

Demand for Sport: An Econometric Analysis of Web 2.0 Use

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I dedicate my thesis to my amazing best friend and wife, Katie Steller. Without her support, patience, and constant high level of academic competition I would have never completed this milestone. Thank you and I love you!

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ABSTRACT

Web 2.0 is made up of a collection of social media platforms that are driven by user-generated content that has gained attention from sport academics and professionals alike due to its growth over the past decade. Sport social media research has historically approached this effective marketing and relationship building tool from the lenses of user motivations, but there is a growing trend in analyzing numeric trends. This study employs a model built on demand theory to analyze which determinants of demand are important in generating Web 2.0 traffic for National Collegiate Athletic Association (NCAA) Division-I-Football Bowl Subdivision (FBS) teams during the 2014 season. The study provides several important contributions to the literature. First, the research helps advance the methodology of analyzing Web 2.0 content generation and what factors draw fans to create content. Additionally, the findings have implications that marketers and practitioners can utilize to more efficiently reach markets

Chapter 1 Introduction

As the internet developed, it quickly differentiated itself from other types of media because of its ability to let users interact with each other (Riegner, 2007). This interaction, engagement, and user-generated content features of the internet have been categorized as Web 2.0 and is defined by the platforms that allow users to not only connect with each other but also create content and broadcast it to anyone who stumbles upon it (Constantinides & Fountain, 2008). A perfect example of Web 2.0 and its exponential growth is Twitter. Twitter is a microblogging platform that gives users the opportunity to share their thoughts or “current status” instantly in 140 character messages (Java, Song, Finin, & Tseng, 2007). In the decade since its creation, Twitter has grown from 94,000 unique users to 271 million unique users (Barnett, 2011; Java et al., 2007). This growth is attributed to Twitter’s ability to be used by many different types of people motivated by a wide range of desires and outcomes (Java et al., 2007).

From this, the number of Web 2.0 users has increased dramatically from 2005 to 2013. Additionally, social media users grew from only 8 percent of internet users to 73 percent of internet users (Cameron & Geidner, 2014). Sport teams’ Web 2.0 accounts have also shared in this increase. For example, Twitter accounts of college football teams have nearly doubled their followers in just less than 2 years. The University of Michigan football account has increased from 149,382 followers in July 2013 to 296,915 followers in May 2015 (Tennessee, 2013, 2015). While the University of Michigan football Twitter account has gained many followers in such a short time, Clavio and Walsh (2014) noted that overall social media participation among college sport fans with official team Facebook and Twitter feeds is low. They also found that the leading motives for sport

fans to utilize Web 2.0 platforms is to gain information, while there is little intent to interact with a sport team's account. Furthermore, to better understand Twitter users' intentions, they can be divided into four categories: daily chatter, conversations, sharing information, and reporting news (Java et al., 2007).

On a broader scale, sport fans are no different in their use of Web 2.0 and their shared need for information than the general Web 2.0 user. While fans may differ from general Web 2.0 users slightly because they tie their identity to the success of a team or athlete instead of a company or brand. Their motives are similar in wanting to find an identity with a sport figure or organization, create relationships centered around a shared interest, and to learn more about a subject. (Clavio & Walsh, 2014; Stavros, Meng, Westberg, & Farrelly, 2014). However, despite numerous studies which examine an array of variables that influences a fan's motivation for attending a match or game and for following a team, there is little information on why fans demand social media or Web 2.0 (Allan & Roy, 2008; Borland & Macdonald, 2003; Gitter & Rhoads, 2010; Van Leeuwen, Quick, & Daniel, 2002). Clavio and Walsh (2014) argued that the growth of sport fans utilizing social media to follow a team is much lower than the growth of social media users as a whole. These examples of previous research show that social media and Web 2.0 are relatively new context of study in sport communication and marketing and that research has established that sport fans utilize social media for numerous reasons including following athletes, coaches, teams and leagues but has not looked at the variables and factors that impact how fans utilize the medium on a functional basis. This is an element of social media because of its ability to allow individuals to gain and contribute information instantly during games or as storylines unfold. Considering this,

the goal of this study is to investigate what factors influence fans to consume social media in a sport context.

Specifically, utilizing Web 2.0 traffic during the 2014 college football season, this study examined the influence of factors on the volume of Web 2.0 content generated around individual college football teams. In order to discover the influence level of each variable, the study used a quantitative approach utilizing regression models to estimate results. Through such methodology, this study showed that these variables may or may not be directly applicable to social media use, but also uncovered new trends and explanations for why fans choose to utilize Web 2.0 platforms.

1.1 Focus of Study

In order to examine the consumer interest for sport across social media platforms, this study employs economic demand theory as applied to sport by Borland and Macdonald (2003). A fan's interest in sport includes their need to view or listen to the game, buying products associated with the contest or team, and their willingness to follow a team or keep up with news outside of competition (Borland & Macdonald, 2003). This study looks specifically at Web 2.0 content that mentions a college football team as a derived demand or a product that is created or derived from the game itself (Borland & Macdonald, 2003). In order to gain a better understanding of the derived demand for Web 2.0 content, the study will examine 123 Division 1 college football teams in the Football Bowl Series (FBS) Division and the number of times they are individually mentioned daily during the 2014 football season. Data collection will focus on the 2014-2015 season and begin with content created on August 20, 2014 (the Wednesday before the first game) and end on January 15, 2015 (the Thursday following

the National Championship game). This sample was chosen in order to gain a complete picture of social media usage and allow for the comparison of conferences, school size, team success, and fan expectations. The choice to gather information daily instead of weekly was made to provide more accurate results on when fans utilize social media based on the measured variables. College football was chosen due to the high percentage of fans in the 18-29 year old age bracket, which accounts for 89% of social media users (Cameron & Geidner, 2014). The higher concentration of users surrounding this college football provided an increased number of Web 2.0 content and provided a more vivid picture of how variables affect the number of active social media users. Thus, through the use of the economic demand theory, this study will uncover what factors influence a fan base to post about their team and discover if the factors that influence fan attendance can be used to predict a fan base's use of social media platforms.

1.2 Definition of terms

Economic theory of demand: States that under a certain set of circumstances a consumer will act a certain way and his decision to purchase an item can be swayed each way based on the changes in the factors that create the present circumstance (Lancaster, 1957)

Social media: Highly interactive internet-based platforms in which individuals and communities share, co-create, discuss, and modify user-generated content (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011).

Web 2.0: A collection of open-source, interactive, and user-controlled online applications that expand the experiences, knowledge, and market power of users and makes them participants in business and social processes (Constantinides & Fountain, 2008).

NCAA: National Collegiate Athletic Association (Soebbing, Tutka, & Seifried, 2015).

Division 1 FBS: The Division One Football Bowl Series is the highest classification for universities in terms of athletics (Soebbing et al., 2015).

1.3 Significance of Study

This study attempted to build on a growing volume of sport research working to explain how fans utilize Web 2.0 platforms, and the results have several implications. Theoretically, the study is one of the first to employ economic demand as a framework to explain the habits of fans across multiple Web 2.0 platforms. Previously, studies by Clavio (2008), Perez (2013), and Watanabe, Tan and Soebbing (2015) have investigated one form of social media over a game or a season which have provided significant findings related to consumer habits but do not illustrate usage patterns across platforms or for all teams in a league. The large nature of the dataset built on timing research from Watanabe, Yan, & Soebbing and fan preferences from Pérez and Calvio to better explain what determinants of demand impact social media traffic. Additionally, this study has several significant statistical findings that improve the understanding of what factors influence social media traffic and have practical implications. Results highlight the importance of participation over outcome in post game play and which factors determining target market can assist social media managers in properly allocating resources. Results of timing variables concluded that to maximize exposure, marketers should focus their efforts on certain months and days. These results can improve the efficiency of marketing and the number of fans reached. Finally, there are several methodological contributions made by this study. The individual qualities of universities and their football teams lead to a wide variation in fans and factors influencing sport consumption both on social media platforms and in-person sales. Previous research found

that 60 percent of variation in football revenue can be attributed to conference membership and a similar effect was found in Web 2.0 usage (McEvoy, Morse, & Shapiro, 2013). This study utilized a log-linear transformation of the data to account for a greater range of data variation. This, combined with the use of clustered random effects in the regression model, produced results that better assessed the true influence of demand determinates on fans' consumption of Web 2.0 platforms. Considering that a large amount of previous sport social media research has focused on surveys and interviews that account for a relatively small number of schools and fans, the present analytical framework maybe beneficial in better explaining the difference in fan motivation based on the effects from several determinants of demand.

Chapter 2 Literature Review

2.1 Social Media and Web 2.0

Web 2.0 was born from the evolution of Web 1.0 which had grown from the origins of the World Wide Web in the early 1990s (Campbell-Kelly, Garcia-Swartz, 2013). Web 1.0 consisted of static webpages where one author reached many people (Hsu & Han Woo Park, 2011). Web 1.0 evolved to Web 2.0 as developers created ways for general users to communicate with others. This created an environment where webpage content became dynamic and many people produced content for the masses (Hsu & Han Woo Park, 2011). Social media platforms, such as Facebook and Twitter, are built on the idea of user-generated content and fall under the umbrella term of Web 2.0. Web 2.0 is considered to be a collection of open-source, interactive, and user-controlled online applications that expand the experiences, knowledge, and market power of users due to the new roles played in the business and social process by creating and sharing information (Constantinides & Fountain, 2008). The origin of social media can be traced back to SixDegrees which launched in 1997 and allowed users to connect to friends and relatives to share content (Kietzmann et al., 2011). Following the launch of SixDegrees companies such as Facebook, Myspace, LinkedIn, etc., expanded on this idea of creating content to share with others. Kietzmann et al. (2011) describes social media as a system that “[employs] mobile and web-based technologies to create highly interactive platforms via which individuals and communities share, create, discuss, and modify user-generated content.” Constantinides and Fountain (2008) explain that this is possible through networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, and sharing of informational content. Additionally, Web 2.0

includes other platforms besides profile-based social networks such as micro-blogging (Twitter), forums and bulletin boards, communities (YouTube and Flickr), and bookmarking sites (Reddit) that allow users to rank content based on votes (Constantinides & Fountain, 2008; Kietzmann et al., 2011). With the growth and types of Web 2.0 platforms increasing, the motives and demographics of users are changing as well. It is due to these factors that Web 2.0 is of high interest to academics and practitioners alike.

A variety of theoretical frameworks have been created to explain Web 2.0 users' motivations. Kietzmann et al. (2011) places user motives in a honeycomb of seven functional building blocks: identity, conversation, sharing, presence, relationships, reputation, and groups. Each separate honeycomb of users has a unique user experience and motivations as well as implications for a product and company. The seven categories do not have to be present in every Web 2.0 scenario nor does a single user fall only into one category of motivation (Kietzmann et al., 2011). Kietzmann's building blocks provide scholars with a way to categorize and explain Web 2.0 users and actions. Another approach employed by Riegner (2007) is to place Web 2.0 users in different categories based on usage. For example, some (Social Clickers) utilize Web 2.0 to maintain and build relationships, while others (Content Kings) do not communicate as much but are there to have fun and expand their knowledge. Furthermore, Online Insiders are more holistic in their use of their Web 2.0 usage by not only connecting with others but also shopping, creating personal pages and blogs, and creating their own 'voice' in communities Fast Trackers, who are too interested in utilizing Web 2.0 for their own needs and do not interact with others (Riegner, 2007). Fast Trackers are people who are

too interested in using the internet to meet their needs of actively communicating with others. This group is interested in things such as checking the news, weather, and sports news.

