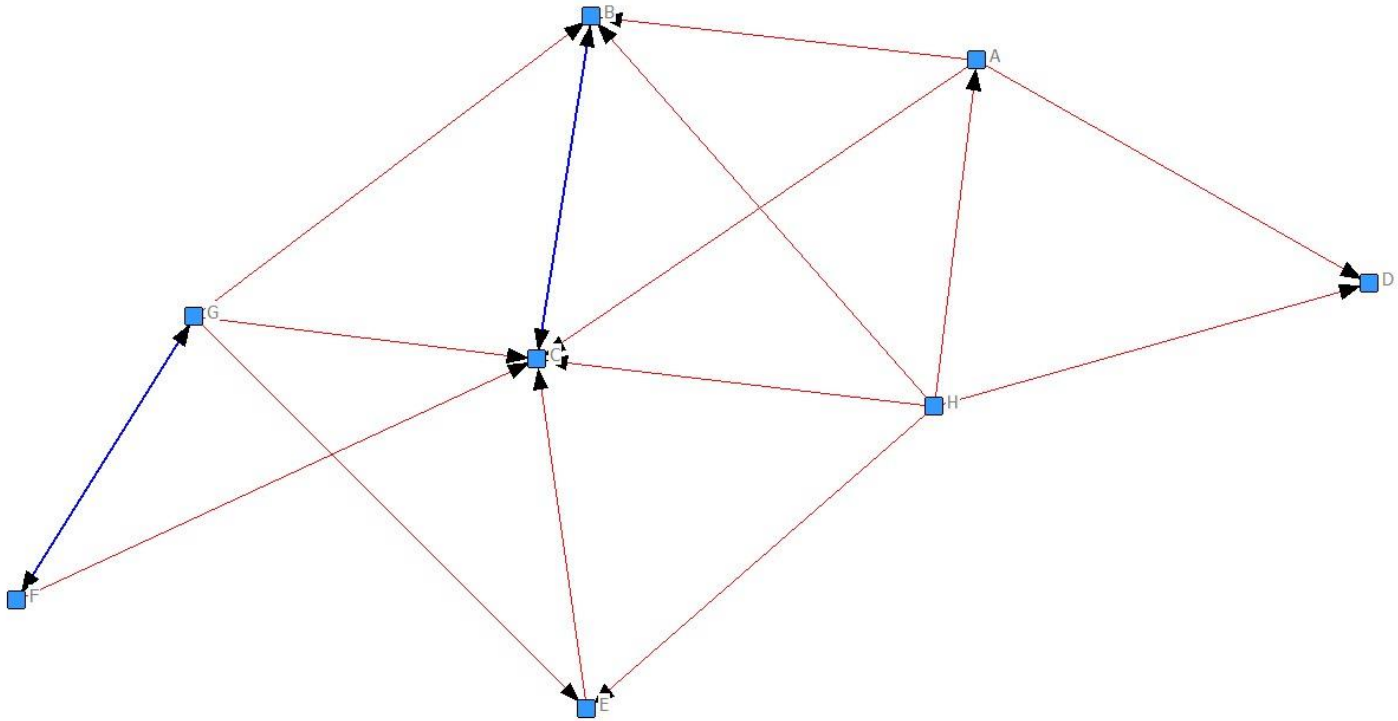


Figure 7. Interview mentions, with reciprocated ties in blue.

Summary

The individual interviews and observations of the team were indicative of the high camaraderie between the relatively young (both in age and experience) group. Because of the emphasis on creativity, risk-taking, and almost constant communication, they are not afraid to fail with an individual tweet or idea because, overall, they are succeeding in terms of growth rate of the account, engagement with followers, and priorities of the company administration. The upper-level and lower-level leaders of the group have created an environment conducive to collaboration, and this was seen in the behavior of the members of the Social Production Group. The key informant indicated that team members were hired, sometimes from other departments at ESPN, based on their skills, sports knowledge, and attitude.

From my observations, I noticed a high level of communication between members of the group. They talked frequently and continuously, chatting in a friendly manner about sports-related issues in general as well as specific work tasks. During the staff meeting, everyone participated in the discussion, contributing thoughts, ideas, and suggestions. All of these were met in a receptive manner, and, even when countering with another offer or refining the idea, the environment remained positive and upbeat. They interacted not only as a group of coworkers in a healthy work environment, but also as a group of friends would. While this was not stated explicitly, the upper-level managers responsible for hiring team members could very likely be seeking particular characteristics within their general requirements mentioned in the previous paragraph. For instance, a “good attitude” is open to interpretation, and, when hiring, the managers could be looking for an attitude or personality that would seem to blend well with those already in the group.

I also observed the two lower-level managers moving throughout the group regularly, checking on work tasks and ongoing events and just touching base with each individual team member. They also brought other assignments to the attention of the members of the group, talking both in smaller subgroups and on a one-on-one basis. It was clear that they were leaders in the group, but they maintained a friendly, approachable attitude and did not speak arrogantly or domineeringly to the other members. Given my observation of their level of communication with the team members, it is no surprise that they had the most central social network analysis measurements from the written survey portion.

While the social network analysis measurements derived from the written surveys were useful to understanding the team's communication patterns and information flow, they did not give a complete picture of the high level of communication and collaboration that the interviews and observation provided. On the other hand, the interviews alone were not sufficient to clarify the role certain members (like the team leaders) played; the social network analysis measurements provided a nuance to the interview responses. Having access to both of these types of data helped triangulate the data and offered a more complete picture of the environment as a whole. The next section will discuss the SportsCenter Twitter account itself and will continue to fill out the picture of this information provider.

Twitter Analysis

SportsCenter is one of the most followed accounts on Twitter. At the time of this writing, it was ranked at 36 with more than 24 million followers, almost equal to the general ESPN account and surpassed only by CNN and The Ellen Show in terms of similar media outlets (Twitter Counter, 2016). Despite its slightly lower rankings in follower numbers, it was the highest ranked television show account on Twitter in terms of retweets and favorites, more than three times any others. This results in greater engagement from followers, despite having slightly lower actual numbers of followers than other shows and accounts. It has also grown by almost 20 million followers in the last two years, and, with management changes, this growth has been strategic (personal communication, August, 2016).

Using demographic data, the team first created an avatar of the show's core fan to give the Twitter account a particular voice. They thought in terms of this character both in terms of how he might phrase a tweet and also how he might perceive a tweet they wrote. For example, the character lives in New York City but grew up in the suburbs, watching SportsCenter. He is a young, white male who plays fantasy football and most enjoys professional and college football but is also a basketball and baseball fan. This idea corresponds with what Bonini, Caliandro, and Massarelli (2016) found that followers of popular Twitter accounts frequently "display a clear fan cultural identity" (p. 50).

