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Examining the Predictors of FBS Football Revenue

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Examining the Predictors of FBS Football Revenue

Examining the Predictors of FBS Football Revenue

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Education in Recreation and Sport Management

by

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University of Arkansas
Bachelor of Science in Business Administration, 2012

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This thesis is approved for recommendation to the Graduate Council.

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Abstract

College football, specifically the Football Bowl Subdivision, is an ever growing industry. As revenues continue to rise, it is important to be able to predict these revenues. A series of correlations and least square analysis were run on data from 2007-2011 to test their significance to football revenue. The analysis found strong correlations between all-time wins and all-time bowl appearances, average attendance, and historical grade. Strong correlations are seen between all-time bowl appearances and average attendance, historical grade, and recent grade. Strong correlations are seen between wins from 2007-2011 and recent grade. Strong correlations are seen between average attendance and historical grade and recent grade. The overall regression model with average revenue as the dependent variable was significant. However, only three variables, National Championship Grade, AP-Poll grade and average attendance were significant. National Championship Grade and average attendance were significant at the 0.01 level while AP-Poll grade was significant at the 0.05 level. The overall models for dollar change and percent change in revenue were not significant. A second regression model used historical and recent grades as variables as well as four environmental variables. The overall model was significant. However, only average attendance had significance at the 0.01 level.

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Dedication

I would like to dedicate this thesis to my parents, Mike and Kathy Redd. Their love and support has given me the ability to pursue my goals. Thank you for always supporting me and helping me along the way.

Table of Contents

Chapter 1	1
Introduction	1
Problem Statement	2
Research Question	2
Purpose of the Study	2
Delimitation	2
Limitations	2
Assumption	3
Definition of Terms	3
Chapter 2	11
Literature Review	11
Revenue and Expense Reporting	11
Television Right Agreements	14
Financial Contributions in Athletics	15
Data Sources	16
Summary	17
Chapter 3	17
Methodology	18
Sample	18
Variable Selection and Description	18
Method for Selecting Variables	19
Variable Sources	19
National Championship Grade	20
AP-Poll Grade	20
Historical Grade	21
Recent Grade	21
Method of Analysis	22
Chapter 4	23
Results	23
Descriptive Statistics	23
Bivariate Analysis	24
Simultaneous Relationships	27
Chapter 5	31
Discussion	31
Future Research	32
Conclusion	32
References	34
Appendix A	36
IRB Approval	37

Chapter 1

Introduction

In order to settle old scores, Rutgers challenged Princeton to three football games. On November 6th, 1869, approximately 100 patrons watched as Rutgers defeated Princeton 6-4 in the first college football game in history (Rutgers Football, 2013). The popularity of college football, specifically the National Collegiate Athletic Association's (NCAA) Division I Football Bowl Subdivision (FBS), has continued to grow throughout the years. In 2011, the average FBS attendance per game was over 46,000 (National Collegiate Athletic Association, 2011). College football started as a challenge, but it has evolved into a giant revenue producer for many athletic departments. According to the NCAA, the median football revenue of FBS programs increased more than 112% from 2004-2012 (Fulks, 2012). Furthermore, the NCAA indicated the median football revenue of FBS programs accounted for more than 35% of the total median revenue generated by athletic departments. Comparatively, the median men's basketball revenue of FBS programs accounted for less than 11% of the total median revenue generated by athletic departments. (Fulks, 2012).

Litan, Orszag, and Orszag (as cited by Humphreys & Mondello, 2007) reported that athletic department revenues are unequally distributed. For many FBS athletic departments, football and men's basketball are the largest sources of revenue (Dosh, 2013). Not only does the revenue from football offset the costs associated with football, but it also helps offset the cost of capital projects, facility improvements, and non-revenue generating sports. Therefore, the ability to predict football revenue is crucial for athletic departments. Due to the substantial increase in

football revenue over the past eight years, it is important to examine the predictors of this revenue.

Problem Statement

Many studies have examined college athletic department finances, but little research has examined the predictors of FBS football revenue.

Research Question

What are the most significant predictors of FBS football revenue?

Purpose of the Study

The purpose of this study is to examine what factors act as predictors of FBS football revenue. With the substantial increase in football revenue over the past eight years, the ability to predict this revenue is crucial for athletic departments. The revenue from football not only goes to offsetting the costs of football, but also goes to support the cost of capital projects, facility improvements, and non-revenue generating sports. With the ability to predict football revenues, athletic departments would be more equipped to plan for the future.

Delimitation

This study is delimited to FBS universities who reported their 2007-2011 football revenue to the Department of Education, per the Equity in Athletics Disclosure Act.

Limitations

Because there is no standard for reporting, the limitations of this study include access to accurate and complete data about the institutions.