The interaction of Web 2.0 users has created a shift in market power (Constantinides & Fountain, 2008). Riegner (2007) described the new power saying, “Everyday consumers are wielding greater control over their media habits and their role in the commercial marketplace.” This has led to a shift in marketing power, taking the complete control of media from the marketer and putting in the users’ hands (Constantinides & Fountain, 2008). For example, Riegner’s 2007 study found nearly 31 percent of participants were reviewing products online and 15 percent were expressing their opinions. Web 2.0 has created a customer who wants a strong online component to their purchased products and an engagement level that was not present before (Constantinides & Fountain, 2008). Web 2.0 is built on the action of communication and engaging conversation between two parties, which is illustrated in the Twitter research of Aladwani (2015). The study found that 64 percent of tweets and 88 percent of replies were made by individual users. Aladwani (2015) also found businesses were missing the prime time to reach their market; and activity times were crossing with target market usage times only 16 percent of the time. This swing in market power has created new marketing programs and many companies are forced to play catch up in order to keep ahead of the curve (Constantinides & Fountain, 2008). These trends in activity times and user-generated content are also prevalent in sport as fans identify with teams.

2.2 Social Media and Web 2.0 in Sport

The shift in power and rapid growth of Web 2.0 platforms in the last decade has not been ignored by sport teams or sport scholars. Initial Web 2.0 research simply revolved around what it is, how people use it, and why fans are using it (Hardin, 2014). Early studies found that sport Web 2.0 users did not differ from other users in that their motivations to gain information or to identify with an organization (Clavio & Walsh, 2014; Williams, Heiser, & Chinn, 2012). Along these lines, Hutchins (2014) quickly realized that the true value of Twitter was in how it could be monetized, such as sponsored posts, the ability of posts to act as marketing tools, and the expansion of multi-screen viewing by fans. Researchers expanded the scope of social media and Web 2.0 studies to investigate things, such as the way coaches utilize Twitter to recruit, factors that affect changes in daily Twitter followers, or what drives new fans to follow a team's account (Jensen, Ervin, & Dittmore, 2014; Pérez, 2013; Watanabe et al., 2015). In a review of sport research, it was found that current studies examining social media in relation to sport can be divided into three types: strategic, operational, and user focused (Filo, Lock, & Karg, 2015). This review of research examined 70 published journal articles in order to illustrate the importance of social media in relationship marketing (Filo et al., 2015). Filo et al. (2015) not only concluded that social media marketing was important in building the brand-consumer relationship, but that interactions and engagement are extremely important in building these relationships.

First of all, strategic research investigates the role and function of Web 2.0 in sport from a brand's perspective such as Hutchins' (2014) examination of possible revenue increase from social media, as well as how a soccer club may gain supporters by

utilizing social media (McCarthy, Rowley, Jane Ashworth, & Pioch, 2014). Strategic research has utilized a variety of methodologies including questionnaires, qualitative data analysis, content analysis, and analysis of a total social network (Filo et al., 2015). Although the methodology varied across studies, the theoretical approach most used was the relationship marketing theory (Filo et al., 2015). Furthermore, strategic research continued to highlight the importance of social media interaction with fans and how it created a stronger bond. Research found that social networks were increasingly important in spreading information and that fans followed social media accounts quickly and thoroughly (Hambrick, 2012). Abeza, O'Reilly, and Reid (2013) established five opportunities where teams can benefit from using social media: enhanced knowledge of consumers, advanced interactions, effective engagement, efficient use of resources, and quick assessment of the fan-brand relationship. These five areas would provide future guidance to Web 2.0 research in the realm of sport.

The second category, operational, focuses on how brands use social media on a day to day basis. These studies focus more on social media techniques and their ramifications (Filo et al., 2015). Operational focused studies utilized a plethora of methodologies including content analysis, questionnaires, and semi-structured interviews while utilizing a variety of theories to explain social media trends (Filo et al., 2015). A prime example of operational research is the Geurin-Engleman and Clavio (2015) study. It found all athletes, especially niche athletes, have a lot to gain by using Facebook to reach fans. They found fans interacted more with an athlete when they shared personal feelings and experiences with their fans. While sport entities have been reluctant to embrace social media, such as the attempted ban of fan-generated content during games

by the Southeastern Conference in August 2009, many now have followed the research and use it to the fullest extent (Ostrow, 2009). Athletic programs now produce Twitter hashtags for big games that allow fans to connect more easily and see what others are posting (Smith & Smith, 2012). Utilizing Web 2.0 platforms provide teams with a simple modern utility to expand their brand identity and awareness across the world (Pérez, 2013). The acceptance of social media usage has also spread to coaches utilizing Twitter to connect to fans and, more importantly, as a recruiting tool (Jensen et al., 2014). The strength in social capital is in its ability for an organization to build relationships with consumers and create a brand loyalty or team loyalty among followers. Teams, athletes, and coaches are smart to employ the growing medium because sport fans utilize social media in sport at a higher proportion than the common internet user and they can continue to build relationships and brand loyalty. Facebook specifically was found to create greater social capital between fans and between a fan and their team (Phua, 2012).

Finally, user-focused research specifically examines the sport fans' motivations, constraints, perceptions, and preferences in social media use. This research also focuses on demographics, or the fan profiles of users, and examined mostly primary and empirical research (Filo et al., 2015). User-focused research mostly applied gratification theory in past research to evaluate user motivation, but recent studies have explored new methodologies by employing a demand theory framework (Filo et al., 2015). An overarching finding in user-focused research was that sport fans utilize Web 2.0 platforms at a high rate. For example, out of 1,000 participants, it was found that 97.9 percent had a Facebook page and 68.4 percent have a Twitter account. These results are staggering compared to the 19 percent of all adult internet users who have a Twitter

account and 71 percent that have a Facebook account (Cameron & Geidner, 2014; Clavio & Walsh, 2014). While these numbers show that sport fans are more likely to use Web 2.0 platforms it is important to note that these fans are not a good representation of all sport fans but actually they are a unique market segment (Billings, 2014). Sport fans who use Twitter represent a market of individuals who are poised to have a larger impact than the average user due to the use of tweets constantly by national broadcast channels, such as ESPN (Billings, 2014). Billings (2014) explains that this ability, combined with the influence of a viral retweet, places a lot of power in any one tweet. Beyond simple consumers, the sport fan population that makes up Twitter users and social media as a whole can also be viewed as a microcosm for sport research that should not be ignored (Hutchins, 2014). Clavio (2011) describes the importance of Web 2.0 platforms in younger generations, because they feel more comfortable using these mediums. His research showed that in younger fans, Web 2.0 platforms were utilized more and older media such as newspapers or sports radio were showing a decline. Motivations of sport fans who use Web 2.0 are broad and important in understanding user motives.

2.3 Sport Fan Behavior on Web 2.0 Platforms

The motivations and uses of social media by sport fans is an emerging theme in current sport communication research. Sport fans utilize social media for numerous reasons including: following athletes, coaches, teams and leagues (Stavros et al., 2014). Fans are motivated to follow their favorite athletes' and teams' accounts by the passion they have for their teams, the hope they will win, and the attachment and esteem they get from being associated with a successful team or a strong-branded network of people (Phua, 2012; Stavros et al., 2014). Witkemper, Lim, and Waldburger (2012) and Phua

(2012) establish that sport fans are using Twitter and Facebook as a way to gain information, enhance or supplement their experience, entertain, or simply waste time. In addition, Clavio and Walsh (2014) found that most sport fans are motivated to use Twitter to find out about upcoming events. Their results also found that the lowest-ranking motivations revolved around interactions with fans and others, contrarily fans are more motivated by interactivity with athletes and teams (Clavio & Walsh, 2014; Gibbs, O'Reilly, & Brunette, 2014). Additionally, Clavio (2008) found that among sport forum posters their primary motives revolved around information gathering based and social-related elements. These results show that sport fan social media users provide a unique sample of individuals because of their wide range of motives for utilizing different platforms. While there are some similarities across different forms of Web 2.0, many share the primary theme of information gathering and a secondary motive of social-related items. Not all Web 2.0 users can be tracked because of their stealth usage, but they must be accounted for. This can be accomplished by thinking of users as two groups: lurkers and posters (Williams et al., 2012). Lurkers are users who actively visit online communities or follow Twitter accounts but do not post. In contrast, posters are active social media users who post their ideas and view themselves as a valuable part of a brand and even promoters. While their usage is different, both types of people may have a strong sense of team identity (Williams et al., 2012). They discovered that the lurkers are more likely to become repeat game attendees than the posters who utilize media as a way to connect and to experience the sport. This is particularly important when combined with the statistics that only 13 percent of social media users are creators or posters, 33 percent are passive users, 19 percent are joiners, and 15 percent are collectors (van Dijck, 2009).

The results from this study will only be representative of the posters, but if there are a large number of posters, then there are also a large number of users passively viewing social media. The research in sport fan utilizing social media is growing, but it's characterized mostly by studies looking at motivations and behaviors of fans with a small subset looking at secondary data to find trends (Jensen et al., 2014; Smith & Smith, 2012; Williams et al., 2012). Growing from this small subset is a trend of using demand to explain the trends in sport fan usage of Web 2.0 and social media in order to gain a more complete understanding of how variables affect usage (Pérez, 2013; Watanabe et al., 2015). This study utilizes demand in order to continue this line of research with a larger, more complete dataset.

2.4 Demand Theory

Demand theory has long been used to examine the sport industry in order to explain a wide range of topics including baseball labor market, fan consumption, sport team actions (Borland & Macdonald, 2003). It is rooted in neo-classical economics and justifies consumer and market actions. It establishes that under a certain set of circumstances a consumer will act a certain way and his decision to purchase an item can be swayed based on changes in factors that create the present circumstance (Lancaster, 1957). For example, in order to purchase or consume an item, the buyer must see it favorable based on the current circumstance. It is also important to note that a only a few factors may impact the actions of an individual, in other situations, all factors may contribute in the decision on how to act (Lancaster, 1957). The origins of sport demand research can be traced to the early works of Rottenberg and Neale. Rottenberg (1956) first utilized economics to analyze organized baseball and discussed why economics was

important in a team's success. He applied economics to explain how teams selected players, how much to pay them, and even the rationale behind the draft (Rottenberg, 1956). Building on this application of economics in sport, Neale (1964) introduced the idea of joint products and the importance of media in driving ticket sales and consumption of joint products that result from a game. The idea of the Fourth Estate Benefit was introduced, which is that the reporting of game results and league standings will increase sales (Neale, 1964). The Fourth Estate Benefit is applicable to Web 2.0 content today but on an exponentially larger scale due to the increased content and number of users on these platforms. This is one of the first media to total revenue relationships stated in sport, and it still is applicable today and has implications in this study. Building on the sport economics base created by Rottenberg and Neale, El-Hodiri and Quirk developed the first theoretical model to explain how market size determined demand for sport (El-Hodiri & Quirk, 1971). Scully (1974) furthered sport research with the first empirical study in sport economics, looking empirically at the relationship between pay and performance of professional baseball players. From this came an increase in applied economic research in sport, including Bird's investigation into the relationship of demand of sport products (Bird, 1982). Bird's research was the first to establish an equation to explain the impact of variables on the willingness of consumption and suggested that media coverage, TV in this case, may lead to a positive increase in demand (Bird, 1982).