As with engaging other Twitter accounts, many of the participants in the Social Production Group stressed that writing in this avatar's voice was organic, not legalistic. They featured news, events, and commentary on sports outside of football, basketball, and baseball, and they were conscientious about including a variety of perspectives from women and ethnic groups. However, identifying this core fan was one tool that allowed them to work toward a unified voice when working as individuals but tweeting jointly for a single account.

Further similarities between the actual television show SportsCenter and the Twitter account also seemed to contribute to the unified voice. For instance, SportsCenter boasts a variety of anchors, but many of the participants referred to the single "SportsCenter voice" or "SportsCenter sound." This sound has developed since the show's 1979 premiere, and more than 100 anchors and reporters have contributed to the show. This idea of a multitude of voices functioning on a single television show to produce a SportsCenter sound has actually (intentionally or not) provided a template for

the Twitter account 30 years later. The members of the Social Production Group understand that there is a great deal of overlap between the core fans of the show and those who would follow it online.

Along with identifying the core SportsCenter fan, the team and management have also created “buckets” of content for the Twitter account. These 10 buckets include breaking news, highlight videos, “cool internet content,” quotes from athletes and analysts, and engagement with other ESPN brands, and the buckets also include best practices the team has developed and refined over time as well. These 10 categories ensured that every aspect of the content they wanted to highlight on Twitter was being covered, and the template has functioned as a training tool for new group members as well.

When this research first began, there was a much greater focus on the amplification of the ESPN brand in terms of the goals of the Social Production Group. However, with a shift in management structure as well as increased social media growth, the core principles were now to be part of the conversation on Twitter, to interact with the followers and fans on that platform in its own right while still promoting other content, and to get information to fans quickly but accurately. The team members were all familiar with copyright issues and the necessary processes to take to ensure their tweets were within legal bounds as well.

During the August 9-29 measurement period, the SportsCenter Twitter account sent an average of 42 tweets per day. The number of @ replies to these tweets ranged from around 20 to well over 100. Many of these replies were argumentative, offensive,

profane, spam, or vague (i.e. “!!!”), and analyzing them in depth is beyond the scope of this research.

The Social Production Group uses the Spreadfast software to filter out verified accounts and will, at times, interact with those athletes, teams, or analysts who reply to a tweet. However, the group typically does not engage the @ replies from average followers or even gauge success by the level of interaction based on these replies. Rather, they use the number of retweets and favorites to measure engagement with their followers.

Narrowing down to the #SCtop10 hashtag, the average number of retweets for the time period was 936, and the average number of favorites was 1,309. For the direct calls to action, where the team specifically asks viewers to submit their nominations, there were fewer retweets and favorites but, understandably, a larger number of replies since followers were submitting their nominations within that thread. The team again uses Spreadfast to filter out profanity and potentially offensive Twitter handles, then scrolls through any follower-nominated videos or links for the #SCtop10 feature. No particular users seemed to interact with the account at a notably higher rate than any others.

During the time period analyzed, the SportsCenter account sent a total of 45 tweets with the #SCtop10 hashtag, an average of 2.2 per day. Six of these (13.6 percent) were direct calls to action, asking viewers to submit plays for nomination. Only one was not a “singleton,” or “an undirected message where no specific recipient is suggested” (Larsson, 2013, p. 138). This directed message was sent as an @ message to two other Twitter accounts (@WWEUniverse and @WWE) notifying them of an

athlete’s inclusion in the #SCtop10 on the actual television show SportsCenter. The account had a variety of types of tweets and included media: text only, text plus a link, a static image with a link to a video or other story, and an embedded video that followers could see directly in the Twitter timeline. Table 10 breaks these down in percentages by the different types of tweets.

Table 10

Distribution of Tweets Sent by the SportsCenter Account by Type

Type of tweet	Number	Percentage of total tweets	Average Retweets	Average Favorites
Text only	9	20.4	113	280
Text plus link	11	25	1,000	1,419
Image	5	11.4	550	929
Video	19	43.2	1,356	1,731

Out of the 44 tweets sent during the time of analysis, there was an average of 921 retweets and 1,265 favorites. The number of favorites was higher than the number of retweets on almost every tweet, possibly indicating an inhibiting factor on the part of the user, which will be further discussed in the section dealing with the ISCM. As mentioned, the calls to action were also noticeably (and understandably) lower in both numbers of retweets and favorites. Table 10 specifically notes the average number of retweets and favorites for each type of tweet, but, overall, the text only tweets received the lowest amount of interaction, with figures far below the other types of tweets. On the other hand, the embedded videos generated the highest number of retweets and

favorites. Figure 8 also gives a visual representation of the retweets and favorites during the three-week period of analysis.

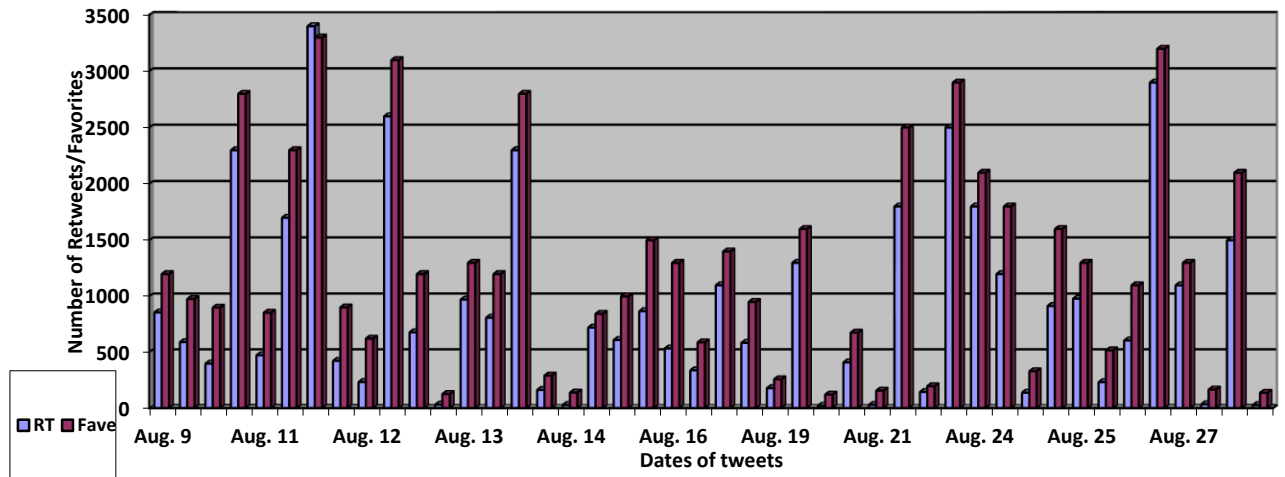


Figure 8. Average number of retweets and favorites.

