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Market Segmentation of a College Football Fan Base

Understanding one's customers is key to any organization's core goals. In the spectator sports industry, teams have constantly invested in learning about their fan base. The implementation of Customer Relationship Management systems (CRM) over the past few decades has allowed organizations, including college athletic departments, to track their fans and learn more about them. The use of data for decision-making on which product attributes to offer including pricing (variable or dynamic, or multi-tiered pricing within the stadium), kids engagement areas, halftime events, food choices, ingress, and egress, has allowed the creation of different packages and attributes for different sets of fans, and determine which marketing channels to use.

Often, CRM data is limited in terms of the types of information provided. Therefore, it is recommended that sports teams survey their fan base occasionally. With the goal of understanding a Power 5 (P5) university's football fan base, a survey utilizing the P5's ticket purchasing database was conducted yielding over 2,800 responses. Utilizing a factor-cluster technique analysis in order to create market segments resulted in five such segments that represented just over 95% of the respondents. These consisted of "high income critics," "older experiential seekers," "price sensitive health-conscious fun seekers," "single game middle income critics," and "core football fans." Their perceptions, demographics, and media use vary and are explained below.

Research Process and Method

The chosen methodology included a long and extensive survey that was administered online to the P5's database of email addresses of previous ticket purchasers. The survey was sent to 17,637 members of the database provided by the P5 athletics staff. Of that, 2,817 completed the survey, with an additional 929 partially completing it (defined as more than 20% complete), and 412 abandoning it prior to completion. This response rate of nearly 16% is quite high and suitable for a market segmentation study.

In order to determine whether the sample is representative of the population, comparisons must be made between the population and the sample. The only known information about the population is their ticket buying history (not demographics, for instance). It is estimated that approximately 53% of the members of the population (the database) purchase season tickets only, with the remaining purchasing single game tickets and some of both. The survey resulted in 53% of the respondents also in the category of season ticket only purchasers, thus at least on this dimension, the sample is representative of the population. Assuming a random sample, the sample size is statistically significant with a 95% confidence interval of less than 3%.

Cluster analysis classifies observations, in this case football fans of a P5 university, into categories based on their similarity with each other and differences from those in other groups. Similarity is determined by the responses to the questions in the survey. E.g., two people with a similar age range, all else equal, are deemed more similar than

those with different ages. Or, two respondents who indicate a similar rating on the importance of ticket prices in their purchase decision would be considered similar along that dimension.

Because there were many variables (questions) in the survey, we conducted a factor analysis by category: logistics and customer service, quality of team, pre-game promotions, price sensitivity, concessions, merchandise, the band, the scoreboard programming, and family activities. Getting into the weeds, this uses statistical analysis to shrink the number of variables that are correlated with each other. The result is what is known as factor scores (composite variables) that represent the original variables, but allow for fewer dimensions and more orthogonality. We used principal components extraction method with varimax rotation. This makes the cluster analysis feasible in that there are few enough variables in order to measure commonalities among the respondents.

A two-step cluster procedure was then completed using the composite variables plus gender, age, and household income. The number of resulting market segments can either be chosen by the researcher or iterated to by using a hierarchical cluster analysis to guide the number of clusters. Then a k-means analysis finalizes the results. These factor followed by cluster analyses are well documented in the academic research literature.

Findings

General Survey Results

About three-fourths of the respondents were male, with 44% over age 55. There were relatively more women among the younger respondents. The income distribution was more even with 27% reporting household incomes over \$200,000, but the next highest grouping (\$100,000-\$124,999) represented only 16% of respondents. Those earning over \$200,000 were most likely to be between 35-54 years old. Almost 40% of those between 35-54 years old earned over \$200,000.