Assumption

It is assumed the data were self-reported in an accurate and complete manner.

Definition of Terms

National Collegiate Athletic Association: “The National Collegiate Athletic Association is the dominant organization governing college sports in the United States today” (Rosner & Shropshire, 2011, p. 479). The National Collegiate Athletic Association is commonly referred to as the NCAA.

Division I: “Division I member institutions, in general, support the philosophy of competitiveness, generating revenue through athletics, and national success” (Masteralexis, Barr, & Hums, 2011, p. 488).

Football Bowl Subdivision: Must meet the NCAA requirement for sponsoring 16 sports. The institution must offer a minimum of 200 grants-in-aid or spend a minimum of \$4 million on grants-in-aid for student athletes. Football Bowl Subdivision is commonly referred to as FBS (Dosh, 2013).

Bowl Game: Postseason games that select participating institutions based on predetermined arrangements with conferences (Rosner and Shropshire, 2011).

Bowl Championship Series: “A Coalition of the Fiesta, Orange, Rose, and Sugar Bowls and the BCS National Championship game” (Rosner & Shropshire, 2011, p. 506). The Bowl Championship Series is commonly referred to as the BCS.

Atlantic Coast Conference: FBS conference that, for the 2011-2012 season, consisted of 12 football playing institutions. Those institutions included: Boston College, Clemson, Duke, Florida State, Georgia Tech, Maryland, Miami (FL), North Carolina, North Carolina State, Virginia, Virginia Tech, and Wake Forest. This conference is commonly referred to as the ACC (National Collegiate Athletic Association, 2011a).

Big East Conference: FBS conference that, for the 2011-2012 season, consisted of eight football playing institutions. Those institutions included: Cincinnati, Connecticut, Louisville, Pittsburgh, Rutgers, South Florida, Syracuse, and West Virginia. This conference is commonly referred to as the Big East (National Collegiate Athletic Association, 2011a).

Big Ten Conference: FBS conference that, for the 2011-2012 season, consisted of 12 football playing institutions. Those

institutions included: Illinois, Indiana, Iowa, Michigan, Michigan State, Minnesota, Nebraska, Northwestern, Ohio State, Penn State, Purdue, and Wisconsin. This conference is commonly referred to as the Big Ten. It is important to note that Nebraska was a member of the Big 12 through the 2010-2011 season (National Collegiate Athletic Association, 2011a).

Big 12 Conference:

FBS conference that, for the 2011-2012 season, consisted of 10 football playing institutions. Those institutions included: Baylor, Iowa State, Kansas, Kansas State, Missouri, Oklahoma, Oklahoma State, Texas, Texas A&M, and Texas Tech. This conference is commonly referred to as the Big 12. (National Collegiate Athletic Association, 2011a).

Pacific-12 Conference:

FBS conference that, for the 2011-2012 season, consisted of 12 football playing institutions. Those institutions included: Arizona, Arizona State, California, Colorado, Oregon, Oregon State, Stanford, UCLA, USC, Utah, Washington, and Washington State. This conference is commonly referred to as the Pac-12. It is important note that through the 2010-2011 Colorado was a member of

the Big 12 and Utah was a member of the Mountain West (National Collegiate Athletic Association, 2011a).

Southeastern Conference:

FBS conference that, for the 2011-2012 season, consisted of 12 football playing institutions. Those institutions included: Alabama, Arkansas, Auburn, Florida, Georgia, Kentucky, LSU, Mississippi State, Ole Miss, South Carolina, Tennessee, and Vanderbilt. This conference is commonly referred to as the SEC (National Collegiate Athletic Association, 2011a).

Conference USA:

FBS conference that, for the 2011-2012 season, consisted of 12 football playing institutions. Those institutions included: East Carolina, Houston, Marshall, Memphis, Rice, Southern Miss, SMU, Tulane, Tulsa, UAB, UCF, and UTEP (National Collegiate Athletic Association, 2011a).

Mid-American Conference:

FBS conference that, for the 2011-2012 season, consisted of 13 football playing institutions. Those institutions included: Akron, Ball State, Bowling Green, Buffalo, Central Michigan, Eastern Michigan, Kent State, Miami (OH), Northern

Illinois, Ohio, Temple, Toledo, and Western Michigan. This conference is commonly referred to as the MAC (National Collegiate Athletic Association, 2011a).

Mountain West Conference:

FBS conference that, for the 2011-2012 season, consisted of eight football playing institutions. Those institutions included: Air Force, Boise State, Colorado State, New Mexico, San Diego State, TCU, UNLV, and Wyoming. This conference is commonly referred to as the Mountain West. It is important to note that Boise State was a member of the WAC through the 2010-2011 season (National Collegiate Athletic Association, 2011a).