The theory of economic demand in sport has been more recently used to analyze many things including fan attendance, how fans view sport, and even the willingness of fans to buy concessions or how economics plays a part in social media use. (Coates &

Humphreys, 2007; Gitter & Rhoads, 2010; Van Leeuwen et al., 2002; Watanabe et al., 2015). The consumer theory process is no different than how sport fans approach choices during their sport experience. The demand for consuming sport can be explained using a standard consumer theory model (Borland & Macdonald, 2003). This model incorporates five main determinants of demand that influence a fan's choice to attend or consume a game. The five determinants of demand are, as defined by Borland and Macdonald (2003), form of consumer preferences, economic, quality of viewing, characteristics of the sporting contest, and supply capacity. Borland and Macdonald (2003) further describe demand and consumer model theories by breaking elements down into direct demands and derived demands. Direct demands are those things occur due to the game and the game itself such as stadium concessions, and game day events. Derived demands are products that use the game to create something. Derived demand examples include a TV or radio show that use the game to create content. These derived demands would not occur if it was not for the sporting event (Borland & Macdonald, 2003). Neale (1964) described derived demands as joint products. Joint products referred to the process of two products technologically resulting from a single process, such as viewing a game and the Web 2.0 content that is produced from a single sporting event (Neale, 1964). Social media usage can be placed in both of these categories depending on how it is being utilized. If it is being viewed to keep track of the game, then it would be a direct demand. But if it was being consumed as a second screening option in combination with game attendance or if the content of the game was being used to create gains by a third party, then social media usage would be viewed as a derived demand or a joint product. For the

sake of this study, social media is viewed as a direct demand that is being used for other reasons than to make a gain by the user.

2.6 Determinants of Demand

2.6.1 Fan Consumption

Fan consumption of sport has been explained by the theory of economic demand, the consumer model theory, and the determinants of demand many times in sport research (Borland & Macdonald, 2003). It is important to understand that while there may be one determinant of demand many sport factors can affect it. While the literature about the factors affecting a fan's motivation to actively create Web 2.0 content is small, the literature of factors that affect fan attendance is quite large. This study will draw from these factors and investigate how they affect the number of unique social media users that produce content pertaining to a college football team. The extensive pool of demand theory-based literature exploring factors that affect fan attendance provides many variables that may affect a fan's motivation to use social media. Literature discusses several elements that influence fan attendance to a game such as uncertainty of outcome, quality of contest, significance of contest, success of a team, availability of alternates (Allan & Roy, 2008; Borland & Macdonald, 2003; Gitter & Rhoads, 2010).

2.6.2 Consumer Preference

Consumer preference is the first determinant discussion by Borland and Macdonald (2003) and includes many factors such as fan loyalty, tradition, fan experience, and perceived quality. Fan loyalty can be a major influence in how often a fan interacts or attends a sporting event (Hill & Green, 2000). Hill and Green also found that a fan's interaction with the sportscape has a large impact on fan interest and

consumption. Van Leeuwen et al. (2002) developed the sport spectator satisfaction model in order to better describe how fans build their perceived quality value of an experience and how they navigate through negative experiences. While fans may adjust their perceived experience based on loyalty and attachment to a team, there is also evidence that a winning team produces higher attendance and more loyal fans (Borland & Macdonald, 2003; Van Leeuwen et al., 2002). Team performance has been found to have a positive effect on attendance and can increase attendance by nearly 2 percent (Gitter & Rhoads, 2010). Branvold (1997) also found that attendance at Class A and AA baseball games was greatly affected by winning percentage. Several other studies reinforced the fact that fans are more easily satisfied when a team wins and they have more fun (Van Leeuwen et al., 2002). While this factor may play a role in fan consumption and attendance, the question of how it affects a fan's use of social media has yet to be researched. All of these factors affect the consumer preferences determinant.

2.6.3 Sporting Contest

The dimension of sporting contest is described by Borland and Macdonald (2003) to include the factors of the competition such as level of competition such as the quality of competition and the uncertainty of outcome. They presented a model to measure the level of competition, quality of match, uncertainty of outcome, and significance of each contest based on the rankings of each team and the requirements for post-season play. Previous studies have established that competitive balance is a positive indicator of fan attendance and that attendance is higher at a competitive game (Levin & McDonald, 2009; Neale, 1964; Szymanski, 2001). Neale (1964) labeled outcome uncertainty as "race utility". He established that the better the competition and more position changes in the

standings, not only ticket sales, but also media coverage would increase. If true, then there should be increased Web 2.0 traffic if teams have a greater outcome uncertainty.

The level of competition and difference in ranking can also be used to quantify perceived expectations of a team, which can factor into fan satisfaction and attendance (Van Leeuwen et al., 2002). While the competitive balance of the teams playing draws fans' attention and attendance to a game, the level of uncertainty around a game may have a greater influence for fans who are less attached to a team (Borland & Macdonald, 2003; Szymanski, 2001; Van Leeuwen et al., 2002). Szymanski (2001) discovered that overall in a game's attendance, the presence of uncertainty may overshadow the idea of a level playing field, indicating that fans would rather see their team win than have a level playing field. This idea is also one way (Groza, 2010) explained the trend of increasing attendance following a college football team changing conferences. Groza (2010) found that attendance increased as a team moved conferences, even if traditions were lost in the change. He explained that the increase occurred, not only because some conferences have a bigger draw than others, but the idea of playing a new opponent created a level of uncertainty about how the home team would perform. The idea that an interleague or intra-league game creates a difference in attendance was also presented by Szymanski (2001), who found that an intra-league game was more likely to draw higher attendance. This could be due to the meaning of the game which has been proven to affect attendance.

Ahn and Lee (2014) found that MLB games that fans view as important, such as a play-in playoff game or a rivalry game, saw a higher level of attendance. Borland and Macdonald (2003) also discuss the factor of game importance on demand, saying that a

game that has playoff implications is more highly attended. The characteristics of the sporting contest are the most influential reasons persuading fans to attend a game, even outweighing population income, which may inhibit a fan's financial ability to attend (Levin & McDonald, 2009). It is important to note that even with a poor performance or poor perceived expectation based on rankings, fans can create their own idea of performance and skew what actually happened in order to maintain a high level of satisfaction with a team (Van Leeuwen et al., 2002).

2.6.4 Economic Factors

Economic factors have a large impact on fan attendance and ticket sales as well (Borland & Macdonald, 2003; Neale, 1964). The economic factor determinant encompasses many things such as average income of fan, the availability and cost of alternatives, the market size of the team, and price of admission (Borland & Macdonald, 2003). While many of these can be negated when studying Twitter due to its low cost of entry, a few cannot. A game being aired on TV is a low-cost alternative to attending a game and crowds out home team spectators but could actually increase the use of social media during a game due to dual viewing. (Allan & Roy, 2008). Dual viewing has grown in popularity especially in live, talent-based shows and is by far the most popular entertainment type to utilize dual viewing (Buschow, Schneider, & Ueberheide, 2014). This specifically occurs towards the end of a show when there is a call to action from an affiliated social media account. The number of users tweeting increases significantly and can cause trending to occur (Buschow et al., 2014). This same type of thing can occur during a sporting event as many times announcers may incorporate social media games or polls into a broadcast. Dual viewing can also lead to a polarized audience as Cameron

and Geidner (2014) found in their dual viewing study. Participants tended to gravitate towards the negative comments more when they were present even if positive comments were more prevalent (Cameron & Geidner, 2014). These factors cannot be ignored in analysis as dual viewing is growing in sport and may have an impact on the amount of unique Twitter users.

2.6.5 Quality of Viewing

Quality of viewing is a determinate that takes into account the setting of the sporting event, including things like location, concession quality, sportscape, and timing of the event (Borland & Macdonald, 2003). These factors have been found, in several studies, to affect fan attendance at a game. Sportscape has been shown to have a large impact on whether a fan will return to a game and how much they enjoy the game. (Hill & Green, 2000). It has also been proven that if a game is played on a public holiday or on a weekend, more fans will attend than if a game is played on a weekday (Baimbridge & Cameron, 1995). Baimbridge and Cameron (1995) also found that games played in the evening were more attended and watched on TV than those that were played during the day. Borland and Macdonald (2003) also place away games and the distance a fan must travel to a game as a quality of viewing determinate. Leonard (2005) found that the choice of a fan to travel to an away game was affected by many factors including: distance, winning percentage of their team, and destination. It was found that the fans that actually travel to the away games of teams with a losing record are less affected by distance than fans of a winning team. It was also found that the factor of distance was a lesser factor if the destination city had more experiences to offer than just the sporting

event (Leonard, 2005). Quality of viewing encompasses most things that are directly related to game day besides what happens on the field or court.

2.6.7 Supply Capacity

Supply capacity is the fifth determinant of demand discussed by Borland and Macdonald (2003) and is determined by the size of the stadium in which the sporting contest takes place. If the desired supply capacity is usually below the capacity of the stadium, then there are no constraints on attendance from supply. But if desired supply capacity is greater than stadium capacity, the stadium will sell out (Borland & Macdonald, 2003). Stadium capacity has not been proven to have an impact on number of tickets sold besides the fact that higher capacity stadiums can sell more seats. Higher capacity stadiums may have an impact on the number of social media users present due to the increased number of fans attending a game.

While many studies have utilized demand theory to analyze social media they have only done so either by only one team, one game, or one platform (Graves, McDonald, & Goggins, 2016; Pérez, 2013; Smith & Smith, 2012; Watanabe et al., 2015). The proposed study will fill the gap in literature by analyzing all Web 2.0 content across all platforms for all 128 FBS Division 1 NCAA College football teams during the entire 2014-2015 season. This study will also fill the gap in literature regarding changes in motivation for consumption of social media over an entire season. Utilizing the determinants of demand laid out in Borland and Macdonald (2003), this study will consider how Web 2.0 content is affected by different factors. The study aims to answer the following research question:

RQ1: Utilizing the economic demand theory and the determinants of demand, which factors surrounding a college football season have a significant relationship with changes in Web 2.0 content produced in a 24-hour period over an entire season?

Based on current research in sport, such as the finding of Watanabe et al. (2015) concerning Twitter followers in MLB, I hypothesize that a change in factors such as win streak and outcome uncertainty variables will impact the volume of Web 2.0 traffic about a specific team.