Thirty-nine percent (39%) of respondents fell into two or more categories in terms of their relationship with the school, with the most common individual responses being Alumni (50%) and Donor (22%). That was also the most common combination – in fact, 719 of 857 Donors were also Alumni. However, only 37% of Alumni were also Donors. Seven percent (7%) of respondents had no direct relationship to the school. Over 10% of respondents were both Alumni and Family of Alumni (and nearly two-thirds of those donated to the school). About 62% of respondents are members of the school's athletic association (boosters). Almost 70% of those over 55 years of age are also boosters, while only 40% of those under 35 are. The “other” category was filled with parents/family of current students (about 3%). This was not an option for the check boxes in the survey. Also, “general fan” was another 4% (making “no direct relationship” around 11%).

As mentioned above, 53% of respondents purchased season tickets only. Over half of respondents purchased two season tickets, with another 28% purchasing four or more. Season ticket buyers attend about 5.5 games per season, while single ticket buyers attend 2.1. Seat purchasers who are eligible to purchase tickets in a young alumni section tend to be about 30 years old and buy less than two season tickets. Similarly, over 30% of fans aged 25-34 bought one season ticket while less than 10% of fans over 44 bought a single season ticket. Younger fans and female fans tended to buy more single game tickets (although the differences are not large). Alumni, faculty, and staff tend to buy season tickets only (overwhelmingly), while donors purchased more combinations of season tickets and single game tickets. Those with no relationship to the school purchased more single game tickets than season tickets.

Factor Analysis Results

Separate factor analyses were conducted on purchase decisions and satisfaction. The first factor analysis focused on the respondents' decision to purchase tickets and what drove that decision (17 possible reasons). Those variables resulted in four (4) final factors. Factor 1 is a variable that captures the importance of logistics and customer service (e.g., crowds, customer service, and transportation). Factor 2 captures the importance of the quality of the team. Factor 3 sums up ancillary items such as pre-game activities, promotional giveaways and change in job/child status. Factor 4 is loaded with price sensitivity and non-conference schedule. These factors explained 67% of the variation in the original variables.

A second factor analysis was performed on the merchandise, concessions, and in-game activities ratings questions (32 aspects). There is a single factor, Factor 1, which captures concessions. Similarly, Factor 2 captures merchandise. Factor 3 contains information about the band, dance team, and on-field recognition of athletes, teams, etc. Factor 4 is about the scoreboard (e.g., advertising and sponsorship activation activities). Finally, Factor 5 is a variable about the mascot and family activities. These factors explained 58% of the variation in the original variables.

Cluster Analysis Results

Cluster analysis takes the different respondents to the survey and checks to see if they fall into meaningful customer segments whereby the members of a segment have similar perceptions about their experience at a game at this P5 school or along other metrics. It creates different markets to target that might be based on demographics, but could be based on perceptions or feelings about their experience. Once the different segments are understood, marketing strategies can be used to address each segment.

The resulting 9 factors (from above) along with age, household income, and gender were used to create market segments of similar respondents using the aforementioned cluster analysis. The order of the clusters is immaterial. The first cluster (high income critics) consists of respondents who were less than satisfied regarding concessions and merchandise and that influenced their decision to purchase tickets. Additionally, they are very discerning regarding crowds, customer service, and transportation. Family status (job or child or relocation) also was more important in their decision to purchase tickets. These are very high income respondents who are upper middle age, and likely to be alumni. This group is most likely willing to contribute to the booster club to get better seats. They rate their overall experience on the athletic department's website the lowest, as well as their overall experience at a game of this P5 school the lowest. They consist of just over 20% of the sample.

The second cluster (older experiential seekers) are older, low-to-middle income earners who are influenced positively by concessions, merchandise, and the school band, but the scoreboard events (including advertising) and field announcer are turnoffs. Customer service, transportation, or crowds are not important in their decision to buy tickets, nor is their family status (job, child, etc.). They are more likely to have no direct relationship to the school than the other groups except the fourth cluster. They do not use social media either. These make-up about 28% of the sample.

The third cluster (price sensitive health-conscious fun seekers) consists of younger lower income earners who are more likely to be women than in the other clusters (although there are still more men in this group). They are also more likely to purchase single game tickets relative to the other groups. This group is overwhelmingly likely to be young alumni. They care most about concessions (healthy options in particular) and promotional giveaways and

are more price sensitive than the other clusters. Team quality and customer service are less important. They enjoy the video scoreboard (including the sponsorship activations involving racing and pets) relative to others. They are least likely to listen to local radio stations, but most likely to use Facebook. They are not interested in receiving marketing materials from the school. This is a smaller group, making up 14% of the sample.

