

COLLEGE CHOICE FACTORS AND ORGANIZATIONAL EFFECTIVENESS IN INTERCOLLEGIATE ATHLETICS

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ABSTRACT

The purpose of this study was to find out if winning could be predicted by spending on facilities and coaches' salaries by NCAA Division I intercollegiate athletic departments. Using the goals attainment model (Price, 1972) approach, winning, as measured by the National Association of Collegiate Directors of Athletics (NACDA) Cup Points, was used as the measure of organizational effectiveness for intercollegiate athletic departments.

The results of a hierarchical multiple linear regression suggest that a significant proportion of the total variation in Directors' Cup points was predicted by the combination of total annual debt service, total outstanding debt, average men's head coach salary, and average women's head coach salary ($F(4, 284) = 183.962, p < .001$). Multiple R^2 indicates that approximately 75 percent of the variation in Directors' Cup points was predicted by the combination of total annual debt service, total outstanding debt, average men's head coach salary, and average women's head coach salary.

INTRODUCTION

Intercollegiate athletics offers a unique opportunity to examine organizational effectiveness. Because there is a clear winner and loser declared in college athletic contests, these wins and losses are an easily quantifiable variable that can be used for an effectiveness measure. Therefore, it behooves college athletic departments to examine the impact on winning by various elements of their operations to determine strategies for success for the future.

This study aimed to look at two elements in particular, both related to college choice: facility spending and coaches' salaries. These two items make up almost half of athletic department budgets (Perko, 2009) and it is crucial to understand what effect they have on winning and losing in order for college athletics administrators to properly plan for the future. Additionally, it can be argued that these elements are the most critical to recruiting student-athletes, which is the lifeblood of college athletic teams (Clotfelter, 2011; Pekala, 2014). With

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the understanding of their importance, the author reviewed the literature on facility spending, coaches' salaries, and organizational effectiveness for college athletic departments, explained the data collection and analysis methods, discussed the results of the analysis, and provided future directions for the research.

COLLEGE CHOICE FACTORS

There have been numerous studies on the factors involved with college choice for the general student body (Chapman, 1981; Hossler & Gallagher, 1987; Hoyt & Brown, 2003; Perna, 2006). Some of the most prevalent factors include residency, financial aid, reputation and quality of the institution and its programs, and size of the institution (Kallio, 1995). While these factors may be involved in a student-athlete's decision on where to attend college, the additional elements of coaching staff, opportunities to compete in National Collegiate Athletic Association (NCAA) and conference championships, quality of training and competition facilities, and quality of competition are also factors in a student-athlete's choice on where to attend school (Cooper, Huffman, & Weight, 2011).

Studies investigating these factors in student-athlete college choice are prevalent in the literature. These studies have looked at different sports such as hockey (Schneider & Messenger, 2012), softball (Kankey & Quarterman, 2007), football (Klenosky, Templin, & Troutman, 2001) and baseball (Doyle & Gaeth, 1990) and what the athletes that play these sports use to make their college choice decision. Within these studies and others, facilities can be seen as a common elements that student-athletes factor into their decision to attend a particular university.

FACILITIES

In their study investigating college choice factors for student-athletes, Judson, James, and Aurand (2004) found that facilities were the sixth most influential attribute for incoming freshmen student-athletes. Similarly, Cooper, et al., (2011) and Letawsky, Schneider, Pedersen, and Palmer (2003) found athletic facilities to be an important attribute in college choice decisions for student-athletes. Another study, this one done by Doyle and Gaeth (1990), found that baseball and softball players rated facilities as the fourth most influential attribute affecting their college decision. As these studies show, facilities are an important factor in recruiting student-athletes.

Because student-athletes spend so much of their time, while on campus, at their respective facilities for practice, training, and competition and have cited it as a factor in their college choice decision, college athletic administrators and coaches have placed an emphasis on adding and renovating the facilities that are used on a daily basis by student athletes (Wolverton, 2008). For example, North Carolina State University opened a new indoor practice facility in 2015. The total cost of the project was \$14 million. Similarly, Wake Forest University also opened a new \$21 million indoor practice facility in 2015 (Jacobs, 2015). On a much larger scale, Texas A&M University completed a \$485 million project on their football stadium in 2015, with the hope of attracting both fans and recruits to the newly refurbished digs (Newcomb, 2015).

Another trend taking place on campuses across the country is the building of new residence halls with the intended purpose of housing student-athletes. These dorms are only allowed have up to 49 percent student-athletes, but that has not stopped places like the University of Oklahoma, the University of Kentucky, and the University of Kansas from spending tens of millions of dollars on these new residence halls (Jacobs, 2015) with the anticipation that they will attract higher quality talent to their teams. These are just a few of the many examples of universities putting resources into their athletic facilities in order to attract the best talent, which, in turn, should contribute to more winning.