Chapter 3 Methodology

In order to examine the demand for Web 2.0 content using the determinants of demand outlined in Borland and Macdonald (2003), data was collected for 123 out of 128 NCAA Division 1 FBS football teams utilizing Infegy Atlas software and college football data sites. Five schools were removed from the sample due to the inability to gather data for these teams. In the end, the dataset spanned the period of August 20, 2014 to January 15, 2015, in order to capture the entire 2014-15 NCAA FBS season. The platform used for data collection, Infegy Atlas, describes itself as “an industry-leading social media analytics platform that utilizes proprietary algorithms and the industry’s most comprehensive dataset to deliver consumer insights at a speed, depth and accuracy that cannot be matched” (Infegy Atlas). Data from Infegy Atlas was collected for a set period each day from 12:00 a.m. to 11:59 p.m., allowing for daily measurement of all traffic in a 24-hour period. The data collected spanned all Web 2.0 platforms, including universal content, microblog posts, and blog posts. In the end, the data collected during this time resulted in approximately 19,000 team-day observations. Watanabe et al. (2015) utilized the change in Twitter followers in the previous 24-hour period; however, this study will position the daily Web 2.0 content created in the previous 24-hour period as the dependent variable (*Web2.0Content*). The reason for this is to provide a better representation of the dispersion of content amongst teams.

3.1 Explanatory Variables

In order to explore the impact of demand factors on the creation of daily Web 2.0 content, a variety of variables were selected utilizing the determinants of demand outlined in Borland and Macdonald (2003). The study also utilized more recent empirical

variables proven by previous studies to expand on current research (Pérez, 2013; Watanabe et al., 2015). The first three variables used to represent consumer preference were based on the time of season: preseason (PreSeason), regular season (InSeason), and post or bowl season (BowlSeason). All three of these were dummy variables based on which week it is. Next, whether or not it is a game day was taken in to account as a dummy variable as well as if it is a home game.

The next set of variables accounted for the sporting contest and its characteristics. The rank of a team was recorded (Rank), the game outcome (Win or Lose), as well as the total number of wins a team has (Wins) and the total number of losses throughout the season (Loss). Furthermore, variables were also included to indicate if it is a conference championship (ConfFinal), a bowl game (BowlGame), a game on New Year's that is not part of the College Football Playoffs (NYnonCFP), or if it is a College Football Playoff (CFP). Also, variables were used to mark wins for these games. Three additional variables were added to indicate if it is a semifinal game (SemiFinal) or a championship game (Championship) and if a team is the champion (Champion). Three variables were included to account for econometric factors. Population and per capita income of each metropolitan statistical area (MSA) were gathered from the Bureau of Economic Analysis. In addition, a control variable was added for each of the ten conferences and the independent teams. Controls were also added to represent the month and day that games are played. The remaining two determinants of demand, supply and quality of viewing, were not included because there is no cost to using most Web 2.0 platforms and quality of viewing can vary greatly between all Web 2.0 users.

Table 3.1 – Independent variables

Variable Name	Factor Measured
PreSeason	Observation occurs during preseason
InSeason	Observation occurs during season days
BowlSeason	Observation occurs during post season days
Game	Game day (Yes = 1)
HomeGame	Home game (Yes = 1)
Rank	The Massey team ranking for that week
Won	Team won their game (Yes = 1)
Lose	Team lose their game (Yes = 1)
Wins	The total number of wins a team has
Loss	The total number of losses a team has
ConfFinal	Participation in a conference championship (Yes = 1)
ConfChamp	Won conference championship (Yes = 1)
BowlGame	Participated in bowl game (Yes = 1)
BowlWin	Won a bowl game (Yes = 1)
NYnonCFP	Bowl game on New Years that was not a CFP game (Yes = 1)
CFP	Played in a College Football Playoff game (Yes = 1)
SemiFinal	Played in the CFP semifinal game (Yes = 1)
Championship	Played in the national championship game (Yes = 1)
Champion	Won national championship (Yes = 1)
Population	The population of the MSA
PerCapitaIncome (PCI)	The per capita income of the MSA
Enrollment	Total school enrollment
Independents	School with no affiliation. (Yes = 1)
ConferenceUSA	Membership in Conference USA (Yes = 1)
Pac12	Membership in Pac 12 Conference (Yes = 1)
SunBelt	Membership in Sun Belt Conference (Yes = 1)
AAC	Membership in Atlantic Athletic Conference (Yes = 1)
MAC	Membership in Midwest Athletic Conference (Yes = 1)
BigTwelve	Membership in Big 12 Conference (Yes = 1)
ACC	Membership in Atlantic Coast Conference (Yes = 1)
SEC	Membership in Southeastern Conference (Yes = 1)
MountainWest	Membership in Mountain West Conference (Yes = 1)
BigTen	Membership in Big 10 Conference (Yes = 1)
August	August (Yes = 1)
September	September (Yes = 1)
October	October (Yes = 1)
November	November (Yes = 1)
December	December (Yes = 1)
January	January (Yes = 1)
Monday	Monday (Yes = 1)
Tuesday	Tuesday (Yes = 1)
Wednesday	Wednesday (Yes = 1)
Thursday	Thursday (Yes = 1)
Friday	Friday (Yes = 1)
Saturday	Saturday (Yes = 1)
Sunday	Sunday (Yes = 1)

3.2 Model and Econometric Issues

In order to analyze the panel data in this study, econometric methods are used. Specifically, this research will employ a regression to estimate the results from the following equation:

$$\begin{aligned} \text{Web2.0Colume} = & \beta_0 + \beta_1 \text{PreSeason} + \beta_2 \text{InSeason} + \beta_3 \text{BowlSeason} + \beta_4 \text{Game} \\ & + \beta_5 \text{HomeGame} + \beta_6 \text{Rank} + \beta_7 \text{Won} + \beta_8 \text{Lose} + \beta_9 \text{Wins} + \beta_{10} \text{Loss} \\ & + \beta_{11} \text{ConfFinal} + \beta_{12} \text{ConfChamp} + \beta_{13} \text{BowlGame} + \beta_{14} \text{BowlWin} \\ & + \beta_{15} \text{NYnonCFP} + \beta_{16} \text{CFP} + \beta_{17} \text{SemiFinal} + \beta_{18} \text{Championship} \\ & + \beta_{19} \text{Champion} + \beta_{20} \text{Population} + \beta_{21} \text{PerCapitaIncome} \\ & + \beta_{22} \text{Enrollment} + \beta_{23} \text{Independents} + \beta_{24} \text{ConferenceUSA} \\ & + \beta_{25} \text{Pac12} + \beta_{26} \text{SunBelt} + \beta_{27} \text{AAC} + \beta_{28} \text{MAC} + \beta_{29} \text{BigTwelve} \\ & + \beta_{30} \text{ACC} + \beta_{31} \text{SEC} + \beta_{32} \text{MountainWest} + \beta_{33} \text{BigTen} + \beta_{34} \text{August} \\ & + \beta_{35} \text{September} + \beta_{36} \text{October} + \beta_{37} \text{November} + \beta_{38} \text{December} \\ & + \beta_{39} \text{January} + \beta_{40} \text{Monday} + \beta_{41} \text{Tuesday} + \beta_{42} \text{Wednesday} \\ & + \beta_{43} \text{Thursday} + \beta_{43} \text{Friday} + \beta_{45} \text{Saturday} + \beta_{46} \text{Sunday} + \varepsilon \end{aligned}$$

In analyzing a panel dataset through using an econometric model, there are a number of issues which must be taken into consideration. First off, because of the nature of team sports, it is often the case that individual teams have special characteristics which distinguish them from other teams. To correct for this, models will be run using clustered standard errors to examine whether there are significant differences when one clusters by team in analyzing FBS demand. This will also account for the uniqueness of each team based on school size or conference allegiance, which McEvoy et al. (2013) found to account for 60% of variation in team revenue. Additionally, there is also the need to test

for issues such as heteroscedasticity, which could cause the estimated results from a regression to be biased. Thus, in order to make sure that the best unbiased estimators were used within this research, proper attention was given the econometric methods used in this research (Gujarati, 2003).

Chapter 4 Results

4.1 Universal Posts

Model 1 estimated the factors which had an effect on universal Web 2.0 posts across all platforms. Results showed that many determinants of demand had an impact on how sport fans utilized social media. The model returned an R-Squared value of 0.0929, which means that the model only measures about nine percent of the variation within the data. Table 4.1 lists the full results for Model 1. First, considering variables categorized as being related to the nature of sporting contests, the occurrence of a home game had a significant and positive impact in the number of universal Web 2.0 posts likely due to the concentration of fans at the game. This increase in post volume is expected due to the fact that fans likely are more inclined to talk about a home game which is easier for them to attend, and thus posting increases by having people directly affected and interacting with the events of the game and surrounding festivities. Next, the timing of the observations was significant when they occurred during the season or during the bowl season when compared to the preseason time period, indicating that the volume of posts increased during the time when teams played competitive games. Second, the dummy variable for game days did not prove to be a significant factor in relation to the volume of universal posts. The dummy variable accounting for team wins throughout the season was positive and significant. This indicates that the more wins a team had during the course of the season, the greater the number of online posts. This is on par with current research for factors influencing fan attendance which shows successful teams have higher attendance (Van Leeuwen et al., 2002). Playing in bowl games was also significant and positive, but surprisingly, the occurrence of a bowl win or a College Football Playoff game was not

significant. It appears that the occurrence of increased posts for any bowl game could be due to the fact that a limited number of bowl games occur per day resulting in fans and media outlets focusing on a few sporting contests at a time. The results also indicate the winning and losing teams in a bowl game receive equal discussion on Web 2.0 platforms, meaning that gains are received by qualifying for bowl games and not the outcome of the event. Specifically, the College Football Playoff games (semifinals and national championship) were significant and positive, indicating that post volume was increased on the days of the College Football Playoff semifinal and championship games. This suggests that there is a boost in Web 2.0 posts from advancing in the playoffs even though variables for winning either a conference championship or national championship were both insignificant. Once again, this highlights that participation in a game drives posts not outcome because, win or lose, the game is the focus of conversation. Furthermore, as posts often occur in real-time, game outcome is something which may not necessarily drive online discussions.

Next, in considering the economic determinants of demand the school enrollment dummy variable was significant and positive, indicating that schools with a higher enrollment generate a greater volume of posts. This is not a surprising result as Clavio (2011) found that younger college football fans tend to dominate the medium and feel more comfortable using it than older generations. At the same time, population and per capita income were found to be insignificant in the model meaning that the surrounding metropolitan size and wealth have no significant impact on Web 2.0 traffic. Considering the economic variables further, the model suggests that a school's enrollment is a better

predictor of market size. In this manner, it is the enrollment and size of the school that increase the volume of posts referencing the school's football team.

Table 4.1 illustrates the impact of conference membership found in Model 1. Considering the reference panel is the Big Ten, all other conferences returned significant results except for the ACC and SEC, hinting that those three conferences are not significantly different. The only affiliation found to be positive were independent schools. This finding can be attributed to the effect of Norte Dame, whose popularity allows it to act as its own conference and manage its own TV contracts. Conference USA, Pac 12, Sunbelt, AAC, MAC, and Big Twelve were all found to be negatively significant, indicating that these teams have a significantly lower post volume than Big Ten teams.