Sun Belt Conference:

FBS conference that, for the 2011-2012 season, consisted of nine football playing institutions. Those institutions included: Arkansas State, Florida Atlantic, Florida International, Louisiana-Lafayette, Louisiana-Monroe, Middle Tennessee, North Texas, Troy, and Western Kentucky (National Collegiate Athletic Association, 2011a).

Western Athletic Conference:

FBS conference that, for the 2011-2012 season, consisted of eight football playing institutions.

Those institutions included: Fresno State, Hawaii, Idaho, Louisiana Tech, Nevada, New Mexico State, San Jose State, and Utah State. This conference is commonly referred to as the WAC (National Collegiate Athletic Association, 2011a).

Division I FBS Independents:

For the 2011-2012 season, four football playing institutions were not affiliated with a conference.

Those institutions included: Army, BYU, Navy, and Notre Dame. It is important to note that through the 2010-2011 season BYU was a member of the Mountain West (National Collegiate Athletic Association, 2011a).

BCS Automatic Qualifier:

Institutions from the ACC, Big East, Big Ten, Big 12, Pac-12, and SEC, as well as Notre Dame, that have automatic tie-ins to the BCS. (Rosner & Shripshire, 2011). BCS Automatic Qualifiers are commonly referred to as BCS AQ's.

Associated Press Top-25:

A point system based college football poll that started on October 19th, 1936. It is the longest-running poll to award a national title at the end of the season. The poll consists of 60 sports writers

and broadcasters all who have extensive knowledge of college football (Associated Press, 2013).

Nielsen Company:

A global information and measurement company that studies consumers in over 100 countries (Nielsen, 2013a).

Designated Market Area:

The geographic areas in the United States in which local television viewing is measured by the Nielsen Company. These areas are listed as total number of households, not rank. Designated Market Area is commonly referred to as DMA (Nielsen, 2013b).

Equity in Athletics Disclosure Act:

“The Equity in Athletics Disclosure Act requires co-educational institutions of postsecondary education that participate in a Title IV, federal student financial assistance program, and have an intercollegiate athletic program, to prepare an annual report to the Department of Education on athletic participation, staffing, and revenues and expenses, by men's and women's teams. The Department will use this information in preparing its required report to the Congress on gender equity in intercollegiate athletics” (U.S. Department of

Education, 2013). The Equity in Athletics

Disclosure Act is commonly referred to as EADA.

Chapter 2

Literature Review

Several studies have examined the finances of athletic departments, as well as the relationship between athletic success and fund raising revenues. According to McEvoy (2005), “the ability to forecast fund raising revenues is crucial for college athletic departments.” While this research is critical, little research has been conducted on the ability to predict football revenue. With the substantial increase in FBS football revenue over the past eight years, the ability to predict football revenue would better equip athletic departments to plan for the future.

Most research on this topic can be broken down into four categories: revenue and expense reporting, television rights agreements, financial contributions in athletics, and data sources. The section on Revenue and Expense Reporting will discuss the issues and methods of athletic department finances. The Television Rights Agreements section will examine and compared recent television rights agreements within conferences. The section on Financial Contributions in Athletics will review a previous study, McEvoy (2005), on the predictors of financial contributions to athletic departments. Finally, the section on Data Sources will explain the recent access to data that was previously unavailable.

Revenue and Expense Reporting

Borland, Goff, and Pulsinelli (1992) indicated that there are questions about the fiscal soundness of athletic departments. These questions are a result of issues pertaining to institution specific accounting procedures and the non-profit environment of athletic departments. Because of the non-profit nature of athletic departments, Borland et al. (1992) believed surpluses are often turned into expenses. Goff (2000) indicated, because of the non-profit nature of athletic

departments, directors don't have any incentive to maximize profits. Therefore, when surpluses are anticipated or experienced, expenses are often increased to match, or exceed, revenues. According to Borland et al. (1992), the accounting procedures of athletic departments are not designed to allocate revenues and expenses to their true sources. Goff (2000) indicated institutional budgetary practices and misleading accounting methods have led to reported losses for some institutions.

In order to be in compliance with the EADA, FBS football playing institutions must submit an annual financial report describing revenues and expenses to the Department of Education (U.S. Department of Education, 2013). However, Lawrence (2013) stated that although the EADA and the NCAA require departments to submit their financials, neither has mandated a specific accounting method. According to the Knight Commission (as cited by Lawrence, 2013), a standardized accounting method would help meet the desire transparency for university presidents'. Lawrence also believes a standardized accounting method would help university presidents and athletic directors be able to explain and defend tough financial decisions.