There are additional trends that should be considered as evidence of the importance being placed on athletic facilities by institutions and their athletic departments. For instance, spending on athletic facilities increased 143 percent between 2006 and 2012 (Duffy, 2013). The decade prior to this saw universities spend \$15 billion on sports facilities. Additionally, from 2009 to 2011 non-residential public construction decreased 10.3 percent, but as detailed before, during that same time period athletic facility spending was increasing exponentially (Bennett, 2012).

COACHES

Another important aspect to student-athlete recruitment is the coaches. Unlike facilities, which can be involved in the general student's decision to attend college, coaches are a unique and vital element of the student-athlete college choice decision. In looking at freshmen student-athlete college choice both Gabert, Hale, and Montavlo (1999) and Goss, Jubenville, and Orejan (2006) found that the head coach was a highly influential factor in the decision, with Gabert et al., finding it the most important factor. Additionally, Klenosky et al., (2001) (football), Kankey and Quarterman (2007) (softball), and Cooper et al., (2011) (wrestling) all found that the head coach and or coaching staff were an important factor in student-athletes' college choice decision making process. The empirical support of the importance of the coach in the student-athlete college decision making process leads to the understanding of coaches' compensation in the NCAA structure.

The NCAA and its member institutions have set a limit on the value of an athletic scholarship at tuition, fees, room and board, course related books, and for some schools an additional stipend that can cover miscellaneous items such as travel home and personal expenses (Berkowitz, 2015). This limit means that scholarship offers to student-athletes will have little to difference between the competing institutions, further increasing the importance of the coach in the student-athlete college choice (Farmer & Pecorino, 2010). The combination of capping the amount of resources devoted to scholarships and the resulting importance placed on the coach in the recruiting process leads to institutions aggressively bidding on coaches by continually offering higher salaries in order to attract the best talent to their campuses.

As noted earlier, coaches' salaries take up a significant portion of athletic department budgets. As of 2007, coaches' salaries accounted for 32 percent of the average athletic department budget (Perko, 2009). One can most clearly see the effect of institutions' aggressiveness in trying to attract coaches in the escalation of football coaches' salaries. In the decade from 2006 to 2015, at the highest profile level of the NCAA, the Division I Football Bowl Subdivision (FBS), the average head football coach's annual salary more than

doubled from \$950,000 in 2006 to just over \$2 million in 2015 (Brady, Berkowitz, & Schnaars, 2015). Additional evidence is provided by the fact that the number of head football coaches making \$3 million annually, tripled in the five year span from 2011 to 2015 (USA Today, 2011; USA Today, 2015). With this amount of investment both in facilities and coaches it is important to ask how this investment impacts organizational effectiveness for athletic departments.

ORGANIZATIONAL EFFECTIVENESS

While there are a number of ways to approach organizational effectiveness in sport, one of the most common approaches is to use the goals attainment model (Price, 1972) where the goal is equated with the organizational objective, purpose, mission, aim, and task. In this model the ability to identify and achieve goals is how effectiveness is measured (Frisby, 1986). This approach is a natural fit in sport due to the easily understood and quantifiable goal of winning.

There have been several studies that have taken advantage of the easily quantifiable nature of winning in sport. In 2002, Cunningham used winning as the measure of effectiveness in investigating the relationship between strategic types and effectiveness in intercollegiate athletic departments. Similarly, studies have looked at the perception of effectiveness in intercollegiate athletic departments (Wolfe, Hoerber, & Babiak, 2002), the relationship between coaches' behaviors and effectiveness (Rocha & Turner, 2008), and the impact of student fees on effectiveness (Morton, 2017) with winning as the measure for effectiveness for intercollegiate athletic departments. With these studies in mind, the purpose of this study was to find out if winning could be predicted by spending on facilities and coaches' salaries by NCAA Division I intercollegiate athletic departments.

METHODS

To determine the impact of facility spending and coaches' salaries on organizational effectiveness in intercollegiate athletic departments, it was necessary to use multiple data sets. For facility spending, a database compiled by the Knight Foundation's commission on intercollegiate athletics was used (Knight Commission, 2015). Information on coaches' salaries and organizational size was obtained from a database created by the United States Department of Education (DOE) with information provided by higher education institutions in compliance with the Equity in Athletic Disclosure Act (United States Department of Education, 2014). Finally, data used to account for organizational effectiveness was obtained from the National Association of Collegiate Directors of Athletics (NACDA) (NACDA, n.d.).