While these numbers represent relatively high engagement from users on social media, it is worthy to note that they are only a small percentage of the potential connections between the SportsCenter account and its millions of followers. Even the highest number of retweets and favorites during the time of analysis represented less than half of one percent of the followers of the account. Contrary to the Social Production Group itself, this is not a dense network in terms of social network analysis measurements.

Other than the types of images used, there did not seem to be a difference between the engagement on a tweet in terms of retweets and favorites based on the type of sport it covered. The most frequently used words from the analysis period point

to a variety of sports coverage as well and, as seen in Figure 9, support the idea of SportsCenter as a home base for all types of sports fans. Figure 9 shows the most used words from the time of the Twitter analysis, both in the word cloud form and in terms of the number of times the words were used, as indicated in the chart on the right. The main content of the selected tweets included general sports terms such as “catch,” “make,” and “game” as well as Twitter-specific terms such as “ICYMI” (an acronym for “in case you missed it”).



Figure 9. Analysis of most frequently used words.

Summary

The SportsCenter Twitter account strives both to meet organizational goals and engage followers and fans, specifically, in terms of this research, through the #SCTop10 hashtag. After analyzing the content and themes of the tweets from the SportsCenter Twitter account in light of the interview analysis, written surveys, on-site observations,

and social network analysis measurements, it was further evident that the Social Production Group essentially functioned as a single information provider. Even after conducting the interviews and observations, it was not evident from the content of any of the tweets which member of the group wrote or edited any particular tweet. This is further indication that the Social Production Group can be viewed as a single unit or information provider when examining its operations in light of the information seeking and communication model.

Information Seeking and Communication Model

Each component of Robson's (2013) information seeking and communication model, Figure 10, is singly identified for further exploration and in-depth discussion. "A feature of the model is that it can be broken down into simpler components, which can in turn shed light on information behaviour" (Robson, 2013, p. 71). These components are discussed in detail below in relation to this specific study in light of the themes that emerged during the coding of the interview analysis portion, and examples of quotes from the participants will be given to illustrate these themes and the coding terms from Robson's codebook, which is listed in Appendix E.

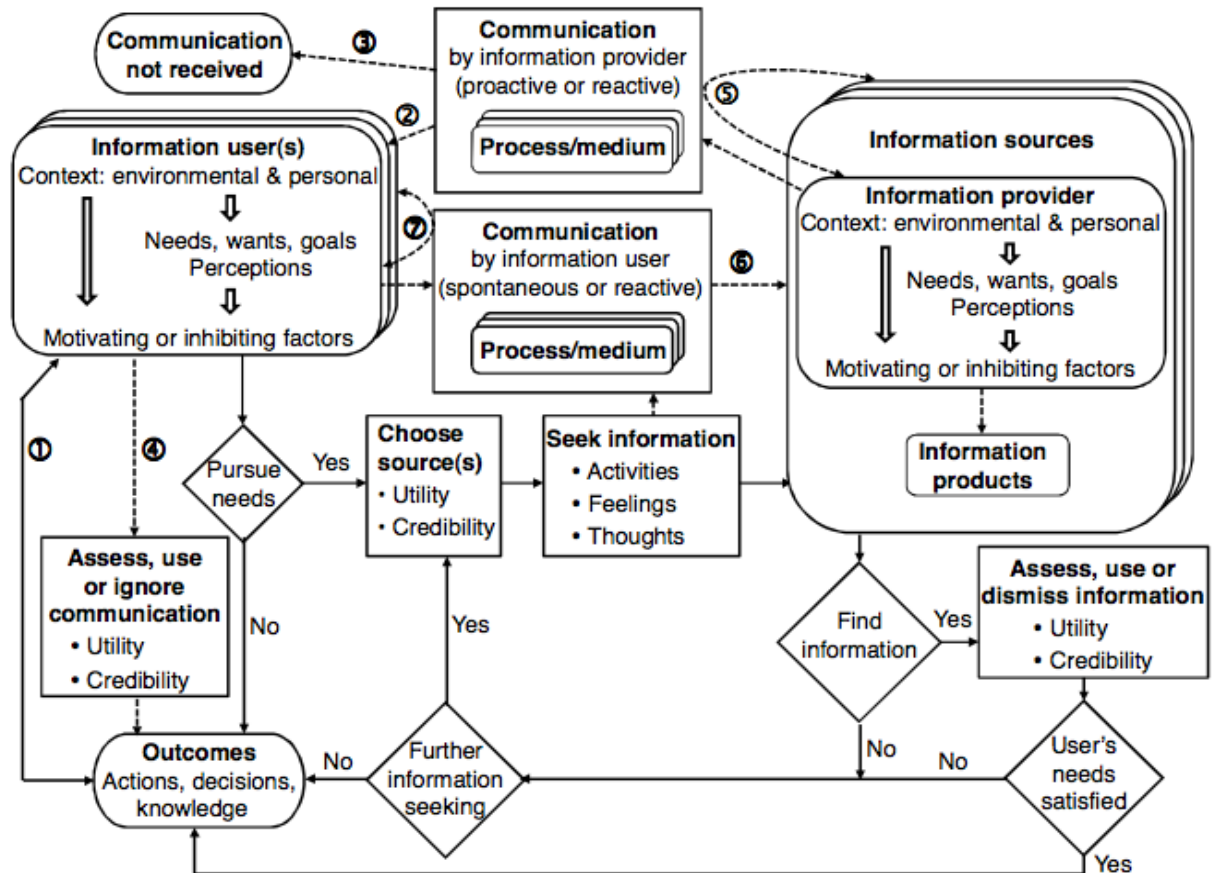


Figure 10. Information seeking and communication model (Robson, 2013).

The first component in the model is the information user: the individual user's context; needs, wants, goals, and perceptions; and motivating or inhibiting factors. In the codebook, Robson (2013) defined the user as an individual or group "that uses information, seeks information, has information needs, or receives communications." For this research, the information user would be defined as the collective Twitter

followers of the SportsCenter account. In the same way that the Social Production Group functions as a single account, the Twitter followers are also perceived by the team to function, in essence, as a single voice with a particular amount of social capital. “Digital platforms play a crucial role in enabling and sustaining online communities” (Spagnoletti, Resca, and Lee, 2015, Intro, para. 1). These Twitter followers’ wants and goals might include learning the score of a sports event, and motivating or inhibiting factors might be having to scroll back through their timeline or go directly to the SportsCenter account to most easily access that information. Perceptions come into play in terms of viewing the SportsCenter account as a news authority or credible source of information.

Examples of the information user component emerged in the coding of the interviews when team members referenced the calls to action (such as the #SCtop10), the avatar of the user the group created, the interests and needs of the user, and what content users might enjoy.