Fulks (2012) helped define revenues, expenses, and net results. Revenues fall into two categories: allocated or generated. Allocated revenues include student fees directly related to athletics, direct financial support from the institution, indirect financial support from the institution, and direct financial support from the government. Generated revenues include ticket sales, alumni contributions, royalties, NCAA and conference distributions, television and radio agreements, and any other revenue source that is not dependent upon entities outside the department. Likewise, expenses fall into two categories; expenses paid by the department or expenses paid by outside parties. Finally, net revenue results are considered to either be net

generated revenue or negative net revenue. Net generated revenue occurs when total revenues generated by the department exceed the department expenses. Negative net revenue occurs when the department expenses exceed the total revenues generated by the department.

Dosh (2013) indicated there are still issues with revenue and expense reporting in athletic departments. Two of these issues include the idea of self-sustaining athletic departments and the method of accounting used in athletic department budgets. According to Dosh (2013, p. 8), “a handful of public FBS programs are applauded for being self-sustaining, meaning no revenue in the form of direct institutional support, government support or student fees is necessary to show a net profit on their NCAA financial disclosure”. The author made note that direct institutional support is the amount of money the athletic department saved by paying in-state tuition for out-of-state student athletes and is not actually a reflection of money changing hands. As for the accounting methods, Dosh (2013) stated that transfer pricing practices can dramatically change the financial picture of an athletic department. The author defined transfer pricing as “the analysis, documentation, and adjustment of charges made between related parties for goods services or use of property” (p. 8). One example of transfer pricing is facility rental. This occurs when the university owns the facility but it is leased by the athletic department. Furthermore, Dosh (2013) indicated that studies have found athletic related revenue is often listed under non-athletic accounts. The author used merchandise sales, concession revenues, and parking receipts as examples.

Television Right Agreements

Due to the increase in popularity of college football, specifically that of FBS football, there has also been an increase in television right agreements. Rosner and Shropshire (2011) believe that many television rights agreements are an indication of the popularity of a conference not only in its regional footprint, but also on a national basis. The regional footprint is associated with the designated market areas (DMA) of institutions within a conference.

Rosner and Shropshire (2011) drew a comparison on television rights agreement for the ACC. The ACC recently signed a 12-year, \$1.86 billion contract with ABC/ESPN for football. This new deal replaced a 7-year, \$258 million deal with ABC/ESPN that ended in 2010. The annual average value of the rights agreement increased from \$66.9 million to \$155 million, or 130%.

It is important to note that conference affiliation also led to higher television rights agreements. For example, according to Rosner and Shropshire (2011), in 2009-2010, the Bowl Championship Series Automatic Qualifying (BCS AQ) conferences received significantly higher amounts of television revenue than non-BCS AQ institutions. The ACC, Big East, Big Ten, Big 12, Pac-12, and SEC received television revenues of \$78 million, \$33 million, \$242 million, \$67 million, \$58 million, and \$205 million, respectively. These rights agreements help show the popularity of FBS football. Comparatively, non-BCS AQ conferences received significantly less amount of television revenue. The Conference USA, MAC, Mountain West, Sun Belt and WAC received television revenues of \$11.3 million, \$1.4 million, \$12 million, \$1 million, and \$4 million, respectively.

Financial Contributions in Athletics

McEvoy (2005) examined the predictors of fund raising revenues in NCAA Division I-A, now FBS. According to Fulks (as cited by McEvoy, 2005), behind ticket sales, contributions from alumni and others is the second-largest revenue source for athletic departments. The author cited previous research by Coughlin and Erikson (1984, 1985) in which 16 independent variables were used to run multiple linear regression analysis to model contributions to athletic departments. According to Coughlin and Erikson (as cited by McEvoy, 2005), football attendance, conference affiliation, bowl participation, state population, men's basketball winning percentage, and professional competition were significant determinants of athletic department contributions. Furthermore, McEvoy (2005) indicated that many previous studies that examined the predictors of contributions to athletic departments are over 20 years old and should be reexamined. The author defined the population of the study as all 119 Division I-A athletic departments and their athletic department contributions for each of the five-year span from 1998-1999 to 2002-2003. McEvoy (2005) selected 13 independent variables based on previous research by Coughlin and Erikson (1984, 1985) and Sigelman and Brookheimer (1983). The author's selected variables were as follows: football and men's basketball winning percentages for the year examined, the change in football and men's basketball winning percentages from the previous year, average home attendance for football and men's basketball in the year examined, whether the school is a member of a major conference, whether the school is a public or private institution, state population and four categorical variables to control for fixed-effects in the time-series regression analysis. McEvoy (2005) sent out questionnaires to all 119 NCAA Division I-A directors of athletic fund raising. The questionnaires inquired about athletic fund raising contributions from 1998-1999 to 2002-2003. The author had 35 questionnaires returned that

represented 171 usable subjects, for a usable response rate of 28.7%. McEvoy (2005) found that five of the 13 independent variables were significantly related to athletic fund raising contributions at the .01 level. Those variables included average football home attendance, conference affiliation, football winning percentage, type of institution, and average men's basketball home attendance. However, only two independent variables, average football home attendance and conference affiliation had a relationship when the correlation coefficient was examined. Average football home attendance had a positive coefficient while conference affiliation had a negative coefficient.