The fourth cluster (single game middle income critics) are in their 30s and 40s and are similar to the high income critics (the first cluster), but are more likely to purchase single game tickets and have family status issues that affect their purchase decisions. Like the first cluster, they rate their overall experience at a game of this P5 school relatively low. They are also critical of concessions, merchandise, and even the school's band, but do like scoreboard features more. They are the least satisfied with the ticket purchasing process and options. They are relatively less likely to be alumni and the most likely to have no affiliation with the school at all. They are also relatively critical of the school's mascot. Based on ticket purchase habits, these are likely families with kids. They are least likely to want to receive marketing materials from the school. This group consists of 16% of the sample.

The fifth and final cluster (core football fans) care about the quality of the team and football is their main concern. They don't care about logistics, customer service, promotions, etc. They rate their overall experience at a game of the P5 school the highest. They don't find the scoreboard activities of interest, but do want to eat well, buy school merchandise, and listen to the band. These are middle-age core football fans with relatively high incomes. They buy the most season tickets, attend the most games, are most likely to be members of the booster club, and are most satisfied with the ticket buying options and process. They rate their overall experience on the athletic department's website the highest. For those who are not members of the booster club, they are more interested in donating to the booster club to get better seating than other groups. They are most likely to listen to local radio stations and least likely to use Facebook. This cluster consists of about 20% of the respondents and has the fewest women.

Implications

These sorts of findings can help college football programs target each segment utilizing customized techniques. Some examples include offering the core football fans the game magazine for free as part of a season ticket package, and invite them to a chalk talk with the coaches. The single game middle income critics often have children and could be offered a package of family-friendly games that are day games with free kid-related pre-game activities. The price sensitive health-conscious fun seekers could be offered a pre-game event with lots of healthy food offerings. The high income critics are quite critical of much of what is offered, but are willing to pay more to get better seats. Reach out to them regarding the booster club, which would allow them better seating, and perhaps offer them a streamlined ingress option (separate gate) and food line. Creative marketers can take these sorts of findings and maximize their value for their team.

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Calculation of a \$208 Million NCAA Sports Settlement

In the recent GIA Cap antitrust case,¹ the first author was asked to estimate which schools and teams would have paid the full cost of attendance (Full COA) back as early as the 2009-10 academic year if it had been allowed. Recall that the NCAA allowed the Power 5 (P5) schools to make some autonomous rule changes in January 2015, and beginning on August 1, 2015, schools were allowed to raise the scholarship up from the old (pre-2015) cap (essentially tuition, room, board, and books) to the Full COA (tuition, room, board, a broader definition of books, transportation, and miscellaneous expenses).

The analysis looked at the economic context in 2015-16 for the schools that did and did not immediately offer Full COA, created an econometric (statistical) model based on identifying key economic factors that correlated with the yes/no decision, and applied that model to the 2009-10 economic context of those schools. The idea was first to identify the best economic factors that predicted which schools would choose to compete more intensely for athletes if allowed (by adopting COA), and which would continue to compete, but less intensely (by remaining at COA). This was done for both men's basketball and football (with a simpler, but related analysis done for women's basketball).

The analysis was based on an econometric technique known as probit regression. Probit is a form of what economists call a "discrete choice model" that is well suited to regressions focused on a yes/no decision, e.g., to adopt GIAs above the maximum athletic aid cap from the pre-2015 cap or not. The probit regression was used to model past and present COA adoption rates. As a first test, the model was used to "predict" which schools would adopt COA in 2015-16, without telling the model which schools had actually done so. The model was very accurate, only incorrectly predicting a school would immediately adopt COA when it did not 6% of the time (with many of those schools adopting it in subsequent years or indicating as such). This showed that the model's estimation of the economic factors underlying the decision were good predictors of schools' conduct. The model was then used to provide a reliable prediction of which schools within FBS football and Division I basketball would have paid athletic grants-in-aid at levels in excess of the pre-2015 cap for the period from 2009-10 forward.