To measure facility spending, two continuous variables were used from the Knight Commission (2015) database. The first measure used was total annual debt service on athletic facilities in 2014. This was described by the Knight Commission as the "payment of principal and interest on athletic facilities debt in the reporting year." The second measure used was total debt outstanding on athletic facilities in 2014, defined by the Knight Commission as the "total athletic facilities debt balances owed by the athletic department that have not been

previously paid.” The combination of these two variables gives good insight into an institution’s philosophy on, and investment in, their athletic facilities.

To measure coaches’ salaries two continuous variables were used from the DOE’s database comprised of financial data provided by institutions’ athletic departments (United States Department of Education, 2014). The first measure used was the average annual institutional salary per head coach for men’s teams in 2014. The second measure used was the average annual institutional salary per head coach for women’s teams in 2014. These two variables were chosen because they encapsulated all the sports an institution offered and gave a clear picture of the level of investment the schools were making in their coaching staffs.

The number of student-athletes was used as a covariate and it was measured using the total participants from men’s and women’s teams in 2014 from the DOE database. Organizational theorists throughout the years have found that size impacts organizational structure and outcomes (Blau & Schoenherr, 1971; Burton & Obel, 2004; Glisson & Martin, 1980). Because of this, it was important to control for size and the total number of participants is a good measure of the size of an athletic department (Cunningham & Rivera, 2001).

The dependent variable used to measure organizational effectiveness was total NACDA Directors’ Cup points in 2014. The NACDA Directors’ Cup, which assigns point values to each school’s final rankings in each of 20 sports is the best measurement of overall athletic success (Lawrence, Li, Regas, & Kander, 2012). The 20 sports are divided into 10 men’s and 10 women’s sports that are used for scoring in Division I. First place earns the school 100 points and based on the type of sport, point values decrease from there based on post season finish (NACDA, n.d.).

A hierarchical multiple linear regression model was conducted using IBM SPSS Statistics 22 to determine if NACDA Directors’ Cup points could be predicted from total annual debt service, total outstanding debt, average men’s head coach salary, average women’s head coach salary, and total number of athletics participants. Independent variables were added in blocks to isolate how much variance was explained by each group of variables and the covariate: 1) total annual debt service and total outstanding debt, 2) average men’s head coach salary and average women’s head coach salary, 3) total number of athletics participants. The null hypotheses tested were that the multiple R^2 was equal to 0 and that the regression coefficients were equal to 0.

The data were screened for missingness and violation of assumptions prior to analysis. Due to the lack of enforceable reporting regulations, not all institutions had values for total annual debt service on athletic facilities and or total debt outstanding on athletic facilities. All the other variables were complete for all cases. To address the missing data, a multiple imputation was conducted and the imputed dataset was collapsed by averaging across the imputations. The averaged variables for total annual debt service and total debt outstanding were then used for the analysis. Upon examination of the residuals, one extreme value was identified and removed. With this removal, there were 289 cases representing the three subdivisions of the NCAA Division I: FBS, Football Championship Subdivision (FCS), Division I without football (IAAA). Further examination of the residuals along with Q-Q plots, scatterplots, and histograms suggested the assumptions of linearity, normality, independence, and homoscedasticity were met. Inspection of tolerance, correlations, variance inflation factor and eigen values for the predictors revealed that multicollinearity was not an issue.

RESULTS

The results of the hierarchical multiple linear regression suggest that a significant proportion of the total variation in Directors' Cup points was predicted by the combination of total annual debt service and total outstanding debt ($F(2, 286) = 60.978, p < .001$), the combination of total annual debt service, total outstanding debt, average men's head coach salary, and average women's head coach salary ($F(4, 284) = 183.962, p < .001$), and the combination of total annual debt service, total outstanding debt, average men's head coach salary, average women's head coach salary and the total number of athletics participants, $F(5, 283) = 172.467, p < .001$ (Table 1). The only predictor not shown to be significant was total outstanding debt in the second ($p = .201$) and third ($p = .135$) models.

Table 1. Model fit statistics for the three models

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6856261.061	2	3428130.530	60.798	.000 ^b
	Residual	16126302.738	286	56385.674		
	Total	22982563.799	288			
2	Regression	16582532.996	4	4145633.249	183.962	.000 ^c
	Residual	6400030.802	284	22535.320		
	Total	22982563.799	288			
3	Regression	17303828.263	5	3460765.653	172.467	.000 ^d
	Residual	5678735.535	283	20066.203		
	Total	22982563.799	288			

^aDependent Variable: Cup_Points.

^bPredictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean.

^cPredictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean, Women_Salary, Men_Salary.

^dPredictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean, Women_Salary, Men_Salary, Size.

For total annual debt, the standardized coefficient (.184) was statistically significantly different from 0 ($F = 17.441, df = 283, p < .001$); with every standard deviation change in total annual debt resulting in an increase of .184 Director's Cup points when controlling for the other variables in the model. For average men's head coach salary, the standardized coefficient (.301) was statistically significantly different from 0 ($F = 22.564, df = 283, p < .001$); with every standard deviation change in average men's head coach salary resulting in an increase of .301 Director's Cup points when controlling for the other variables in the model. For average women's head coach salary, the standardized coefficient (.416) was statistically significantly different from 0 ($F = 41.956, df = 283, p < .001$); with every standard deviation change in average women's head coach salary resulting in an increase of .416 Director's Cup points when controlling for the other variables in the model. Finally, for total athletic participation, the standardized coefficient (.256) was statistically significantly different from 0 ($F = 35.946, df = 283, p < .001$); with every standard deviation change in total athletic participation resulting in an increase of .301 Director's Cup points when controlling for the other variables in the model.

The semi-partial correlations for the statistically significant predictors were examined and squared in order to gauge the amount of unique variance accounted for by each variable when controlling for all the others (see Table 2). Total annual debt accounted for 1.5 percent of unique variance when controlling for all the other variables in the model. Average men’s head coach salary accounted for 2 percent of unique variance when controlling for all the other variables in the model. Average women’s head coach salary accounted for 3.6 percent of unique variance when controlling for all the other variables in the model. Finally, total athletic participation accounted for 3.1 percent of unique variance when controlling for all the other variables in the model.

Table 2. Coefficients for the three models

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	F	Sig.
		B	Std. Error	Beta		
1	(Constant)	129.140	16.680		59.939	.000
	Annual_Debt_mean	1.125E-05	.000	.158	4.714	.031
	Outstanding_Debt_mean	1.787E-06	.000	.420	33.563	.000
2	(Constant)	-105.140	18.762		31.402	.000
	Annual_Debt_mean	1.542E-05	.000	.216	21.663	.000
	Outstanding_Debt_mean	2.686E-07	.000	.063	1.640	.201
	Men_Salary	.000	.000	.231	12.200	.001
	Women_Salary	.002	.000	.513	60.614	.000
3	(Constant)	-255.490	30.697		69.271	.000
	Annual_Debt_mean	1.315E-05	.000	.184	17.441	.000
	Outstanding_Debt_mean	-3.325E-07	.000	-.078	2.246	.135
	Men_Salary	.000	.000	.301	22.564	.000
	Women_Salary	.002	.000	.416	41.956	.000
	Size	.382	.064	.256	35.946	.000

a. Dependent Variable: Cup_Points

Model		Correlations			Collinearity Statistics	
		Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)					
	Annual_Debt_mean	.465	.127	.108	.466	2.146
	Outstanding_Debt_mean	.535	.324	.287	.466	2.146
2	(Constant)					
	Annual_Debt_mean	.465	.266	.146	.456	2.195
	Outstanding_Debt_mean	.535	.076	.040	.403	2.483
	Men_Salary	.758	.203	.109	.225	4.446
	Women_Salary	.804	.419	.244	.226	4.428
3	(Constant)					
	Annual_Debt_mean	.465	.241	.123	.449	2.227
	Outstanding_Debt_mean	.535	-.089	-.044	.320	3.121
	Men_Salary	.758	.272	.140	.217	4.605
	Women_Salary	.804	.359	.191	.212	4.727
	Size	.572	.336	.177	.480	2.082

a. Dependent Variable: Cup_Points

Table 3. Summary statistics for the three models*Model Summary*^d

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.546 ^a	.298	.293	237.45668
2	.849 ^b	.722	.718	150.11769
3	.868 ^c	.753	.749	141.65523

a. Predictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean

b. Predictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean, Women_Salary, Men_Salary

c. Predictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean, Women_Salary, Men_Salary, Size

d. Dependent Variable: Cup_Points

Change Statistics

Model	R Square Change	F Change	df1	df2	Sig. F Change
1	.298	60.798	2	286	.000
2	.423	215.801	2	284	.000
3	.031	35.946	1	283	.000

a. Predictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean

b. Predictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean, Women_Salary, Men_Salary

c. Predictors: (Constant), Outstanding_Debt_mean, Annual_Debt_mean, Women_Salary, Men_Salary, Size

d. Dependent Variable: Cup_Points

Multiple R^2 indicates that approximately 75 percent of the variation in Directors' Cup points was predicted by the combination of total annual debt service, total outstanding debt, average men's head coach salary, average women's head coach salary total number of athletics participants (Table 3). As seen in the first model, the two debt variables accounted for 29.3 percent of the variation. In the second model, the two salary variables accounted for 42.3 percent of the variation when controlling for the two debt variables. This change was significant $F(2, 284) = 215.801, p < .001$. The third model indicates that size accounted for 3.1 percent when controlling for the two debt variables and the two salary variables and was statistically significant $F(1, 283) = 35.946, p < .001$.