Data Sources

Humphreys and Mondello (2007) used previously unavailable data to examine athletic success and donations at NCAA Division I institutions. The authors used data from 1976-1996 that was pulled from the Integrated Postsecondary Education Database (IPEDS). The data for this database was collected and constructed by the U.S. Department of Education and the National Center for Educational Statistics. Humphreys and Mondello (2007) indicated that IPEDS consists of annual financial and enrollment data for U.S. colleges and universities. The authors focused on institutions that sponsored Division I football or basketball for at least one year during the previous mentioned period. The NCAA restricts Division I membership by requiring a minimum amount of scholarships in order to participate, according to Humphreys and Mondello (2007). The authors also noted that 65% of the institutions were public while 35% were private. According to Humphreys and Mondello (2007), "public institutions receive direct funding in the form of appropriations from the state and local governments, but private institutions do not" (p. 268). The authors made note that public institutions tuition and fees account for 18% of the revenue compared to 52.5% at private institutions. They indicated that

public institutions receive over \$11 million per year in donations compared to \$17 million per year for private institutions. Humphreys and Mondello (2007), expanded the athletic-success measurement by using bowl game appearances and top-25 polls in their data.

Summary

FBS football revenue helps to sustain many athletic departments. Recently there has been an increase in revenue generated by television rights agreements. Although there is no standardized accounting method for reporting athletic department finances, it is still important to use available data to attempt to predict football revenue. This study will contribute to previous studies by using up to date data that was previously unavailable.

Chapter 3

Methodology

Sample

The NCAA recognized 120 FBS football playing institutions for the 2011-12 season. Army, Navy, and Air Force, federal run institutions whom receive financial backing from the federal government, were omitted making the sample 117 institutions.

Variable Selection and Description

This study chose to look at revenue in three different ways and therefore created dependent variables; average FBS football revenue from 2007-2011, dollar change in FBS football revenue from 2007-2011 and percent change in FBS football revenue from 2007-2011. Rather than using one year, the time frame of 2007-2011 was chosen to add depth to the statistical analysis. As described in the literature reviews, prior research has identified various potential indicators of football revenue. In this study, based on the review of literature and measures in the current dataset, fourteen independent variables were selected. These variables included an all-time national championship grade, all-time wins, all-time bowl appearances, BCS AQ status, total wins from 2007-2011, total bowl appearances from 2007-2011, total home games from 2007-2011 as recognized by the NCAA, an AP-Poll grade from 2007-2011, average attendance from 2007-2011, average enrollment from 2007-2011, average DMA from 2007-2011 which was reflected by total number of households, university affiliation as public or private school, a historical grade, and a recent grade. These variables are presented below in Table 1.

Table 1: Variable Description

Variable	Description
REV	Average Revenue, 2007-2011
DOL	Dollar change in revenue from 2007 to 2011
PER	Percent change in revenue from 2007 to 2011
NCG	National Championship Grade
WAT	All-time wins
BAT	All-time bowl appearances
BCS	BCS AQ status
WIN	Total wins from the 2007 to 2011 seasons
BOW	Total bowl games from the 2007 to 2011 seasons
HOM	Total home games from the 2007 to 2011 seasons, as recognized by the NCAA
POL	AP-Poll grade from the 2007 to 2011 seasons
ATT	Average attendance from the 2007 to 2011 seasons
ENR	Average enrollment from the 2007 to 2011 seasons
DMA	Average DMA, total number of households, from the 2007 to 2011 seasons
UNA	University affiliation as public or private
HIS	Historical Grade for all-time success
REC	Recent Grade for success during 2007-2011

Method for Selecting Variables

Variables were selected based on previous research and their perceived impact on football revenue. DMA, a variable that not found in previous research, was selected due to the growth of television rights agreements.

Variable Sources

Table 2 reflects the source of each variable.

Table 2: Variable Sources

Variable	Source
REV	US Department of Education, 2013
NCG	College Football Data Warehouse, 2013
WAT	Sports Reference, 2013
BAT	Sports Reference, 2013
BCS	NCAA, 2013b
WIN	Sports Reference, 2013
BOW	Sports Reference, 2013
HOM	NCAA, 2013a
POL	ESPN, 2013
ATT	NCAA, 2013a
ENR	US Department of Education, 2013
DMA	Nielsen, 2013

National Championship Grade

Table 3 indicates how national championship grades were awarded. National championships were identified by the college football data warehouse website.