Finally, a number of timing factors are included in Model 1 accounting for the month and day of the week. Only the months of August and December were found to be positive and significant. This indicates that posts in those two months are higher when compared to the panel reference of January. Post volume in these two months could be due to the excitement around college football in general. During August and December, the focus around college football is elevated due to the start of the season and bowl season, respectively. Table 4.1 also contains the dummy variables for days of the week. Model 1 results showed that Sunday through Friday are significant in a negative direction when compared to the panel reference of Saturday. This result suggests post volume is lower on all days compared to Saturday. This is due to a gross majority of college football games occurring on Saturdays and the focus of all football fans being on college level games.

The impact of factors indicated by the results of Model 1 are consistent with results of previous studies and their findings of the impact of determinants of demand. Model 1 did have a few results that were unexpected such as the insignificance of opponent rank, the outcome of a game, and population of the surrounding metropolitan area.

Table 4.1- Effect of Sporting Contest Variables on Universal Web 2.0 Volume

Variable	Coefficient	P-value
PreSeason	-46.01679	0.284
InSeason	55.83796	0.071
BowlSeason	-58.45424	0.001
Game	200.8566	0.201
HomeGame	46.35528	0.061
Rank	-.2643586	0.420
Won	-73.80546	0.638
Lose	-60.55863	0.700
Wins	22.26624	0.000
Loss	-.3351907	0.939
ConfFinal	33.72203	0.852
ConfChamp	-65.36111	0.794
BowlGame	253.486	0.003
BowlWin	17.19165	0.877
NYnonCFP	46.8701	0.791
CFP	258.3694	0.144
SemiFinal	607.4864	0.028
Championship	1252.875	0.008
Champion	82.7461	0.901
Population	2.68e-06	0.623
PCI	-.0013208	0.549
Enrollment	.0053849	0.010
Independents	347.493	0.003
Conference USA	-196.8797	0.003
Pac12	-150.3124	0.027
SunBelt	-189.2017	0.014
AAC	-155.8318	0.017
MAC	-183.7407	0.006
BigTwelve	-151.8986	0.021
ACC	-73.8473	0.248
SEC	5.211032	0.933
MountainWest	-273.3231	0.000
BigTen	Omitted	Omitted

August	188.7527	0.001
September	43.49701	0.334
October	33.16791	0.377
November	9.136031	0.777
December	36.51995	0.021
January	Omitted	Omitted
Monday	-54.40389	0.000
Tuesday	-75.01478	0.000
Wednesday	-74.48841	0.000
Thursday	-43.2188	0.001
Friday	-69.43617	0.000
Saturday	Omitted	---
Sunday	-51.726	0

4.2 Microblogs

Model 2 estimated the factors that affect volume of microblog posts. The microblog post variable represents Web 2.0 posts on social media platforms such as Twitter or Facebook. Model 2 returned an R-Squared value of 0.0745 and results from the model were similar to that of the overall Web 2.0 volume model but did contain a few notable differences. The first major difference between Models 1 and 2 are found in the characteristics of the sporting contest noted in Table 4.2. The initial difference is the time of season; both preseason and bowl season were negative and significant. This suggests that microblog volumes were lower in those time frames indicating that fans will use microblogs at a greater rate during the season when there is a higher concentration of games. Team rank was also negative and significant, which indicates that as a team's rank decreases, or moves closer to the 1st ranking, the number of microblog posts increases. This finding is concurrent to current attendance research and Szymanski (2001). Szymanski argued that fans may be more inclined to see an elite team rather than an even playing field. Similar to Model 1 examining overall Web 2.0 volume, games are also positive and significant in Model 2. This means that the more wins a team has over

the course of a season the more microblog posts they are mentioned in. The outcome of a game and the number of losses a team had was not significant in the volume of microblog posts, which shows that fans discuss a team no matter their overall performance was during the season. The occurrence of a conference championship, national championship, or a College Football Playoff game was found to be insignificant. However, participation in a bowl game was found to be positive and significant meaning that if a team is playing in a bowl game there is an increase in microblog volume, but that it does not matter if that bowl game is a College Football Playoff or even a national championship. These results differ from the findings of Model 1 examining overall Web 2.0 volume when the national championship caused an increase in universal Web 2.0 traffic. The fact that universal content is increasing while microblog volume does not, may be explained by all sport blogs focusing on the national championship instead of their individual teams at that time of the year.

Next the economic factors were found to have an effect on daily microblog volume. Again, enrollment was the only significant and positive factor affecting volume. This indicates that as enrollment increases so does the number of microblog posts, but the factors of the metropolitan area, such as population, do not affect the number of posts. These results suggest that enrollment is the true indicator of market size over actual metropolitan population.

Conference membership was found to have a significant effect on microblog volume as shown in table 4.2. Similar to Model 1, Conference USA, Pac12, Sun Belt, AAC, MAC, Mountain West and the Big Twelve were all found to be negative and significant when compared to the Big Ten. This means that membership to these

conference results in lower overall volume of microblog posts when compared to posts of schools in the Big Ten. The ACC and SEC were again found to be insignificant when compared to the panel reference, the Big Ten. However, a school being independent was not a significant variable in the volume of microblog posts. Model 2 held the pattern of schools in non-Power Five conference having a lower post volume when compared to a Power Five.

Dummy variables for time showed that August and December were again positive and significant when compared to January, similar to Model 1. This occurrence could be due to the increased popularity of bowl games during December and the excitement and uncertainty of the initial games of the season in August. Just as in overall Web 2.0 posts, Sunday through Friday were found to be negative and significant when compared to the panel reference of Saturday. These results are again due to the large number of games occurring on Saturdays during the season.

Table 4.2- Effect of Sporting Contest Variables on Microblog Volume

Variable	Coefficient	P-value
PreSeason	-69.58721	0.021
InSeason	28.8218	0.185
BowlSeason	-34.01394	0.006
Game	217.8927	0.049
HomeGame	26.86459	0.122
Rank	-.5507719	0.017
Won	-114.7522	0.298
Lose	-109.8359	0.320
Wins	10.01885	0.000
Loss	.8315773	0.786
ConfFinal	-21.82368	0.863
ConfChamp	-128.7543	0.464
BowlGame	179.4407	0.003
BowlWin	8.913824	0.909
NYnonCFP	109.7382	0.376
CFP	136.8271	0.271
SemiFinal	130.6394	0.502

Championship	541.5425	0.103
Champion	-343.225	0.463
Population	-4.03e-07	0.912
PCI	-.0006345	0.686
Enrollment	.0026874	0.073
Independents	125.9598	0.130
Conference USA	-104.5607	0.029
Pac12	-98.37099	0.042
SunBelt	-102.7259	0.061
AAC	-76.74691	0.098
MAC	-95.4486	0.044
BigTwelve	-89.21806	0.057
ACC	-47.77173	0.294
SEC	41.62348	0.344
MountainWest	-150.5729	0.004
BigTen	Omitted	---
August	155.0763	0.000
September	37.62141	0.235
October	16.31222	0.536
November	8.176627	0.719
December	23.7855	0.032
January	Omitted	---
Monday	-57.82499	0.000
Tuesday	-72.88983	0.000
Wednesday	-67.70748	0.000
Thursday	-42.44528	0.000
Friday	-57.67280	0.000
Saturday	Omitted	---
Sunday	-57.05112	0.000

4.3 Blogs

Model 3 estimated the effects of the determinants of demand variables on blog volume. The model resulted in an R-Squared value of 0.0713 or accounted for 7 percent of the variation in the data. The results differed greatly from the estimated results from Model 1 (universal posts) and Model 2 (microblogs). The negative and significant bowl season relationship indicates that blog posts decreased during bowl season. This could be due to the low number of teams still playing and the lack of information to be reported per team. The occurrence of a game or the outcome of a game were found to have no

significance which may be due to the reactionary nature of blogs and their tendency to report on both positive and negative information. Total wins in a season was found to have a positive relationship with blog post volume, or the more wins a team had, the more they were mentioned in blogs. Playing in a College Playoff Game (semifinal or national championship) was also found to be positive and significant but playing in a bowl game or conference championship were not. The increase during College Football Playoffs can be attributed to the low number of teams playing at the time compared to other bowls and conference championships. The outcome of the national championship did not have a significant relationship and suggests that blogs report on both positive and negative outcomes equally.

Economic determinate variables also had an impact on blog post volume. Both enrollment and metropolitan population were found to have a significant and positive relationship with blog volume. This differs from the results in Models 1 and 2 and suggests that the market size for blog viewers is not only depending on enrollment but also metropolitan area population. Average income of the metropolitan area was found to not be significant to the volume of blogs. Conference membership did have an impact in blog volume. Independent schools were found to have a positive relationship with blog posts when compared to the panel reference. This can be attributed to the power of Notre Dame and its media following. Membership to the Pac 12, Conference USA, Sun Belt, ACC, MAC, Big Twelve, and Mountain West were also found to be significant but negative. This indicates that members of these conferences saw a decrease in blog posts when compared to the Big Ten but is to be expected as their fan bases are smaller. Unlike microblogs and universal Web 2.0 posts, dummy variables for month and day had no

significance on the volume of mentions in blogs. This could be due to the fact that blogs report on news no matter how the team is playing or what stage of the season they are in.

Table 4.3- Effect of Determinants of Demand Variables on Blog Volume

Variable	Coefficient	P-value
PreSeason	14.76162	0.424
InSeason	18.619	0.161
BowlSeason	-23.45014	0.002
Game	-7.201978	0.915
HomeGame	16.94779	0.111
Rank	.2111441	0.105
Won	24.43479	0.717
Lost	36.63928	0.588
Wins	10.66249	0.000
Loss	-1.277319	0.490
ConfFinal	34.09551	0.660
ConfChamp	87.76777	0.415
BowlGame	68.41481	0.063
BowlWin	17.20983	0.718
NYnonCFP	-60.36241	0.426
CFP	68.32341	0.369
SemiFinal	486.6032	0.000
Championship	691.4353	0.001
Champion	470.1993	0.101
Population	2.68e-06	0.094
PCI	-.000386	0.553
Enrollment	.0021638	0.001
Independents	173.6258	0.000
Conference USA	-73.95344	0.000
Pac12	-42.2519	0.046
SunBelt	-6754778	0.003
AAC	-62.43043	0.001
MAC	-69.1018	0.001
BigTwelve	-48.07111	0.013
ACC	-25.21953	0.182
SEC	-25.76371	0.157
MountainWest	-101.6886	0.000
BigTen	Omitted	---
August	31.91275	0.185
September	7.18107	0.710
October	15.33376	0.340
November	2.787987	0.841
December	9.668902	0.155
January	Omitted	---

Monday	3.202654	0.560
Tuesday	-1.30174	0.813
Wednesday	-5.298862	0.337
Thursday	1.167349	0.834
Friday	-10.39231	0.104
Saturday	Omitted	---
Sunday	4.94815	0.364

The results from Models 1 through 3 produced several findings that were contrary to what was expected such as the occurrence of the bowl season having a negative significant impact on all forms of Web 2.0 content creation but the presence of playing in a bowl game increasing the volume of Web 2.0 content created. This occurrence could be due to the presence of smaller schools in non-Power Five conferences not having the fan following that Power Five (SEC, Big Twelve, Big Ten, ACC, and Pac 12) member teams do. Previous research examining finances in college athletics has noted that there is a significant difference between Power Five and non-Power Five teams in regards to resources and fan interest. McEvoy et al. (2013) found that nearly 60 percent of the variation between schools can be explained by Power Five membership. Thus, in order to remove the impact of smaller schools on the outcome of the models, additional models were run only including the Power Five conference members.

