Merging Retention and Financial Aid in Enrollment Management by Market Segmentation

Oscar T McKnight, Ashland University
Ronald P, Ashland University
MERGING RETENTION AND FINANCIAL AID IN ENROLLMENT MANAGEMENT BY MARKET SEGMENTATION: A CONCEPTUAL MODEL FOR FINANCIAL AID LEVERAGING

Oscar McKnight, Ashland University
Ronald Paugh, Ashland University

ABSTRACT

High school GPA, ACT score, Academic Effort, and Financial Need in predicting student retention risk is examined. The objective is to merge retention risk with financial aid and to explore the options available to the university. Financial aid leveraging is discussed in terms of product fit and positioning strategies.

INTRODUCTION

Many institutions of higher education have marketing plans that extend three to five academic years (Cravens 1994). However, the daily impact of such efforts appears to be minimal (Chan 1993). Likewise, since a fundamental goal of strategic marketing is to match organizational characteristics with its evolving environment (Walters 1994), it would benefit institutions of higher education to include elements of retention and financial aid in the marketing mix. This is not a unique proposition, given the dynamics of brand-building and product positioning strategies (Morris 1996; Kotler 1997).

Lehmann and Winer (1994) reviewed the product or brand manager concept as early as 1956 with the Procter and Gamble Company. The goal in 1956 as well as today remains the same — to segment the customer (i.e., applicant or student) in relationship to product offerings (i.e., majors; departments; student life; public or private institution). Therefore, it is necessary to develop a strategic marketing plan that allows for segmentation and product fit. The corporate brand manager of yesterday is academia’s enrollment manager today.

At an institution of higher education, product fit can include many variables. However, for most universities, product fit is the relationship between an applicant’s profile and university characteristics. The first component theoretically related to product fit is a standard outcome measure (i.e., ACT or SAT score). A second factor determining the product fit is a student’s high school GPA. As a third admission criterion, it is typical to include some measure or indication of financial need. Although this is an abbreviated list, it does represent what one can reasonably expect to find when examining literature on product fit and institutional marketing. As such, it is important to review key terms and concepts as they relate to institutions of higher education.

ADMISSION LITERATURE

A standardized test to measure academic potential falls under what Sternberg (1985) referred to as “compositional intelligence.” Whether that test is the ACT or SAT, it assesses intelligence in a general manner by measuring an individual’s ability to interpret information in various forms. Hence, it is common for institutions of higher education to use standardized instruments (i.e., ACT and SAT) for college GPA prediction purposes (The College Board 1993). Likewise, since high school GPA is correlated with college GPA, Talley and Mohr (1993) suggested that administrators and researchers weight the high school GPA according to advance placement (AP) or honors courses taken in high school. The goal is to increase the predictive relationship between high school GPA and college performance. This establishes high school GPA as a standard predictor when examining a student’s academic ability and product fit.

When assessing financial aid in higher education, the traditional yardstick is a student’s demonstrated ability to benefit from a college education (Callaway 1997). However, Moore and Hagendorf (1994) point out that marketing outcome measures traditionally reflect short-term financial results rather than the long-term strategic plan. Therefore, it appears logical to include retention as a long-term measure in terms of finance and product fit. This research
implicitly assumes that an institution of higher education not only wishes to graduate its students, but to generate enough profitable “sales” to help ensure a long-term existence in the market place. Given this, Noya (1997) argues that institutions of higher education need to examine more carefully how they invest their financial-aid budget.

THE FUNDAMENTAL PROBLEM

This study examines pre-entrance variables of students applying to institutions of higher education in relationship to enrollment management by using the strategic marketing concept of segmentation. Of specific concern is the theoretical relationship between financial aid and retention. Every university has a designated “pot of money” used to assist students in attending their institution. This concept is referred to as financial leveraging. In essence, financial leveraging is a “discount rate” that establishes the percentage of tuition revenue that will be returned to a student. Consequently, this investigation attempts to identify or differentiate students deemed a retention risk from those who are not and to explore possible financial aid options.