P: We just talked about what they liked, what they disliked, who their favorite athletes were, what kind of drink they would order at a bar... This is what mindset you have to get into or you have to start thinking like.

P: Just kind of providing news for them and providing really cool, fun content that they can somehow either share, interact with, or click to... we’re trying to look for the content that best, you know, if it entertains us, more than likely, it will entertain the fans.

P: Pushing that cool content, cool videos, cool pictures that we see. So yeah I mean it's all just trying to serve the fan and thinking as a sports fan and thinking, "Will I like this?", "Will this interest me?"

P: At the end of the day it's a sports network, you know, it's all for fun, and we'll definitely have some fun interactions like...with the fans or with other team accounts, stuff like that. Tweeting funny videos, and you know I think that's what fans, I think that's what they kind of look for in SportsCenter. If there's nothing happening, we'll have some fun, and if there is some news, they still go to us for the news, which helps us, I think, be a very successful platform.

The second component of the ISCM is the communication by the information provider, whether proactive or reactive. This information is sent via a particular medium, and in Robson's (2013) codebook is defined as "the process of communicating, disseminating, or sharing information." In the ISCM, the communication can be one-way, two-way, multidirectional, or broadcast. However, in this case, the SportsCenter Twitter account functions as the information provider, communicating primarily proactively with the Information User (but at times reactively when the Information User is a verified account or is chosen for the #SCtop10, for example), and the communication medium in this case is Twitter. The participants discussed the communication medium, as coded in the interviews, and relevant samples are included below:

P: There's no mold for it, but you want to try to have something like every 20 minutes or half hour cause you don't want it to be dead because people view the Twitter account more than they view the shows.

P: It's really fun during the playoffs or big NFL games because it's a lot of tweets in the moment.

P: We want it to be when something comes out, the SportsCenter Twitter handle is the first place they see it.

P: Spreadfast has partnered with Twitter, and they have the ability to grab all the tweets in all the twittersphere. Our job then is to break it down with keywords and searches and then find information that helps us create content or helps the shows to decipher where they're gonna put the content [for #SCtop10].

The third communication option in the model is when the communication is simply not received. As mentioned, this might occur if, for example, the SportsCenter account tweets something at noon, but a follower doesn't check Twitter until 12:20 p.m. Depending on how many accounts this user is following, it is possible that the SportsCenter tweet would not be seen if the follower did not scroll far enough back in the timeline or does not choose to go directly to the SportsCenter Twitter account. This is part of the reason the Social Production Group tweets so frequently. By tweeting every 20 to 30 minutes, the group believes it optimizes the chances of a tweet being seen.

If the communication is received, however, as indicated in the fourth component of the model, the user then has several options: to assess, use, or ignore the

information, depending on its utility and credibility. The user must take action or make decisions such as whether they will seek further information or if their needs are satisfied for the moment. Beyond the measurement of retweets and favorites, which will be discussed in component six, the user's behavior or motivations is beyond the scope of this study.

The fifth component examines the information sources taking into account the information provider's context; needs, wants, goals, and perceptions; and motivating or inhibiting factors that lead to the creation of information products. Through a two-way arrow, it is shown in the model that information providers can also communicate with each other, as in the case of the members of the Social Production Group as well as with outside sources, whether within ESPN or even another organization (such as the AP wire or athletic team).

The information behaviour of providers mirrors that of users...They substantiate the fundamental importance of context and related factors in the information behaviour of both providers and users. These affect needs, wants, goals, perceptions and motivating and inhibiting factors, and the resulting information seeking, information assessment and use, communications, decisions and actions. (Robson, 2013, p. 206)

The information provider's context and related elements such as needs, wants, goals and motivating and inhibiting factors was the code most represented during the interview analysis portion, with participants discussing everything from their personal goals of interacting more with followers to the goals of the organization as a whole.

Taken as a whole, the interviews present a richly detailed picture of the work culture or context of these information providers.

P: It's becoming a bigger and bigger thing, if we fail, that's OK. We learn, we make mistakes, and get better.

P: We just sit in the room, update what everyone's working on. Sometimes it dives into a brainstorm, sometimes it's a planning meeting. Sometimes we fight with each other about what's cool and what's not. Just the open dialogue and, like, an idea can come from anyone is what I think makes a team good and what makes us continue to grow.

P: People sort of have the feeling around it [SportsCenter] where it's just something we've all grown up around and watched even before we came here and worked where we sort of have an idea of what it stands for and how it's supposed to look and feel.

P: I just try to offer those ideas...It's just nice to have different ideas coming from all different areas and all different people, so. And everyone's been great about if I have an idea, they're like, "Yeah, go for it, try it out..." If something does well, that's good to know, and we can build off that.

Moving on to Component 6, the information user can then return communication to the information provider, again using Twitter as the medium, and this communication is labeled as either spontaneous or reactive, which seems to be particularly fitting in terms of the Twitter medium. For instance, a user sees a tweet from the SportsCenter account about the University of Alabama winning a football game and spontaneously

responds “Roll Tide!” The user could also make use of a variety of hashtags, including the #SCtop10 hashtag if a particularly good play was involved. Referring back to Component 4, the user’s needs might be satisfied if (s)he learns the score of the Alabama football game. However, the user might want to see highlights from the game and either click a link out of the tweet (information that was not publicly available to me to evaluate) or might return to a search engine such as Google or to the main ESPN site.

This research study primarily focuses on the model from the perspective of the information provider and the provider’s attempts to provide “utility and credibility” with the tweets sent out as information products. From the information user’s perspective, this research cannot identify the “feelings and thoughts” of the user when seeking information, but, via measurement of retweets and favorites, the “activities” portion of this component can be gauged. For instance, the group might speculate that, because favorites tend to be higher than retweets, the retweet function is a possible inhibiting factor on the part of the user since it requires an extra step and since users know this information will be shared on their timeline. Also, as indicated in the model, this information then returns to the information provider, who can then structure future information products accordingly.

P: The best thing about social is you have real-time engagement... But we can always tell when we do something creative or innovative, we try something new with .gifs or we try a different video...and it resonated really well, we can tell right away, "Oh this is what our fans like."

P: You can just look at the numbers, and it will tell you whether people liked the stuff or not. You know, we can see that more people retweeted or favorited or engaged with this piece of content than the other one.

P: I think, like, the easiest way for us to understand how the fans think of us is just to look at the numbers. And it's, you know, our followers go up and up. That's really, like I said, the metrics are there for something like this, where it's not a sample size of Nielson families that have their TVs on or off at a certain point. It's the actual people out there who are clicking the retweet button, the like button, or the favorite button who are letting us know whether they like something or don't like something.