4.4 Power Five Universal Posts

Model 4 was the first model to only include members of the Power Five conferences and the results fall in line with the expectation of Web 2.0 behavior. Several variables were also removed from the remaining models that created redundancy. Timing variables for preseason, in season, and post season were removed due to the overlap with the month variables. Also, the variables for game outcome were removed due to their redundancy with total number of wins and losses. The first model in this series model

resulted in an R-Squared value of 0.100. The higher R-Squared value suggests that the model only including Power Five teams and removing the variables that were creating redundancies provides a better representation of the data. The variables measuring the characteristics of the sporting contest were a mix of significant factors and insignificant factors. Both variables for the occurrence of a game and a home game were significant and positive, indicating that Web 2.0 content across platforms was increased on game day and if it was a home game. This is to be expected as there is more focus on a team based on performance and outcome. The presence of a conference championship or being the winner did not make a difference among Power Five members. Next, the variable for participation in a bowl game continued to be positive and significant signaling an increase in Web 2.0 posts for teams playing. These findings indicate that the important thing is participating in the game and that teams are discussed equally independent of game outcome. Additionally, the variable for playing in the national championship was positive and significant, but the variables for winning the game or playing in a semifinal game were found to be insignificant. This means that posts increased for teams in the national championship, but the outcome did not influence fans. Furthermore, the result of the national championship being significant, but the semifinal games being insignificant could be due to the focus being on just two teams compared to four teams over two games splitting the Web 2.0 conversations and focus. The overall record of a team and their appearance in a conference championship had no significant impact on the number of Web 2.0 posts created due to the tendency of fans to discuss both positive and negative performances of their teams.

Next, the variables representing the economic determinants had a slightly different result when compared to Model 1, which included all conferences. Population and the average metropolitan per capita income were both significant but positive and negative, respectively. This indicates that the higher the population, the more universal posts occurred and that the higher the PCI, the number of universal posts decreased. While the population of the metropolitan area had a significant impact, the enrollment in a school did not. This suggests that in Power Five schools, the population of the city is more important than student enrollment when determining market size. Membership to any conference was found to be insignificant except for the Big Twelve. Membership in the Big Twelve was significant and negative indicating that Big Twelve schools are mentioned less in Web 2.0 content than all other Power Five conference schools who saw no significance when compared to the panel reference of the Big Ten.

It was found that time of the year had an impact on the volume of universal Web 2.0 posts. August, October, and November were found to be significant and positive when compared to the panel reference while all others were not. August being significant can possibly be contributed to the uncertainty of a new season. Much like the uncertainty of outcome explained in Borland and Macdonald (2003), fans are possibly discussing teams more when there is a greater unknown. The spike in content during October and November can possibly be due to the importance of those games to post-season play and conference championships. The dummy variables for days of the week were all found to be negative and significant when compared to the panel reference of Saturday. Just as in the first two models, this occurrence is due to the existence of games on Saturdays.

Table 4.4- Effect of the Determinants of Demand on Power Five Members Universal posts

Variable	Coefficient	P-value
Game	237.771	0.000
HomeGame	60.69043	0.015
Rank	0.4007813	0.420
Wins	34.83638	0.123
Loss	.5116208	0.941
ConfFinal	93.46293	0.316
ConfChamp	-4.91575	0.991
BowlGame	263.1725	0.060
BowlWin	-46.11676	0.816
CFP	139.2743	0.439
SemiFinal	453.9346	0.388
Championship	1058.546	0.000
Champion	115.5129	0.549
Population	.0000118	0.047
PCI	-.0061423	0.021
Enrollment	-.0001162	0.969
Pac12	-64.49608	0.452
BigTwelve	-162.7836	0.047
ACC	7.392326	0.922
SEC	-69.69525	0.433
BigTen	Omitted	---
August	247.8873	0.074
September	139.4731	0.146
October	124.4229	0.007
November	85.07169	0.007
December	10.65312	0.795
January	Omitted	---
Monday	-97.28776	0.001
Tuesday	-132.1968	0.000
Wednesday	-128.8172	0.000
Thursday	-80.60496	0.008
Friday	-141.9315	0.000
Saturday	Omitted	---
Sunday	-94.46149	0.000

4.5 Power 5 Microblogs

The fifth model assessed the impact of variables on the volume of microblog posts among the members of the Power Five conferences. The R-Squared value for this

model was 0.0964, meaning the model measures only about 10 percent of the variation in the data. The variables representing the sporting contest determinants of demand were mostly insignificant in determining the volume of microblog posts, meaning that the record of a team, rank of a team, or importance of a game did not have an impact. This suggests that fans utilizing microblogs are not affected by a team's performance, but will discuss their team under any circumstances. There were a few characteristics of the sporting contest variables that were significant in Model 5 as in Model 4. The variable of a game is positive and significant, but in Model 5 the variable of a home game is not significant. This indicates that there is no difference if a game is home or away for the volume of microblogs to increase on a game day. While bowl game variables were insignificant, those associated with the national championship were proven to be significant to the number of microblog posts. The variables for playing in the national championship and winning the national championship were both significant and positive. This indicates that, unlike overall Web 2.0 content volume, microblog volume increases if the team is playing in the national championship and also increases if the team wins the national championship. This could be due to the fact that blogs and other forms of Web 2.0 traffic, such as comment sections, are more balanced in discussion when compared to microblogs or Twitter posts which tend to be more reactive and would focus more on the victor.

Only one economic determinant of demand variable proved to be significant in Model 5. The metropolitan income (PCI) was negative and significant. This shows the average income of the campus' metropolitan area has a negative impact on microblog volume. Due to the nature of microblog platforms, such as Twitter, it is to be expected

that enrollment and metropolitan population do not have an impact on the volume of microblog posts. Conference membership proved to be insignificant when compared to the panel reference, the Big Ten. This is vital in showing that one conference does not have significantly more microblog content volume over another.

Timing variables in Model 5 were similar to Model 4 with August, October, and November all being significant and positive when compared to the panel reference of January. The increase of microblog posts in August is to be expected with the fans' excitement and uncertainty of the upcoming season and team performance. The increase in October and November could be due to the close battles around conference and division positioning and the importance of weekly games. The increased conversation games with post-season implications is congruent with the increase in fan attendance to similar games found by Borland and Macdonald (2003). All days of the week were found to be significant and negative when compared to the panel reference, Saturday. This, again, is due to the occurrence of college football games on Saturday, much like in models 1-3. Overall, Model 5 produced similar results as Model 4 but had several difference when compared to Model 2 which included all conferences. Variation in monthly timing variables and the significance of being ranked higher are the main differences in the models. This can be explained due to the incorporation of smaller conferences. The smaller schools skew data by having a higher concentration of low rankings and smaller fan bases.

Table 4.5- Effect of the Determinants of Demand on Power Five Members**Microblog Posts**

Variable	Coefficient	P-value
Game	192.633	0.000
HomeGame	27.43977	0.160
Rank	-.1986773	0.536
Wins	15.9858	0.181
Loss	2.247303	0.668
ConfFinal	-69.38654	0.284
ConfChamp	-99.20771	0.592
BowlGame	221.1733	0.114
BowlWin	-58.35153	0.735
CFP	5.854498	0.972
SemiFinal	11.21477	0.975
Championship	378.4159	0.017
Champion	-289.6457	0.087
Population	5.96e-06	0.104
PCI	-.0040183	0.027
Enrollment	-.0011327	0.565
Pac12	-33.18268	0.575
BigTwelve	-98.93628	0.100
ACC	7.505493	0.890
SEC	-11.99524	0.860
BigTen	Omitted	---
August	157.9304	0.055
September	94.26038	0.105
October	63.70053	0.020
November	46.39702	0.010
December	13.00763	0.559
January	Omitted	---
Monday	-102.9522	0.000
Tuesday	-129.3606	0.000
Wednesday	-118.5450	0.000
Thursday	-79.19774	0.001
Friday	-122.8413	0.000
Saturday	Omitted	---
Sunday	-103.4309	0.000

4.6 Power 5 Blogs

Model 6 investigated the effect of determinates of demand variables on blog post mentions for the members of the Power Five conferences. The model resulted in an R-

Squared value of 0.0617, accounting for 6 percent of variation in the data. The lower R-Squared value of Model 6 illustrates the difficulty of modeling blogging behavior due to the high effort required to sit down and compose long-form discussion causing blogs to be unpredictable. The variables representing the characteristics of the sporting contest had a greater impact on blog posts than microblogs when looking at only Power Five conference members when comparing the data from Model 3 to Model 6. The occurrence of a game and if that game was a home game were both found to be significant and positive. This indicates that the number of mentions in blogs increased on days there was a game and more if it was a home game. This is significant because if a team was away the number of blogs was lower. The rank of the team was also found to be significant and positive which is a different outcome than Models 3, 4, and 5. This shows that among Power Five teams, the higher a team's rank, or further from the top of the ranking, the more blogs are written about that team, which was not the case when all teams were looked at or if we look only at microblogs. Participation in a conference final was also found to be significant and positive while the outcome of the game was not a significant factor. Competing in the national championship was also significant and positive, but being the champion also has a positive and significant impact. The increase in blogs about a both conference championship teams but not the champion could be due to the factor of future bowl games for both teams. On the other hand, following the national championship only the winner is viewed as significant.

The variables representing population and average income of the statistical metropolitan area were found to be significant, but only population was found to be positive. This indicates that the larger the population, the greater the number of blog

posts. The negative relationship of PCI to blog posts indicates that The greater the average income results in a decrease in blog posts. Membership in the Big Twelve and SEC proved to be significant factors but were negative. Members of these two conferences saw few blog posts than those of the panel reference, the Big Ten. Timing of the season overall was insignificant except for October which was significant and positive. This may be attributed to the importance of games during this time and tight conference standings. The day of the week was found to be insignificant with the exception of Friday. Friday, which is a travel day for teams, was found to be significant and negative. This indicates that the number of blog posts decreases on Fridays when compared to the panel reference of Saturday, which could be due to the lack of football activity on Friday.