McCormick, et al. (1996) introduced four levels of marketing in banking and stressed that the “savvy” institution becomes progressively more knowledgeable about discrete groupings of customers (i.e., applicant or student). However, the researchers cautioned that the ascent is so arduous that many banks either will never undertake the marketing process or will never completely finish it. Therefore, the purpose of this study is to offer a valid strategic marketing process to institutions of higher education that is not so arduous and targets financial aid in relationship to retention.

RESEARCH HYPOTHESES

Based on the above review, the general hypothesis tested in this study examines if the following four variables — High school GPA; ACT score; Academic Effort; and Financial Need — can account for a significant amount of variance when predicting the criterion variable, Retention (i.e., GH1). Specific hypotheses test if the individual variables — High school GPA; ACT Score; Academic Effort; and Financial Need (i.e., respective order: H1, H2, H3, & H4) — can account for a significant amount of variance when predicting the criterion variable, Retention. For clarity, the variable Academic Effort is operationally defined as a theoretical High school GPA a student should have earned, given a specified ACT score. A simple regression formula was used to determine and calculate individual expected scores (i.e., a student should either meet, exceed, or fall short of an expected GPA — categorically scored). Financial Need is defined as the amount of money that is necessary to pursue a higher education, given personal economic resources (i.e., parental, guardian, or self — scored as a continuous variable).

METODOLOGY

The total sample size available for this project was 387. However, when randomly assigning third semester sophomores into two equal groups, the study sample size became 202. Third semester sophomores were chosen because this demarcation traditionally represents the “breaking point” for those students who stay, and for those who leave the private mid-west university under study. Hence, this study had two equal groups (n = 101). The first group was classified as a retention risk (i.e., no longer enrolled after three semesters); and the second group, no retention risk (i.e., enrolled after three semesters).

The data analysis consisted of first, running a multiple discriminant analysis predicting retention risk; followed by specific discriminant models testing individual variables in relationship to retention risk.

In validation, the multiple discriminant formula was tested over four years and the hit-ratio calculated in percentages. The goal was to first test for statistical significance and then to validate for practical implications.

FINDINGS

When using multiple discriminant analysis (GH1), the combination of predictor variables (i.e., High school GPA; ACT score; Academic Effort; and Financial Need) accounted for a significant amount of variance when predicting the criterion variable, Retention. Likewise, findings suggest that all individual predictor variables (i.e., H1; H2; H3; H4) accounted for a significant amount of variance when predicting Retention (see Table 1).
TABLE 1
HYPOTHESES TESTING OF RETENTION MODELS

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>DF</th>
<th>R</th>
<th>R²</th>
<th>F-test</th>
<th>p</th>
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<td>.06</td>
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<td>8.10</td>
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<td>.0009</td>
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<tr>
<td>H4</td>
<td>201</td>
<td>.179</td>
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<td>6.60</td>
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</table>

NOTE: GH1 tests if variables — High school GPA; ACT score; Academic Effort; and Financial Need — can account for a significant amount of variance when predicting the criterion variable, Retention. Specific hypotheses test if the individual variables — High school GPA; ACT score; Academic Effort; and Financial Need (i.e., H1, H2, H3, & H4) — can account for a significant amount of variance when predicting the criterion variable, Retention. Alpha level established at (.05).

When employing the discriminant formula over four academic years, the hit-ratio suggests a 60 percent ability to predict students who leave and a 74 percent accuracy when predicting students who stay. The overall prediction rate is 67 percent when averaging the hit-ratio over four years (see Table 2).

TABLE 2
DISCRIMINANT FORMULA PREDICTING RETENTION

Retention Rating = .18 + (.03)*(High school GPA) + (.02)*(ACT) + (.23)*(Academic Effort) + (-.00001)*(Financial Need)

NOTE: A Retention Rating above .50 indicates a “low” retention risk (i.e., student stays); a Retention Rating below .50 indicates a “high” retention risk (i.e., student leaves).