Generally speaking, the results of this model identified schools as likely to adopt COA starting in 2009-10 if they adopted COA in 2015-16, but not simply because of this adoption (once calibrated, the model had no idea which schools had or had not adopted COA). Instead, the model used factors pertaining to revenues, expenses, recruiting success, etc., to develop a predictive means of assessing a school's competitive situation and generating a predicted yes/no decision.

The independent variables (those used to predict whether a school would offer COA) include:

- The sum of the full scholarships equivalents given to overall counters from the Squad Lists for 2014-15, as a direct measure of a school's payments to its athletes. The lagged year is used in order to be able to compare to the earlier years in the damages period, where both years are unaffected by COA payments.

¹ *In Re: National Collegiate Athletic Association Athletic Grant-In-Aid Cap Antitrust Litigation.*

- The average across all members of the school's conference (other than the school itself) of each schools' total recruiting stars divided by the FBS (or D1) average number of stars. This provides information on how competitive the schools' conference is compared to the FBS or D1 average. Also, the "school's recruiting success" as measured by the total stars (as measured by rivals.com) of the new recruits who committed to the school.
- The number of conferences during the damages period that the school (team) was in (i.e., a school that stays in the same conference the entire period would have a 1 for this variable),² as well as whether the school changed conferences during the given year.
- The ratio of athletic department revenue to expenses during 2014-15. Also, the difference in the athletic department's revenues and expenses as well as the team's revenues and expenses during 2014-15. The data for 2015-16 was not yet available at the time.
- The team's budget during 2014-15.
- The ratio of the athletic department's expenses compared to the median during 2014-15, as well as the team's ratio compared to the median.
- The change (in dollars) per year in the team's budget (i.e., 2014-15 minus 2013-14). Also, the percentage change in the same variables (to account for differences in size of programs and across sports).
- The compounded annual growth rate in the athletic department's budget for 2012-13, 2013-14, and 2014-15, as well as that for the team's budget.
- The COA Gap multiplied by either 85 for football or 13 for basketball divided by athletic department expenses during 2014-15. This is a measure of the cost of providing COA payments compared to what is already being spent in athletics. Also, the COA Gap divided by the recent growth in athletics department expenses, to account for the growth in investment in athletics each year.
- A measure of whether or not a school is on probation and is thus limited in its ability to give scholarships to its athletes.

The result is a model which provides a prediction of schools likely to have adopted COA payments in 2009-10 had the alleged restraints in suit never been enacted by Defendants (NCAA).

As part of the work on that model, an algorithm was demonstrated to identify all class members based on Plaintiffs' proposed class definition. By combining the results of the algorithm for identifying class members, and the econometric method of assessing impact, the model was able to demonstrate a class-wide method for assessing impact for every class member, and then also to demonstrate how their damages would be estimated by means of a reasonable and non-speculative formula.

This was done using data produced by the Defendants and their member schools, and with government data on COA gaps in those limited cases where discovery was still incomplete. The COA gap was defined as being equal to the difference between (a) the relevant average Cost of Attendance for each class member for each academic year and (b) the sum of my estimate of all athletic and non-athletic financial aid provided to the athlete for that same academic year. Excluded from these calculations were the receipt of Pell Grants and/or any payments identified as coming from the Student-Athlete Opportunity Fund (SAOF) or the Student Assistance Fund (SAF), so that the gap was not affected by the receipt of these funds.

Using that definition and those assumptions, the estimated total class-wide damages for the three classes of athletes (prior to any trebling) attending schools identified by the probit model's predictions was approximately \$210

² Those schools not in a conference are independent (which is rare), but are also given a minimum of a 1 for this variable.

million to \$220 million (or about five to six thousand dollars per athlete). This total was based on the academic years 2009-10 through 2015-16.

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