Table 4.6- Effect of the Determinants of Demand on Power Five Members Blog**Posts**

Variable	Coefficient	P-value
Game	37.76823	0.002
HomeGame	25.92488	0.015
Rank	.568504	0.029
Wins	16.89214	0.109
Loss	-1.43836	0.714
ConfFinal	114.6974	0.031
ConfChamp	157.292	0.521
BowlGame	34.0768	0.308
BowlWin	23.03489	0.789
CFP	80.05862	0.258
SemiFinal	453.8138	0.093
Championship	669.0073	0.000
Champion	439.431	0.000
Population	5.48e-06	0.023
PCI	-.0017091	0.072
Enrollment	.0007805	0.449
Pac12	-23.02304	0.454
BigTwelve	-47.37696	0.027
ACC	.5988072	0.979
SEC	-42.63712	0.061
BigTen	Omitted	---
August	80.79461	0.237
September	39.39972	0.416
October	49.17754	0.074
November	30.52445	0.175
December	-6.026009	0.806
January	Omitted	---
Monday	7.408267	0.598
Tuesday	-1.965608	0.783
Wednesday	-8.416865	0.248
Thursday	2.309497	0.822
Friday	-16.57311	0.082
Saturday	Omitted	---
Sunday	8.497508	0.160

4.7 Log-Linear Transformation Model of the effect of determinants of demand variables on Universal Web 2.0 Posts.

Models 7 through 9 employ a log-linear transformation of the dependent variable to analyze the dataset. This is due to the relationship between the dependent and independent variable measuring Web 2.0 posts volume. This method is a common econometric tool used when the distribution of the dependent variable causes problems in estimating regression results. First, Model 7 looked at universal Web 2.0 posts of the Power Five conference members, as in Model 4, but uses the natural log of the dependent variable. Model 7 produced a higher R-Squared value of 0.2499, indicating that the model accounted for nearly 25 percent of the variation in the data and suggests that the log-linear transformation is better suited to examine Web 2.0 content. The variables representing the characteristics of the sporting contest were highly influential in Model 7. First, game days and home games were significant and positive. This means that Web 2.0 posts increased on game days and also on home games when compared to away games and can again be explained by the increased number of fan influenced by game activities. Additionally, team performance proved to be significant for the first time in the Power Five models. The number of team losses throughout the season had a significantly negative relationship with the number of Web 2.0 posts. This outcome suggests that as a team develops a losing record, fans stop discussing them on Web 2.0 platforms. The same findings are significant in fan attendance as found in baseball attendance by Van Leeuwen et al. (2002) due to the change in fan satisfaction. Furthermore, participating in a conference championship also had a positive and significant relationship which is different from Model 4, but winning the conference championship had a negative and

significant relationship with the number of Web 2.0 posts. This indicates that fans discuss both teams competing in a conference championship, but surprisingly, they discuss the winner of the game less than the loser. Also, unexpectedly the participation in a bowl game was found to be insignificant unless it was a College Football Playoff game. Finally, playing in a national championship was found to be positive and significant while playing in the semifinal games was found not to be significant. These three findings mean that teams receive an increase in Web 2.0 posts for being announced into the College Football Playoff game and again for playing in a national championship but not during the semifinal games. While playing in the national championship resulted in an increase in Web 2.0 posts, the outcome does not. This suggests fans discuss both the winner and the loser of the national championship at the same rate.

The economic determinates of demand had a similar impact to previous Power Five models. The population of the surrounding metropolitan area was found to be positive and significant in the total number of posts, while school enrollment was not a significant factor. These outcomes suggest that the population surrounding a school has more influence than the student population. Additionally, per capita income for the metropolitan area had a negative and significant relationship. This indicates that as the PCI rises, the number of Web 2.0 posts decreases. Also, conference membership variables were found to be insignificant except for Big Twelve membership which was found to be significant and negative. Big Twelve schools are actually mentioned less across Web 2.0 platforms compared to panel reference of Big Ten schools. The timing during the season was also found to be significant with October, November, and December all having positive relationships when compared to the panel reference. This

result could be due to games becoming more important as the end of the season nears. End of the season games tend to have more perceived weight in relation to bowl games and conference championships than early games. The increase in December could also be to the excitement and large number of bowl games occurring. The day was also significant with Monday through Friday all negative and significant when compared to Saturday. Saturday and Sunday see more universal Web 2.0 traffic as a result of Saturday's games and reactionary posts and blogs discussing the games. The natural log models included a total revenue model which is an addition to the other six previous models. Model 7 found the total revenue of a team to be positive and significant, indicating that the more money a team made, the more Web 2.0 posts it was mentioned in.

Table 4.7- Log-Linear Transformation of the effects of Determinants of Demand**Variables on Universal Web 2.0 Posts**

Variable	Coefficient	P-value
Game	1.014318	0.000
HomeGame	.2361976	0.004
Rank	-.0018546	0.337
Wins	.0223977	0.260
Loss	-.0487453	0.022
ConfFinal	.7047388	0.001
ConfChamp	-1.595456	0.051
BowlGame	.344031	0.266
BowlWin	-.0125952	0.972
CFP	.9039494	0.007
SemiFinal	.2869883	0.482
Championship	.929963	0.007
Champion	-.4028261	0.270
Population	6.46e-08	0.002
PCI	-.0000211	0.087
Enrollment	3.37e-06	0.792
Pac12	.0630946	0.841
BigTwelve	-.6151352	0.013
ACC	.2112188	0.507
SEC	-.0690369	0.802
BigTen	Omitted	---
August	.1801965	0.331
September	.0414507	0.803
October	.2703401	0.016
November	.4031051	0.000
December	.2366162	0.002
January	Omitted	---
Monday	-.307132	0.000
Tuesday	-.2265481	0.000
Wednesday	-.2813711	0.000
Thursday	-.1622108	0.009
Friday	-.3969	0.000
Saturday	Omitted	---
Sunday	-.0824497	0.120
Total Revenue	2.83e-08	0.000

4.8 Log-Linear Transformation Model of effects of Determinants of Demand

Variables on Microblog Post Volume

Model 8 utilized the natural log of each variable to examine their impacts on microblog posts throughout the year. Model 8 returned an R-Square value of 0.2426 indicating that the model accounted for 24 percent variation of the data. Again the occurrence of a game and a home game were found to be positive and significant just as in Model 7. As a team loses more games in a season, it was found that the number of microblog posts decreased. This suggests that fans will tolerate a few losses, but as they increase, fans stop discussing teams. Participating in a conference final and winning the game were both found to be significant, but as in Model 7 winning the game had a negative influence on microblog posts. These findings points to the occurrence of fans discussing teams due to their participation but discuss the loser of the championship game more than the winner. Additionally, the participation or outcome of bowl games, College Football Playoff games and national semifinal games had no significance in the number of overall microblog posts. On the other hand, the national championship was significant and positive, indicating that fans talk about teams that are playing. Just as in conference championships the national champion variable is negatively significant to the number of microblog posts. The discussion about the losing team may be due to the discussion of what they could have done differently or what they can do next season while the winners are only celebrated.

Economic determinate variables had similar outcomes to Model 7. Just as in universal posts (Model 7), the population of the surrounding area was positive and significant but student enrollment is insignificant in the number of microblog posts.

Metropolitan population being significant indicates that it is a more powerful factor than enrollment when setting the market size of a university and its football team. Also, average per capita income of the metropolitan area was negative and significant in Model 8. Indicating again that the higher the income of the surrounding community, the larger the decrease in microblog posts. It was also found that the only conference membership to be significant when compared to the panel reference of the Big Ten was the Big Twelve. This indicates that of the Power Five, the Big Twelve was the only where membership has a negative and relationship to microblog posts. Timing variables were also found to be significant, specifically when compared to the panel reference. The only month with a significant relationship when compared to the panel reference of January was December. December was found to have a positive and significant relationship to the total number of microblog posts. The increase in microblog posts can be attributed to the occurrence of bowl games and the focus being on the few teams playing each day. Furthermore, Sunday through Friday were again found to be negative and significant when compared to the panel reference of Saturday. Saturday's strong tendency to dominate the overall share of microblog content continues and can be contributed to the large concentration of games and related activities on Saturday. As in Model 7, Model 8 included total revenue and found it to be a positive and significant factor in the number of microblog posts. This specifies that as revenue increases, the total number of microblog posts mentioning a team increases as well.

Table 4.8 – Log-Linear Transformation of the effects of Determinants of Demand**Variables on Microblog Post Volume**

Variable	Coefficient	P-value
Game	.963194	0.000
HomeGame	1.455852	0.049
Rank	-.0016189	0.361
Wins	-.0001412	0.995
Loss	-.0404013	0.040
ConfFinal	.4383759	0.078
ConfChamp	-1.57392	0.038
BowlGame	.423193	0.201
BowlWin	.1057757	0.779
CFP	.5304537	0.150
SemiFinal	-.0823965	0.887
Championship	.8943024	0.021
Champion	-.848938	0.024
Population	4.60e-06	0.002
PCI	-.0000241	0.013
Enrollment	-4.83e-06	0.558
Pac12	.2632106	0.308
BigTwelve	-.3922048	0.051
ACC	.2481391	0.299
SEC	.1599088	0.534
BigTen	Omitted	---
August	.2125232	0.273
September	-.0400674	0.803
October	-0.685702	0.558
November	.1113702	0.242
December	.1455218	0.065
January	Omitted	---
Monday	-.985737	0.000
Tuesday	-.417617	0.000
Wednesday	-.4779292	0.000
Thursday	-.3613374	0.000
Friday	-.4616692	0.000
Saturday	Omitted	---
Sunday	-.3435165	0.000
Total Revenue	2.58e-08	0.000

4.9 Log-Linear Transformation Model of the effects of Determinants of Demand Variables on Blog Post Volume

The ninth and final model investigated the influence of the determinants of demand on the volume of blog posts for Power Five conference members using a log-linear transformation. Model 9 resulted in an R-Squared value of 0.2417, accounting for 24 percent of the variation in the data. Game days and home games were again found to be positive and significant. This continues the suggested trend that Web 2.0 content increases while indicating that blog posts also increase on game days. Unlike Models 7 and 8, team wins were positive and significant. This indicates that blog posts increase as teams build a winning record. The number of team losses was not significant, meaning that the number of losses a team has does not impact the blog posts about them. Also, playing in a conference championship and winning were both positive and significant. This is different from microblogs in Model 8, because not only do both competing teams receive an increase but the winning team also sees an increase, instead of the losing team. Additionally, conference championships and bowl games were insignificant in blog volume but the semifinal games and national championship were found to have a positive significant relationship. The increase for semifinal and national championship participants instead of all bowl games could be due to the low number of games and the high level of focus on these three games.

Only one economic determinate of demand variables was proven to be significant to blog post volume. Population was again found to be a positive and significant factor, and enrollment was insignificant. This strengthens the idea that population of the metropolitan area is a larger determinate of market size than the student enrollment. It is

important to note that PCI was not significant in Model 9, indicating that there is no relationship between blog posts and income. This could be due to the ease of posting microblogs compared to writing a blog-length article as well as the availability of resources in more rural areas necessary to write a blog. Also, results indicate that conference membership has a greater impact on blog volume. The SEC, Big Twelve, and Pac 12 were all found to be negative and significant when compared to the panel reference. This indicates that when compared to the Big Ten, their conference members all have lower blog post volumes. Time proved to be significant once again in Model 9. Monthly variables were mostly insignificant when compared to the panel reference of January, except October. October was found to have a positive and significant relationship suggesting that there are more blog posts concerning teams during the middle of the season. Additionally, Monday, Tuesday, and Wednesday were all found to be negative and significant when compared to the panel reference of Saturday. The negative relationship indicates the number of microblog posts were decreased overall when compared to Thursday, Friday and Saturday. This could be due to the occurrence of a few games on Thursday and Friday and the majority on Saturday. Total revenue was again a positive and significant factor in the volume of blog posts. These results combined with models 7 and 8 indicate that as revenue increases so does total posts for all platforms of Web 2.0. The total revenue findings of Models 7-9 directly correlate with the early findings of Neale (1964). Neale established that by utilizing joint products, such as Web 2.0, to report scores and league standings, revenue increased. Neale also was the first to note the importance of media and the reporting of outcomes and standings in increasing

total revenue. This should not be a surprise and these results support the possible theory that the use of Web 2.0 platforms plays a part in driving revenue.