Table 3: National Championship Grade

Grade	Number of Championships
0	Zero Championships
1	One or two championships
2	Three or four championships
3	Five or more championships

AP-Poll Grade

Table 4 indicates how AP-Poll grades were awarded. When summed, these grades were used in the recent grade variable.

Table 4: AP-Poll Grade

Grade	AP-Poll Finish
0	Did not finish in poll
1	Finished in the 25-21 range
2	Finished in the 20-16 range
3	Finished in the 15-11 range
4	Finished in the 10-6 range
5	Finished in the 5-1 range

It is important to note that a poll grade was assigned for each year from 2007-2011. These grades were summed and re-graded. Table 5 indicates how the AP-Poll sums were re-graded. The re-grade was used in the first regression analysis.

Table 5: AP-Poll Re-Grade

Grade	AP-Poll Sum
0	Sum of zero
1	Sum of one, two or three
2	Sum of four, five or six
3	Sum of seven, eight, or nine
4	Sum of 10 or more

Historical Grade

Summing the national championship grade, all-time wins, and all-time bowl appearances developed the historical grade.

Recent Grade

Summing total wins from 2007-2011, total home games from 2007-2011, total bowl appearances from 2007-2011, and the AP-Poll grade from 2007-2011 developed the recent grade

Methods of Analysis

Descriptive statistics were run for both continuous and categorical variables. Correlations were run for the independent variables as well as the dependent to independent variables.

Ordinary least square regression was used to test the association between the dependent and independent variables. A second ordinary least square regression was run using only average revenue as the dependent variable and historical grade, recent grade, BCS AQ status, university affiliation, average DMA and average enrollment as the independent variables.

Chapter 4

Results

First, the data was described in descriptive statistics. Second, the data was looked at using straightforward and bivariate analysis. Finally, the data was looked at simultaneously through ordinary least square regression.

Descriptive Statistics

The descriptive statistics for the continuous variables are indicated in Table 6. The descriptive statistics for the categorical variables are indicated in Table 7.

Table 6 Descriptive Statistics for Continuous Variables

	M	SD
Average Revenue, 2007-2011	\$22,001.83*	\$18,862.04*
Revenue Dollar Change, 2007-2011	\$5,459.10*	\$7,141.71*
Revenue Percent Change, 2007-2011	39.07%	45.18%
Wins, All-Time	429.29	212.48
Bowls, All-Time	18.17	14.07
Wins, 2007-2011	33.32	11.15
Home Games, 2007-2011	31.59	2.96
Average Attendance, 2007-2011	44.47*	25.77*
Average Enrollment, 2007-2011	17.74*	8.07*
Average DMA, 2007-2011	1,072.10*	1,162.94*
Historical Grade	448.00	225.31
Recent Grade	70.92	18.24

*represented in thousands

Table 7 Descriptive Statistics for Categorical Variables

	Institutions	Percent
Total Study Sample	117	100.00%
<i>National Championship Grade, All-Time</i>		
Zero National Championships	81	69.23%
One or Two National Championships	18	15.38%
Three or Four National Championships	9	7.69%
Five or More National Championships	9	7.69%
<i>Bowls, 2007-2011</i>		
No Bowl Appearances	13	11.11%
One Bowl Appearance	13	11.11%
Two Bowl Appearances	26	22.22%
Three Bowl Appearances	19	16.24%
Four Bowl Appearances	25	21.37%
Five Bowl Appearances	21	17.95%
<i>AP-Poll Grade, 2007-2011</i>		
Zero Grade	63	53.85%
One, Two, or Three Grade	20	17.09%
Four, Five or Six Grade	10	8.55%
Seven, Eight, or Nine Grade	10	8.55%
Ten or More Grade	14	11.97%
<i>BCS AQ Status</i>		
BCS AQ	66	56.41%
Non-BCS AQ	51	43.59%
<i>University Affiliation</i>		
Public	101	86.32%
Private	16	13.68%

Bivariate Analysis

Table 8 compares the means for the categorical independent variables to the means of the dependent variables. The correlations between the dependent and independent variables are indicated in Table 9. Correlations between the independent variables are indicated in Table 10.