P: The feedback we get from fans comes with the engagement. So it's where we're looking at "What did people think about this?" We don't need to read through the comments. We can just be like, "Oh well they liked it. They retweeted it x amount compared to our average." And we can sort of take the temperature of people that way.

There were additional codebook terms that were not specifically used in the analysis but are relevant to mention:

- Choose source (ChSource) referring to "a user's decision about which information source(s) to use when searching for information
- Seek/search for information (ISseek) related to "decision to seek information"

- Feelings and thoughts (ISF/IST) meaning “feelings and thoughts when seeking information”

These terms that were not used do represent elements of the information users' context such as needs, wants, and goals and motivating or inhibiting factors as well as users' perceptions, but these elements were beyond the scope of this research study. However, the Social Production Group, functioning as the information provider, was certainly aware of these elements of the information user, and the members of the group discussed some of these elements in the interviews based on their perceptions, which further underscores the importance and validity of the model as a whole.

Other coding terms from the ISCM that were used but not detailed above included:

- Sources (Source) referring to “information products”
- Assess/Process information (IProc) defined as “analyzing, evaluating, interpreting, and organizing information found by searching or receiving through communication. This coding primarily referred to the information providers' analysis of the users' responses (such as retweets and favorites).
- Utility (Util) meaning the “perceived usefulness, relevance, importance, timeliness, accessibility, or ease of use of information or a source”
- Credibility (Cred) defined as “perceived trustworthiness, reliability, accuracy, objectivity, authority, completeness, and lack of bias of information or source”

Summary

As Robson (2013) pointed out, “To prove the validity of the ISCM it is not necessary that every facet of information behaviour represented in the model should be demonstrated in every study” (p. 106). However, he did stress that it is important to decide whether any information concepts “are not adequately covered by the model” (Robson, 2013, p. 106). In this research, I did not find any general concepts that arose from the Twitter content, interview analysis, or surveys that were not covered in the ISCM. Therefore, the findings of this study serve to further support and validate the ISCM’s representation of information behavior.

Using these three components of the research study—the written surveys, the on-site interviews and observation, and the Twitter analysis—to examine information behavior in light of the ISCM not only further validates Robson’s (2013) model, but it also serves as a reminder that information providers and information users are inextricably linked in the ongoing exchange of information. This is particularly relevant for the journalist as information provider in light of the evolving democratization of information.

CHAPTER 5

CONCLUSION

Introduction

This interdisciplinary study examined the idea of journalists as information providers, using methods of social network theory and analysis as well as descriptive and exploratory case study methods. These methods were applied when looking at participants from ESPN's Social Production Group in relation to the SportsCenter Twitter account. The information seeking and communication model (ISCM) also provided further context beyond social network theory. The following research questions guided the examination of all elements in this study:

1. To what extent does social network theory explain the operations of the social media team responsible for a selection of ESPN's Twitter accounts?

1a. To what extent does this team exhibit network properties?

1b. How are these network properties influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?

1c. How can information theory, specifically the information seeking and communication model, explain or describe elements of the network relationship that are not covered by social network theory?

2. To what extent does social network theory explain Twitter interactions between the social media team and information users?

2a. To what extent can network patterns be assessed based on analysis of

these interactions?

2b. How are these network patterns influenced by a multi-operator organizational design where multiple people are responsible for one Twitter account?

2c. How can information theory, specifically the information seeking and communication model, explain or describe elements of the network relationship that are not covered by social network theory?

While the scope of this study limits the ability to generalize beyond this particular case, it does still provide useful information for other organizations who are using multiple operators to communicate as a single entity, particularly on social media. The study offers best practices, insights, and a theoretical foundation in the form of the ISCM for information providers who are interacting with information seekers, particularly in the online environment.

Social Network Dimension

Social network theory, in the idea of analyzing how networks actually work rather than just employing the methods of social network analysis, is best exemplified through the theories of the strength of weak ties and structural holes. Essentially, Granovetter (1973) argued that weak ties operate as bridges between networks, and these bridges result in greater information access and communication in a social system. Similarly, Burt (1992) stressed that structural holes, or nonredundant ties, connect individual nodes with sources of information and enable greater information flow. When examining

RQ1a and RQ2a in light of these theories, there are a few additional conclusions to note.

Social network theory does, to an extent, explain the operations of the Social Production Group as well as the interactions between the SportsCenter account and its followers. Network patterns and properties were assessed and described in the Results chapter. Within the Social Production Group itself, there are no weak ties or structural holes. It would be necessary to go outside the group to the larger organization or even to other comparable institutions where members have contacts to concretely explain how weaker ties or structural holes function in relation to this network. That being said, based on information from the surveys and interviews, there are elements of these theories at work. For one, the high rate of turnover within the team members of the group provides a number of weak ties to other departments at ESPN as well as to other organizations. This would certainly enable information sharing not only of news or events, but also of best practices in terms of social media strategy. Further, since the two lower-level managers have been in their positions for several years, they function as the bridges between the previous and current team members who have experienced more rapid job turnover. Over the years these two people have been in place, the Twitter account has undergone rapid growth, so this would potentially support Granovetter's and Burt's theories.

Preferably, the research would have included detailed social network analysis of all Twitter interactions between the SportsCenter account and its individual followers; however, that was beyond the scope of this study and the software available at the time of the study. Based on the information that was available, similar conclusions to

Larsson's (2013) can be drawn in relation to the Twitter users. Specifically, the uses of a particular hashtag, such as the #SCtop10, are rather diverse and sporadic, not strongly connected to individual followers. While there might not be any weak ties within the Social Production Group itself, it could be argued that the relationship between the SportsCenter Twitter account and its followers, even those who engage with the account in relation to this hashtag, is made up entirely of somewhat weak ties. The exception to this could be the interactions between the SportsCenter account and other verified accounts, such as athletes and teams, and this would be interesting for further research.

The Social Production Group members all indicated in the interviews that they felt, while they could always improve on their work, they were, in fact, meeting their goals of extending the television show to online platforms, facilitating cross-platform integration, and interacting with fans. The Twitter analysis corroborates these perceptions. By posting throughout the day, even when the show is not on television, followers have an opportunity to see a video or read an article about a story that aired earlier in the day. Through the variety of content featured such as the images, videos, links, and text, as well as retweets of other ESPN accounts, the Social Production Group is also intentional about cross-platform integration. Finally, as discussed, the primary way the group interacts with the average follower is by measuring engagement in the form of retweets and favorites and by using calls to action, such as the #SCtop10 hashtag.

For RQ1b and RQ2b, Borgatti and Halgin's (2011) idea of a bond model is relevant.