DISCUSSION

The purpose of this study was to find out if the investment in facilities and coaches' as factors influencing college choice for student-athletes was impactful on organizational effectiveness as measured by wins and losses. After conducting the statistical analysis, it is clear that both the combination of total annual debt service and total outstanding facilities debt, as well as the combination of average men's head coach salary and average women's head coach salary were good predictors of Director's Cup points. It is not surprising that coaches' salaries were the best predictors of these variables, as this supports previous studies conducted on student-athlete choice that report coaches as highly influential in the college choice process (Cooper et al., 2011; Gabert et al., 1999; Jubenville & Orejan, 2006; Kankey & Quarterman, 2007; Klenosky et al., 2001).

While the combination of total annual debt service and total outstanding debt was a good predictor, total outstanding debt on its own was not a statistically significant predictor in the third model. This is most likely attributed to the lack of reporting standards for athletic departments. Additionally, the nature of total outstanding debt creates the possibility that the project that caused the need to borrow, is no longer a relevant facility to current student-athletes. It would seem logical that these two variables would go hand in hand, and in fact, total outstanding debt was a significant predictor in the first model that only included the facilities variables. So, despite the lack of statistical significance, I believe total outstanding debt is a useful variable in assessing the effectiveness of an athletic department.

This study also confirms that size is an important factor when assessing effectiveness. Using size as a covariate in this study, it was found to be a significant predictor of Directors' Cup points. Future studies of organizational effectiveness should include size in order to get the most complete picture possible.

LIMITATIONS AND FUTURE DIRECTIONS

One of the biggest limitations of this study was the missing facilities spending data. While a multiple imputation using predictive mean matching is a good method to account for missing data, it is still preferable to have actual data to get the most accurate result possible. However, because there is no standardized reporting structure for this type of information, it will continue to be a limitation for future studies. Another limitation to this study is the use of only one year's data. Expanding this study to include five or ten years' worth of data could possibly add to the conclusions one could draw from the results. Additionally, this study only examined institutions from the three NCAA Division I subdivisions. To accurately cover the whole of intercollegiate athletics, an investigation into NCAA Divisions II and III as well as National Association of Intercollegiate Athletics (NAIA) institutions and junior colleges should be conducted.

Besides addressing the limitations, future directions could include the use of a different outcome variables to represent effectiveness. In addition to athletic achievement, academic achievement as well as Title IX compliance have been used as measures of effectiveness for intercollegiate athletic departments (Cunningham, 2002; Cunningham & Rivera, 2001). Another direction that could be taken is to include salaries for the total coaching staff because assistant coaches are heavily involved in recruiting student-athletes. Further, other college choice factors could be examined as well. Items such as academic standing of the institution, location, and athletic scholarship considerations have been identified as college choice factors for student-athletes (Cooper et al., 2011; Gabert et al., 1999).

CONCLUSION

While college choice factors for student-athletes have been studied by scholars in the past, this study aimed to fill a gap in the literature by examining how the investment in two of those factors, facilities and coaches, impacted organizational effectiveness in intercollegiate athletic departments. When using wins and losses as the measure of effectiveness, spending on facilities and coaches is a significant predictor of organizational effectiveness. The results

of this study provide some justification for the increasing allocation of resources, by athletic departments, towards building new facilities and hiring coaches. With this knowledge it behooves collegiate athletic administrators to make the appropriate investment in both their facilities and coaches in order to attract the best student-athletes and in turn increase the chances of achieving a successful athletic department.

In addition to the justification for the investment in coaches and facilities, this study also emphasizes the impact of the athletic scholarship limit. It has been shown that having a football player or basketball player of draft caliber talent in a program is valued at \$1,000,000 (Clotfelter, 2011). With that kind of value possible, along with the impact talented athletes have on winning (Langelett, 2003), it becomes very important for athletic departments to differentiate themselves in order to attract the top talent. However, because there is little to no differentiation in the scholarship that can be offered, institutions are continually increasing spending on facilities and coaches' salaries. As detailed earlier, this is most evident in the spending trends for FBS institutions. As long as there continues to be an agreed upon limit to the amount of an athletic scholarship, the spending trends in intercollegiate athletics will most likely continue at their current pace.

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