DISCUSSION

This marketing segmentation process as reviewed appears to be valid in predicting retention. Overall findings suggest that predictor variables exist to indicate “at risk” students. Since these predictor variables are known at admission, an opportunity exists in targeting “high risk” students early. From the discriminant formula in Table 2 several findings emerge. For instance, High school GPA has a negative regression weight. One interpretation suggests the presence of grade inflation, thereby lending credence to Talley’s (1989) review of why some universities argue a need for a weighted average or more of an emphasis on standardized testing.

The standard ACT score had a positive regression weight and is theoretically correct when comparing research offered by Manski (1983) on the probability of drop out. However, the variable Academic Effort that conceptually represents an over-achiever or under-achiever profile, has a greater individual impact given the regression weight. Hence, this deviation between an expected High school GPA and ACT appears to be a valid indicator of retention risk. As a caution, this Academic Effort score may pick-up students with a learning disability. This does not signify that an institution is prohibited from using this variable; however, it does mean that an institution cannot require different standards for applicants who have disabilities than they do for other applicants.
The Financial Need variable in the discriminant equation had a negative regression weight. Conceptually this suggests that as personal need (i.e., in terms of dollars to attend a university) increases, the greater a retention risk. In this study, 87 percent of those who did not enroll (i.e., classified as a retention risk) had a history of receiving scholarships, academic awards, department gifts, or merit aid, thus limiting the amount of personal cost. What this variable may be sensitive to is family or cultural background. Therefore, a university must recognize that it is limited to the degree it can control or influence an outside environment. Even offering a “better” financial aid package may not change the retention risk or outcome. Noya in 1997 highlighted that most private institutions simply cannot afford to meet the full demonstrated need. This study’s findings would not support a change of practice given the retention risk.

Although the general hypothesis testing the ability of the four variables to discriminate retention risk only accounted for 10 percent of the total variance in analysis, it was able to successfully predict 67 percent of those leaving or remaining at the university over four years. This finding establishes the process of discriminant analysis (i.e., market segmentation) to be a valuable forecasting tool. As a result, this prediction model has a major benefit in allowing a generated formula to be tested. For instance, a formula can be examined in light of historical data or the next academic class. Thus this approach hinges on what McCormick (1996) referred to as exceptional analysis, creativity, and follow-through leading to higher level marketing. Therefore with analysis, the addition or deletion of variables is possible and warranted in developing any long-term strategic marketing plan.

**IMPLICATIONS**

Since the discriminant process as tested in this study was found significant and practical in forecasting retention, it appears sensible to merge it with financial aid packages. Institutions have a variety of options available in the form of grants and aids, scholarship, or loans, to assist students with tuition. However, of specific concern are institutional dollars. Institutional dollars represent a fixed amount of money a university is willing to “award” students for each enrolled academic year. This specified amount excludes personal loans or scholarships and is really at university discretion. Therefore, one could view this discriminant process as a tool for financial aid leveraging.

One realistic option in distributing financial aid is to use a prediction formula (see Table 2) which targets retention and assigns dollars according to risk. For instance, if the student has a high probability of remaining at the university, that student could receive proportional university dollars. A second option is to scale the discriminant cut-off point by percentage of total possible award. For example, if X dollars are available per student, the discriminant point could be divided into sections. Hence, each section distributes a percentage of total award available according to a predetermined retention risk. With imagination, possibilities abound when employing a market segmentation model in awarding financial aid.

**CONCLUSION**

As an application process, linking retention with the distribution of university monies makes sense at both the conceptual and practical level. This study found that not only can retention risk be predicted within an acceptable range, but that combining financial aid has real implications when developing a long-term strategic marketing plan. The goal of any university should be to retain qualified students and to balance the cost/benefit ratio of student financial aid. This study offers one process in determining a retention risk factor and awarding financial aid, given the parameters of an applicant’s profile.

Future studies should focus on the inclusion of additional variables in order to predict retention. In addition, the impact of a full/partial scholarship in relationship to financial aid justifies further investigation. Likewise, since this study used only one university and one break point (i.e., third semester sophomore) in developing the prediction equation, generalization of results is limited. Hence, further exploration is warranted in examining university financial aid options.

**REFERENCES**