By working together they can accomplish more than they could alone...the bonds between the nodes enable the nodes to act as if they were transferring the capabilities of the other nodes to each other, but without actually doing so...enabling groups of nodes to act as a single node, often with greater capabilities. (p. 7)

Borgatti and Halgin (2011) also note that the bond model addresses elements of power in networks. Several members of the Social Production Group discussed the responsibility they feel toward other Twitter accounts at ESPN, recognizing the power the SportsCenter account has in terms of retweets and engagements for those accounts. For example, the Baseball Tonight Twitter account has about 703,000 followers, compared to SportsCenter's 27.4 million. Therefore, a retweet from the SportsCenter account of one of the Baseball Tonight tweets connects its content to the millions of followers who would likely not see it otherwise. Similarly, as the participants discussed, a retweet of a (non-verified) follower's submission to the #SCTop10 would certainly increase that Twitter user's visibility and could perhaps strengthen the relationship between the fan and the account. This idea would need further research and exploration, as does Borgatti and Halgin's relatively recent bond model, but the principles are useful for RQ1b and RQ2b.

The bond model principles discussed show that the network properties—both within the Social Production Group and between the Twitter account and its followers—are, indeed, influenced by this multi-operator organizational design and its resulting single voice. Further, the one voice model, as displayed in Figure 6, demonstrates the

success of the team and its almost perfect collaboration, providing additional validation for social network theory.

Information Science Dimension

One interesting element of this exploratory study was the degree to which the information seeking and communication model addressed elements of the network relationships that were not specifically covered by social network theory, in answer to RQ1c and RQ2c. The ISCM built on classic models of information science and communication to develop a more comprehensive model to explain the connections and interactions between information users, sources and products, and information providers. While, as discussed in the previous chapters, some of the elements from the users' perspective were beyond the scope of this research, the ISCM thoroughly outlined the information providers' processes. Additionally, in coding the interview responses, there was not an element of the participants' discussion that was not covered by the ISCM. Therefore, the ISCM certainly explains and describes elements of the network relationships that are not covered by social network theory and contributes to information science theory.

Two other information theories relevant to RQ1c and RQ2c are the diffusion of innovations and communities of practice. Rogers (1995) discussed the influence of opinion leaders in terms of "technical competence, social accessibility, and conformity to the system's norms" (p. 27). While this influence cannot necessarily be proven in terms of the SportsCenter Twitter account, the account does meet these three standards. Its growth in number of followers as well as its high rate of engagement relative to other

similar accounts points to a large degree of potential influence among its followers. This is another area of potential further study.

Similarly, through the use of the avatars and buckets of content created by the group, there is a demonstrated homophily with the information users that is an important aspect of both the theories of diffusion of innovations and communities of practice. The Social Production Group itself certainly exhibits characteristics of a community of practice such as a range of perspectives within a common interest, constant adapting to changing membership and circumstances, and a common collaboration, communication, and interest (Brown & Duguid, 1991; Davis, 2010; Wenger, McDermott, & Snyder, 2002). While made up of individuals, the group displays a consistent voice when operating as an online account.

Research Setting

Bates (1999) argued that information science requires multiple methodological approaches to conduct its research” (p. 1049). Since journalism is also a “meta-field,” the same could be true for research that relates to this area of study as well. This study addressed elements of journalism, communication, and information science. The research participants are journalists, communicators, creators, producers, and information providers. Like others in these roles, they are no longer merely gatekeepers or broadcasters but instead partners in the democratization of information due to technological advances and ease of access to information. Because of these elements, this research setting worked particularly well with the multiple methodological approaches and the ISCM.

Future Directions

This research study was a beginning step in examining a team of journalists as information providers who are operating as a single entity in an online environment. It also contributed to validating the relatively recent information seeking and communication model, which offers insights to similar teams or networks (Robson, 2013). This study offered theoretical, practical, and methodological implications that could direct potential future studies.

Theoretical Implications

There are opportunities for further exploration on a number of theoretical levels. As the roles of both journalists and information providers continue to evolve in light of the democratization of information, information science theories can be utilized in order to better understand these evolving roles. Theories such as the diffusion of innovations and communities of practice offer multiple opportunities for future research in the area of journalist as information provider as well.

The highly promising information seeking and communication model also needs further research and validation to confirm its place in information science theory. While it is being researched in connection with the healthcare field, opportunities for investigation abound in library science, journalism, public administration, and other communication and information fields. “The findings could be used to identify specific training needs of information officers and ways in which they could enhance their services in order to increase their utility or credibility for their clients” (Robson, 2013, p. 253). As Robson and Robinson (2013) noted, validation of the ISCM further validates

other information theories as well since this model builds on several of these other noted theories.

Finally, there are further research opportunities in the field of social network analysis. Specifically, a larger-scale social network analysis study would be useful at an organization like ESPN or a similar entity, rather than just a study of a select group. This could offer a more complete perspective on the non-public side of a very public account. Similarly, measuring across other online social networks could be useful on a number of levels. Whether a comparison of accounts on Twitter, Facebook, and Instagram or even an institution's customer service email account that multiple people are responsible for monitoring, further studies could determine whether groups function similarly across platforms and organizations or if some actions are platform-specific or unique to a culture such as that of ESPN.

Further validation is also needed for the one voice model to see if other networks demonstrate this high level of collaboration. Comparison with the success of other groups could indicate whether this model is, indeed, a result that will offer further implications for social network theory. After investigation, if this model is supported, it could provide a goal for similar teams and groups to strive for when working toward one voice in their own organizations.

Practical Implications

This study offered organizational applications for practitioners in the field of journalism who operate as information providers (Bates, 1999). In fact, many organizations, including libraries and other information science institutions, can benefit

as well since these organizations frequently have multiple operators working as a team on a single social media account. Examining how the Social Production Group functioned and communicated on a daily basis provides an idea of best practices for creating a unified voice on a single Twitter or other social media account.

Despite their relative inexperience, organizational change, and a high rate of turnover among the team members, the Social Production Group has seen remarkable growth on the SportsCenter Twitter account in terms of engagement, results, and the number of followers. In light of rapid change on the Internet in general and social media in particular, the team's young ages and adaptability to administrative change has perhaps served to its benefit. In the same way it can adjust to a new vision or try a new method, it can quickly respond to breaking sports news or timeline changes on Twitter. The emphasis on both creativity and communication has also enabled the team to take calculated risks and employ a variety of communication methods, such as face-to-face, email, and text messages. For the most part, they stay on call, communicating even when they are not actually in the office if needed, and there is a great deal of communication with the lower-level managers in the group as well. While all the members of the group were well-connected, these managers were the most central figures within the dense network.

While perhaps difficult to quantify, it is also important to note the organic nature of the communication within the Social Production Group. Each member of the group understands the tone and voice of both the television show SportsCenter and the connected Twitter account. They communicate with other shows and verified accounts (such as teams or athletes) as it "feels right" and fits that tone. They are also aware of

the variety of the audience as well as the main avatar of the fan. These methods of communication and interaction can be adapted by other organizations in a number of information fields.