Table 4.9- Log-Linear Transformation Model of the effects of Determinants of Demand Variables on Microblog Post Volume

Variable	Coefficient	P-value
Game	.2087406	0.007
HomeGame	.1120712	0.093
Rank	.0018165	0.117
Wins	.071626	0.012
Loss	.0150806	0.562
ConfFinal	.3353555	0.033
ConfChamp	.5363062	0.063
BowlGame	-.1110529	0.556
BowlWin	.3218461	0.219
CFP	.3289743	0.333
SemiFinal	1.117164	0.001
Championship	1.61028	0.000
Champion	-.0700215	0.792
Population	2.39e-08	0.003
PCI	-5.12e-06	0.281
Enrollment	7.02e-06	0.134
Pac12	-.2073233	0.086
BigTwelve	-.2212264	0.016
ACC	.0381454	0.740
SEC	-.1802789	0.072
BigTen	Omitted	---
August	.1271309	0.714
September	-.0830192	0.779
October	.4076385	0.059
November	.1883002	0.191
December	.1106244	0.216
January	Omitted	---
Monday	-.1187066	0.049
Tuesday	-.1155646	0.049
Wednesday	-.1641227	0.002
Thursday	-.0635701	0.204
Friday	-.1045798	0.116
Saturday	Omitted	---
Sunday	-0.152773	0.745
Total Revenue	7.33e-09	0.000

Findings from each model set differ slightly but provide a great picture of the wide variation of schools and fans. Models 1 through 3 examined 123 FBS teams and demonstrated that there are significant factors in determining Web 2.0 content. These models resulted in lower R-Squared values illustrating that there is a lot of variation in variables and impact throughout the teams due to wide variety and characteristics between conference members, but little of it was captured. Results from these models provided findings that were contradictory to previous sport and social media research. Models 4 through 6 examined the variables again but only with reference to Power Five conference, members. These models resulted in stronger R-Squared values but illustrated that even in the Power Five conference there are large differences in fan base characteristics due to the nature of the independent variables. Finally, Models 7 through 9 utilized a log-linear transformation method to better capture the effect of variables on Web 2.0 usage. These studies resulted in much more consistent behavior that paralleled previous research in both sport social media research as well as fan attendance and behavior studies.

Chapter 5 Conclusion, Limitations, Future Directions

Web 2.0 platforms have created a growing shift in market power that takes some of the advertisement and fan experience responsibilities from marketers and gives it to the fans. Thus, it has become increasingly important to better understand what drives fans to discuss teams and how to better market to them in a growing trend of dual viewing and social media news (Hutchins, 2014). The current study serves to build on the growing literature working to explain the motivations of fans to discuss sport on Web 2.0 platforms by reaching several conclusions with academic and practical contributions. First, several models indicated that participating in games, especially a post-season game, was a significant factor in Web 2.0 posts. On the other hand, the outcome of the games was not significant. This establishes that in college football the participation in a game is more important in driving fan posting and engagement than the outcome. Additionally, the models showed that for Power Five schools it was the metropolitan population that was a better predictor of market size and increased Web 2.0 posts instead of student enrollment. This was found to be different when looking at 123 FBS schools in which the student enrollment was a stronger predictor of market size and Web 2.0 usage.

The present study also has several empirical academic and practical contributions. First, the results show that many variables across models including home games, game days, team record, and the College Football Playoff games were consistently significant as an indicator of Web 2.0 volume. It was also found that fans are utilizing Web 2.0 platforms more during certain months such as August, November, and December. These findings are similar to Watanabe et al. (2015) which showed that fans were more likely to follow MLB teams during the beginning of the season and end of the season when games

have post season implications and playoffs heat up. The current research builds from this finding that not only were fans more active in particular months but they were more likely to utilize platforms on Sunday than any other day.

Furthermore, this study provides one of the first empirical examinations to compare the use of different Web 2.0 platforms during a season in sport. The results found that determinants of use vary across Web 2.0 platforms, specifically microblogs and blogs. For example, the winner of a conference championship may have an increased number of microblog mentions overall but actually has a decreased number of blog posts compared to the loser. Additionally, while blogs (Model 9) and microblogs (Model 8) both drive increased mentions in Power Five members, the winner actually sees a decrease in microblog posts when compared to the winner, but both teams are mentioned in blog posts the same. When examining all 123 FBS teams in models, teams see an increase of microblog (Model 2) posts on game day, but the number of blog (Model 3) posts do not increase. This is a very strong example of the difference in these two platforms based on how fans utilize them. Microblogs have a low entry level and tend to be real time posts, while blogs require the thought to sit and draft longer communication and ideas following the event. This study accomplished many things beyond answering the research question and these results have considerable impact to practitioners and future researchers.

Finally, present research established an analytical methodology to better measure the impact of variables on college football teams' Web 2.0 content not only overall but directly comparing how platforms are affected differently by the determinants of demand. Models 1 through 3 looked at 123 FBS teams and resulted in lower R-Squared values and

results that contoured previous research. In order to account for more variation in among variables and teams, Models 4 through 6 looked at Power Five conference members only which still resulted in several surprising results. Finally, Models 7 through 9 employed a logarithmic transformation of each variable and resulted in larger R-Squared values capturing a much wider range of variation in the data. The three sets of models also allowed the study to compare the difference of influence between all schools and Power Five members. The first significant difference between Power Five conference members and the models comparing all FBS Division I members was that conference finals and their champions were only significant in Power Five model results. It was also found that fans of Power Five teams seemed to be affected more by a team with a losing record than a winning record, while the larger models found only winning records to be significant. Economic factors had different influences as well. Comparing all markets found that teams were greater affected by student enrollment while the models looking only at Power Five conference members saw a significance in the surrounding metropolitan population and not student enrollment. Power Five members were also mentioned more in the months of October and November which is expected with the significances of conference championships.

5.1 Practical Implications

The results of the current study yield valuable insight for sport marketers and managers in all major sport markets. With the growing number of Web 2.0 users and the increasing shift in power created by Web 2.0 platforms, it has become more important to understand how fans are utilizing the medium (Constantinides & Fountain, 2008). The

current study provides a look into which determinants of demand will allow managers to more efficiently use their time and resources while shifting the power back to them.

First, managers can better reach fans by strategically timing posts during the highest traffic times. The results show that the highest level of posts per day occurs on Saturdays across all models and platforms. This seems like an obvious conclusion, so it may be important to note the difference in a few platforms, such as Model 9's finding of the importance of Thursday and Friday as well. This is important for social media managers looking to maximize their exposure on non-game days. In addition to the importance of Saturday, several months showed to have a higher traffic rate than others. November and December showed significance over other in-season months, which could not only be important to reaching current fans but advertising to football fans about future sports such as basketball.

Secondly, this study builds on the growing knowledge (e.g. Watanabe et al. (2015)) of how fans are utilizing social media and what is influencing their willingness to use social media platforms. A better understanding of fan motives and knowing what factors increase post volume will allow social media managers to improve efficiency and the language of Web 2.0 post content. Managers should maximize participation in bowl games, conference championships, and College Football Playoff games by focusing on the days leading up to the game. Content should be focused on participation in the game and not rely on game outcome to drive content. The publishing of content or ads should also be prior to a game in order to reach the largest market. Furthermore, it is important to note the significance of home games compared to away games. This occurrence could

be an area for social media managers to focus on in the future to drive Web 2.0 conversation even in fans not in attendance at the game.

Finally, sport marketers should be cognizant of their market size and the demographic of users participating in Web 2.0 conversations. Small schools' social media managers should look to build their current base of students but also look to reach more community-based fans. In doing so they can increase the amount of content. Power Five conference team markets were significantly influenced by the population of the metropolitan area. Social media managers should continue what they are doing but ensure that content is not specific to students in areas where Web 2.0 mentions and traffic is driven by the community population.

5.2 Limitations

While the methodology was expanded to account for a greater range of variation, there are still limitations that need to be addressed. The quantitative methodology of this study does not capture the true motivations of fans due to the lack of surveys and questioning fan motives. It can only infer motives based on statistical relationships. Furthermore, the methodology does not account for possible off-the-field events causing an increase or decrease in Web 2.0 post volume. While the regression includes an error term that accounts for some occurrences, such as the death of a player or hiring of a new coach, there still may be an anomaly in the data. Another limitation of the study is that it only looks at one sport during one season. This is important to consider because fans may react differently to teams based on previous year's performance. It is also important to note that the research looks at sport at the college level, whose fans base has an increased concentration 18-24 year olds. This population may utilize Web 2.0 platforms differently

than the fan bases of professional sport teams and of different age groups. While it has been proven that sport fans utilizing all social media, like other Twitter users, can be divided in to two groups: lurkers and posters (Williams et al., 2012). The current study only accounts for posters who are actively engaging on Web 2.0 platforms due to the lack of data of fans just reading social media posts.

5.3 Future Research

First, in regards to publication the journals that best fit this kind of project are the International Journal for Sport Communication, Communication in Sport, Journal of Sport Management, and similar related journals in the fields of sport and sport communication. For future research, the study proposes several major directions. First, future studies should build on improving the assessment of college sports in order to increase the amount of data variation captured. With school characteristics such as enrollment, history, team record, and game attendance varying so greatly across schools (e.g. The Ohio State and Miami of Ohio) it is very important to improve the theoretical models of assessment. Next, future studies should investigate how fans utilize each Web 2.0 platforms differently. The difference in demographic using each platform will continue to change and so will the variables impacting their use. Future research should expand on the present results to explain how to best reach blog users and how that differs from microblogs or picture platforms. Finally, research should investigate how social media usage changes over the course of a season and how usage changes with the frequency of games. For example, does winning and losing have less of an impact for a baseball team who may play five games in a week and leave less time between games for fans to discuss a poor performance. With the wide variety of platforms and users it can be

assumed that fans of different sports will make use of Web 2.0 platforms differently due to the nature of different sports. This will prove its importance as social media continues to grow as an inexpensive marketing tool for smaller sports and teams.

Finally, this is one of the first studies to look at different Web 2.0 platforms over an entire season and the results showed much variation. Thus, going forward it will be important to better explain how sport fans utilize each platform differently and specifically how should each be marketed to. Thus, further studies based on this study should continue to investigate the changes across a season, multiple seasons, and multiple platforms to gain a deeper understanding of fan Web 2.0 usage habits and motives.

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