Table 8

	REV	DOL	PER
	M	M	M
Total Study Sample	22,001.83*	5,459.10*	39.07%
<i>National Championship Grade, All-Time</i>			
Zero National Championships	13,899.73*	4,763.94*	41.60%
One or Two National Championships	29,141.92*	6,367.87*	42.56%
Three or Four National Championships	56,168.91*	7,958.34*	23.44%
Five or More Championships	46,473.50*	7,398.34*	24.89%
<i>Bowls, 2007-2011</i>			
No Bowl Appearances	7,260.00*	6,227.69*	44.00%
One Bowl Appearance	10,350.38*	4,299.76*	57.92%
Two Bowls Appearances	14,341.28*	7,368.50*	49.35%
Three Bowls Appearances	24,277.08*	3,970.70*	25.11%
Four Bowls Appearances	27,838.53*	3,962.53*	28.80%
Five Bowls Appearances	38,818.03*	6,465.22*	36.48%
<i>AP-Poll Grade, 2007-2011</i>			
Zero Grade	12,886.62*	4,987.81*	46.60%
One, Two, or Three Grade	19,919.34*	5,773.22*	26.25%
Four, Five or Six Grade	35,131.81*	4,891.90*	36.60%
Seven, Eight, or Nine Grade	34,011.65*	5,725.60*	42.00%
Ten or More Grade	48,038.32*	7,345.93*	41.14%
<i>BCS AQ Status</i>			
BCS AQ	33,221.20*	7,733.73*	31.11%
Non-BCS AQ	7,482.66*	2,515.46*	49.28%
<i>University Affiliation</i>			
Public	22,303.15*	5,115.33*	37.10%
Private	20,099.79*	7,629.15*	51.50%

*represented in thousands

Table 9 Pearson's r Correlation Coefficient (Dependent and Independent)

	REV	DOL	PER
Wins, All-Time	0.80	0.13	-0.19
Bowls, All-Time	0.83	0.08	-0.15
Wins, 2007-2011	0.53	-0.01	-0.09
Home Games, 2007-2011	0.66	0.16	-0.21
Average Attendance, 2007-2011	0.92	0.12	-0.20
Average Enrollment, 2007-2011	0.47	0.05	-0.07
Average DMA, 2007-2011	-0.06	-0.03	-0.01
Historical Grade	0.81	0.13	-0.19
Recent Grade	0.65	0.05	-0.10

Strong correlations are seen between average revenue and all-time wins, all-time bowl appearances, average attendance, historical grade, and recent grade.

Table 10 Pearson's r Correlation Coefficient (Independent)

	WAT	BAT	WIN	HOM	ATT	ENR	DMA	HIS	REC
WAT	1.00	0.86	0.44	0.69	0.82	0.32	0.05	0.99	0.57
BAT	0.86	1.00	0.62	0.60	0.88	0.37	0.03	0.88	0.72
WIN	0.44	0.62	1.00	0.38	0.60	0.25	-0.03	0.45	0.97
HOM	0.69	0.60	0.38	1.00	0.73	0.36	0.01	0.69	0.54
ATT	0.82	0.88	0.60	0.73	1.00	0.55	-0.04	0.83	0.71
ENR	0.32	0.37	0.25	0.36	0.55	1.00	0.10	0.33	0.30
DMA	0.05	0.03	-0.3	0.01	-0.04	0.10	1.00	0.05	-0.03
HIS	0.99	0.88	0.45	0.69	0.83	0.05	0.05	1.00	0.58
REC	0.57	0.72	0.97	0.54	0.71	0.30	-0.03	0.58	1.00

Strong correlations are seen between all-time wins and all-time bowl appearances, average attendance, and historical grade. Strong correlations are seen between all-time bowl appearances and average attendance, historical grade, and recent grade. Strong correlations are seen between wins from 2007-2011 and recent grade. Strong correlations are seen between average attendance and historical grade and recent grade.

Simultaneous Relationships

Ordinary least square regression results are show in Tables 11 and 12.

Table 11 Ordinary Least Square Regression

	REV		DOL		PER	
Variable Description	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
Constant	5,115.40	0.45	-727.20	-0.06	116	1.63
NC Grade, All-Time	2,839.47	2.62***	1,093.95	0.99	-0.20	-0.28
Wins, All-Time	11.28	1.48	-0.83	-0.11	0.00	-1.06
Bowls, All-Time	-165.95	-1.18	-101.41	-0.71	0.01	0.82
BCS AQ Status	350.96	0.16	1,366.85	0.59	-0.03	-0.23
Wins, 2007-2011	-142.02	-0.70	-2.34	-0.01	-0.00	-0.23
Bowls, 2007-2011	-353.31	0.31	-994.35	-0.85	-0.04	-0.57
Home Games, 2007-2011	-306.28	-0.83	325.11	0.87	-0.01	-0.35
Poll Grade, 2007-2011	2,225.94	2.25**	1,033.12	1.02	0.09	1.45
Avg Att 2007-2011	614.22	7.45***	10.37	0.12	-0.00	-0.84
Avg Enroll, 2007-2011	-101.36	-0.86	44.73	0.37	0.01	1.39
Avg DMA, 2007-2011	-0.45	-0.73	-0.39	-0.62	-0.00	-0.52
University Affiliation	1,573.26	0.16	-2,706.78	0.59	-0.29	-1.87
Mean of Outcome	22,001.83		5,459.10		39.07%	
Standard Deviation	18,862.04		7,141.71		45.18%	
F Significance	0.00		0.60		0.28	
Adjusted R-squared	0.86		-0.02		0.02	
N	117		117		117	

***significant at 0.01

**significant at 0.05

The overall model with average revenue as the dependent variable was significant. However, only three variables, National Championship Grade, AP-Poll grade and average attendance were significant. National Championship Grade and average attendance were significant at the 0.01 level while AP-Poll grade was significant at the 0.05 level. The overall models for dollar change and percent change in revenue were not significant.