This study also offers a number of future directions for research on a practical level. Information organizations who operate social media accounts, particularly employing multiple operators of that single account, could experiment with different communication styles, adopting methods of the Social Production Group to see which ones might improve their engagement with followers online. These organizations could also develop avatars of their audience, then do informal testing and research of these attempts. For ESPN, one possibility would be to employ a consultant or network analyst to further study the Social Production Group's best practices and offer suggestions to other subgroups at the organization who have not had the same level of growth or engagement.

Methodological Implications

This study employed a combination of research methods to explore and describe the team behind the SportsCenter Twitter account and how these results fit with the information seeking and communication model. Taking this approach allowed for a more complete picture of the group itself and its operations in terms of social network analysis. While there were some limitations to approaching the research in this way, there were also promising results from a methodological perspective. Approaching analysis of information behavior from multiple social network levels, using a variety of instruments, contributes to social network analysis and information science on both a

theoretical and methodological perspective (Bates, 1999; Larsson, 2013). Again, studying more networks on a larger scale is the next step in order to generalize and confirm these methods. Also, while particularly challenging in the social media world, in order to fully understand the information behavior of online social networks, it is necessary to incorporate the information user perspective more fully. As Bonini, Caliandro, and Massarelli (2016) pointed out, “proving that the network of social relationships of a Twitter profile for a radio (or any other media) constitutes real social capital for the media itself could be a very interesting line of research” (p. 51). This social capital could eventually translate into economic capital, so this research could have practical implications for organizations such as ESPN as well who are continuing to develop ideas to monetize their social media presence.

Although SportsCenter’s Twitter account is entirely online, the Social Production Group works out of the same office in Bristol, Connecticut. It would have been helpful for me to conduct multiple visits and attend meetings over a longer period of time, perhaps the course of an entire sports season to be able to watch ideas, collaboration, and communication develop in person. With more time spent together, the group might have also become more comfortable with me, enabling me to garner additional insights. However, everyone in the study was accommodating and understanding of the travel difficulties and schedule considerations.

Summary

This research study is an important early step in examining the changing role of information provider in light of the democratization of information and continuing

technological advances, particularly in the realm of social media. The research results demonstrate that models such as the ISCM are vital to understanding and clarifying what the interactions are between information providers and users. Despite these rapid technological changes, however, social network analysis of groups also continues to provide a theoretical grounding for this same understanding of interactions. While the role of information providers will likely continue to change along with technology and information products, the interactions between these providers and users as well as between the providers themselves display patterns that have been seen throughout previous social network research.

The success of the SportsCenter Twitter account in terms of engagement with followers shows the importance of the organizational context for the interactions between information providers and users. Best practices can be gleaned from the Social Production Group's strategies and modified to fit a variety of organizations who use multiple operators to manage a single account of a brand or entity. Robson (2013) concurred, noting that "environmental and personal contexts strongly influence the information behaviour and perceptions of both the information user and provider" (p. 243). The ISCM addresses these contexts as well as the relationships between information providers, users, and products and illustrates elements of information flow. When combined with social network analysis methods that also speak to information exchange, researchers can produce a rich description of a variety of organizations and gain benefits on both practical and theoretical levels.

APPENDIX A
PERMISSION AND CONSENT DOCUMENTS

Approval Letter

Social Production Group Manager
ESPN
Bristol, Connecticut

Dear [Social Production Group Manager],

As you are aware from past conversations, I am working on my dissertation, tentatively titled Examining the Twitter Habits of Sportscasters. I am formally requesting that ESPN allow me to conduct research with the Social Production Group under your supervision. I have listed the particulars of the research below to further outline what I am requesting:

-The study will involve a survey that will be emailed to your employees and returned via email to me; these should take about 15 minutes to complete. After completion of the surveys, I will travel to Bristol, Connecticut, to conduct face-to-face interviews with the team. These interviews should take about 30 minutes to complete. Questions would relate to the SportsCenter Twitter account and to how the team members communicate with one another; the questions might also clarify some of the survey responses. I would work with you to schedule the best day(s) and times for these interviews, preferably this summer, and would do my best to minimize interruptions of your team's work responsibilities.

-There are no foreseeable risks to the members of the Social Production Group or to ESPN, and the participants would not be obligated to answer any questions that might make them feel uncomfortable. The study is designed to analyze the provision of information in the Twitter environment and the general operations of a team working together, not to evaluate ESPN or expose any confidential data. The survey and interview questions would not relate to television ratings information.

-This study will hopefully provide insights into best practices for journalists who are communicating and interacting with Twitter followers as well as insights into working as a team to manage a single Twitter account. I would be happy to share the final results with you in writing as well as in person if you believe a face-to-face presentation would be useful to your team.

I request permission to conduct this study within the ESPN organization.
If you have any further questions, please do not hesitate to call or email me.

Thanks,
Tiffany Norris
Doctoral Student, University of North Texas
[phone number redacted]
[email address redacted]

Consent Form

Hello,

Thank you for your participation in this study. The purpose of this study is to examine how a group made up of several people manages the SportsCenter Twitter account. In particular, the study will attempt to explain information behavior and how you work together as a team to manage a single account and interact with the followers of that account.

If you choose to participate, you will be asked to respond to a survey that will take about 15 minutes to complete. The survey will ask you to identify fellow members of the Social Production Group and other workers at ESPN who are instrumental in your work. You will not be identified in any report or publication describing the study. The original surveys will have your name on them, but will only be seen by me and will not be shared with anyone else. Once the information is extracted and the surveys are no longer needed, they will be destroyed.

After completing the survey, you will be asked to participate in a face-to-face interview conducted by me, which will further clarify your answers and work habits. This will take about 30 minutes. These interviews will be recorded and transcribed, and only I will have access to the original tapes and transcriptions.

No foreseeable risks are involved in this study, but the study may contribute to a better understanding of Twitter habits, interaction, and management.

This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). You may contact the UNT IRB at 940-565-3940 with any questions regarding your rights as a research subject. If any question or problems arise, you may contact me or Dr. Barbara Schultz-Jones, UNT School of Library and Information Sciences at 940-369-8081.

By returning the survey via post or email to me, you are agreeing to voluntarily participate in this research study. You may print or copy this form to keep for your records.

Thank you again for your participation.
Tiffany Norris
University of North Texas
School of Library and Information Sciences

APPENDIX B
WRITTEN SURVEYS

Surveys

Name:

Age:

Current Job Title:

Gender:

Length of experience at ESPN:

Length of experience in Social Production Group:

Four statements are listed below, with a response scale to use when answering the questions.