Table 12 Ordinary Least Square Regression for Average Revenue

REV	
Variable Description	Coeff t-stat
Constant	-7,884.48 -1.98
Historical Grade	11.77 1.87
Recent Grade	-14.16 -0.26
BCS AQ Status	-1,190.07 -0.56
University Affiliation	411.92 0.17
Average Attendance, 2007-2011	624.77 8.68***
Average Enrollment, 2007-2011	-73.76 -0.61
Average DMA, 2007-2011	-0.45 -0.72
Mean of Outcome	22,001.83
Standard Deviation	18,862.04
F Significance	0.00
Adjusted R-squared	0.85
N	117

***significant at 0.01

**significant at 0.05

The second regression model used historical and recent grades as variables as well as five environmental variables. The overall model was significant. However, only average attendance had a significance at the 0.01 level.

Chapter 5

Discussion

The goal of this study was to examine the predictors of FBS football revenue. DMA was selected because of the recent growth in television rights agreements. Analysis showed that DMA had little to no correlation with average revenue and was not a significant variable in the regression models. This might have occurred because it is too early to see the overall impact these television rights agreements had on football revenue. Average attendance was a variable that met expectations. It had both a strong correlation and significance to the average revenue model. The assumption that higher attendance led to higher revenue held true. The poll grade was a variable that was surprising. It was significant to the average revenue model. Being ranked in the poll could have generated interest around a program and thus led to higher attendance which also led to higher revenue. It could be assumed that being ranked in the final AP-Poll also led to bowl appearances because ranked teams almost always participate in bowl games. Thus leading to the conclusion that appearing in bowl games leads to higher revenue. The correlation seen between all-time bowl appearances and wins all-time is most likely a result of more wins resulting in more bowls. The correlation seen between wins all-time and average attendance is most likely a results of more wins leading to interest which leads to higher attendance. The focus of this study shifted as it was being conducted. Initially, revenues were recorded for only the 2011 season. The revenues, as well as other variables, were expanded over five years, 2007-2011, to give more depth to the analysis. Variables were selected based on their perceived impact on revenues. After assessing the variables, it was realized that some of these variables could be grouped together. These groups included historical grade, recent grade and environmental

variables. Once these groups were developed, the analysis showed that institutions should have higher revenue based on historical success and recent success.

Future Research

Future research on FBS football revenues could lead to the development of a standardized financial reporting system. With a standardized financial reporting system, researchers would be better equipped to compare the revenues of institutions. Currently, researchers are assuming that each institution reports the same way, when in fact this is not true. Each institution has its own method of accounting. Future research could also lead to the development of a better historical grade for institutions based on factors such as all-time wins, all-time bowl appearances, all-time poll grades, national championships, and conference championships.

With the recently increase in television rights agreements, it is important to continue researching the impact of these agreements on revenue. Future research could assess the impact of appearing on national television compared to regional television. Using the viewership ratings from each game could also be used to asses the impact of revenue.

Conclusion

This study set assessed the predictors of FBS football revenue. After a series of ordinary least square regression, it was found that AP-Poll grade and average attendance were significant when compared to average revenue. The overall model for average revenue was significant. However, the overall model for dollar change and percent change in revenue was not significant. Finally, when accounting for historical grades, recent grades, and environmental variables, the

average revenue model was significant. For this model, historical grade, recent grade, and enrollment were significant variables.

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Appendix A
IRB Approval



November 20, 2013

MEMORANDUM

TO: Hayden Redd
Stephen Dittmore

FROM: Ro Windwalker
IRB Coordinator

RE: New Protocol Submission

IRB Protocol #: 13-11-237

Protocol Title: *Examining the Predictors of FBS Football Revenue*

In reference to the request for IRB approval of your project titled *Examining the Predictors of FBS Football Revenue*, the IRB is not authorized to oversee and approve such research. This protocol does not meet the definition of research involving human subjects in the federal regulations. (See the citation below.) You are free to conduct your research without IRB approval.

45 CFR 46.102 (f)

(f) Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains

- (1) Data through intervention or interaction with the individual, or
- (2) Identifiable private information.

If you have any questions do not hesitate to contact this office.