Please select the appropriate response for each member of the production group, with the exception of yourself.

1 = Very often (on a daily basis)

2 = Often (At least once a week)

3 = Sometimes (Within the last month)

4 = Infrequently

5 = Never

Statement 1: I typically turn to this person for information about work-related topics.

Statement 2: I typically provide information to this person on work-related topics.

Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.

Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.

Name	Statement 1	Statement 2	Statement 3	Statement 4
GroupMember1				
GroupMember2				
GroupMember3				
GroupMember4				
GroupMember5				
GroupMember6				
GroupMember7				
GroupMember8				
GroupMember9				
GroupMember10				
GroupMember11				
GroupMember12				
GroupMember13				
GroupMember14				

If there are other ESPN employees outside the group who are important to getting your work done, please add them at the bottom of the list, then rate them on the statements as well.

Additional comments:

APPENDIX C
INTERVIEW QUESTIONNAIRE

1. Can you describe your current job (not just your title, but in your own words)?
2. Can you talk about your information exchanges with other members of the Social Production Group?
3. Can you describe your information exchanges with the SportsCenter account's followers on Twitter?
4. What are the goals of the Twitter account, and do you believe those goals are being met?
5. How do you come up with ideas for what to post?
6. Are there any problems that come up from multiple people posting to the same account? If so, how do you work through these problems?
7. How do you think its Twitter followers view the SportsCenter account?
8. How does the account interact with other accounts at ESPN?
9. What is your preferred method of communication with fellow group members? (Email, face-to-face, phone, text, other)
10. Is there anything else you would like to discuss?

APPENDIX D

RAW DATA

Statement 1: I typically turn to this person for information about work-related topics.

	A	B	C	D	E	F	G	H
A	x	1	1	1	1	2	3	1
B	2	x	1	3	2	2	3	3
C	2	1	x	2	2	2	2	2
D	1	3	1	x	2	3	3	2
E	3	2	1	4	x	3	3	2
F	4	3	1	3	1	x	1	4
G	4	1	1	4	3	2	x	4
H	1	1	1	1	1	2	2	x

Statement 2: I typically provide information to this person on work-related topics.

	A	B	C	D	E	F	G	H
A	x	1	1	1	1	2	3	1
B	1	x	1	1	1	1	1	1
C	1	2	x	1	1	1	1	1
D	2	3	1	x	3	2	3	2
E	2	1	1	3	x	2	2	2
F	4	3	1	2	1	x	1	4
G	4	2	1	4	3	2	x	4
H	1	1	1	1	1	1	1	x

Statement 3: I typically turn to this person for help in thinking through a challenging problem at work.

	A	B	C	D	E	F	G	H
A	x	2	1	1	2	3	3	1
B	2	x	1	2	1	1	2	2
C	3	2	x	4	3	4	4	4
D	1	4	1	x	2	3	4	2
E	3	2	1	4	x	3	5	3
F	4	3	1	4	2	x	2	4
G	5	2	1	5	3	1	x	5
H	1	1	1	1	1	3	4	x

Statement 4: I typically collaborate or discuss new or innovative work-related ideas with this person.

	A	B	C	D	E	F	G	H
A	x	1	1	1	1	2	2	1
B	1	x	1	1	1	1	1	1
C	3	2	x	3	2	3	3	4
D	2	3	1	x	2	4	4	2
E	3	1	1	3	x	3	4	2
F	3	3	2	3	2	x	3	4
G	5	1	1	5	2	1	x	4
H	1	1	1	1	1	3	3	x

Statement 1 and Statement 2 combined: I typically turn to this person for information and provide information to this person.

	A	B	C	D	E	F	G	H
A	x	2	2	2	2	4	6	2
B	3	x	2	4	3	3	4	4
C	3	3	x	3	3	3	3	3
D	3	6	2	x	5	5	6	4
E	5	3	2	7	x	5	5	4
F	8	6	2	5	2	x	2	8
G	8	3	2	8	6	4	x	8
H	2	2	2	2	2	3	3	x

APPENDIX E
CONTENT ANALYSIS CODES

Term	Code	Used for
Information	Inf	Information, data, content of an information product. Information provided as guidance, advice, or advocating a course of action.
Utility	Util	Perceived usefulness, relevance, importance, timeliness, accessibility, or ease of use of information or of a source.
Credibility	Cred	Perceived trustworthiness, reliability, accuracy, objectivity, authority, completeness, & lack of bias of information or source.
User	User	Individual, group, or organization that uses information, seeks information, has information needs, receives communications.
User's context	UCon	User's environmental and personal context, including demographics, living or working environment, resources and technology available, culture, job role, knowledge, expertise, and psychological factors.
User's needs, wants, goals	UNWG	Personal or job-related information needs, desires, or aims that may lead to information seeking.
User's perceptions	UPer	Perceptions of self and self-efficacy, perception of a knowledge gap, perceptions of others including sources and information providers.

User's motivating factors	UMF	Factors motivating a user to seek information.
User's inhibiting factors	UIF	Factors inhibiting a user from seeking information.
Sources	Source	Information products, communication media, or the providers of information.
Provider	Prov	Individuals, groups, and organizations that produce, supply, or communicate information or facilitate or control access to it.
Provider's context	PCon	Provider's environmental and personal context including demographics, living or working environment, resources and technology, culture, job role, knowledge, expertise, and psychological factors.
Provider's needs, wants, goals	PNWG	Personal, job-related, or organizational information needs, desires or aims that may lead to production and dissemination of information.
Provider's perceptions	PPer	Perceptions of individual provider or organization of itself, perceptions of others including users.
Provider's motivating factors	PMF	Factors motivating a provider to communicate information.
Provider's inhibiting factors	PIF	Factors inhibiting a provider from communicating.
Information products	Prod	Literature, databases, websites, presentations, TV, and radio programs and other outputs from information providers.
Communication	Com	The process of communicating, disseminating, or sharing

		information by an information provider or by a user. One-way, two-way, multidirectional, or broadcast communication.
Communication medium	ComMed	The medium or channel through which information is communicated.
Choose source	ChSource	A user's decision about which information source(s) to use when searching for information.
Seek/search for information	ISeek	Decision to seek information.
Feelings and thoughts	ISF/IST	Feelings and thoughts when seeking information.
Find information	Find	Finding information as a result of information seeking.
Assess/Process information	IProc	Analyzing, evaluating, interpreting, and organizing information found by searching or received through communication. Refers to a user or provider of information.
Information Use	IUse	Using information to:
-Act/Decide	Act/Dec	-Take action or make a decision on the basis of the information.
-Produce information	Prod	-Produce information in printed, electronic, or other form.
-Communicate	Com	-Disseminate or share information.
Information non-use	Ign	Ignoring information or dismissing information received or found.

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