Comparison of Factors Influencing the College Choice of Matriculant and Non-Matriculant Students into a College of Agriculture

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Abstract

Nationwide colleges of agriculture have struggled to meet the need for qualified graduates to fill jobs in the food, renewable energy and environmental industry sectors. Even with increasing enrollment in some disciplines, colleges of agriculture and natural resources are estimated to provide only 54% of the graduates needed to fill the expected job openings between 2010 and 2015 (Goeker et al., 2010). This creates a need for colleges to improve recruitment efforts and utilize financial resources more efficiently. This study examined recruitment efforts as they relate to the college-choice decisions of matriculant and non-matriculant students entering a college of agriculture. Results showed no notable difference existed in academic performance between matriculants and nonmatriculants. Differences did exist when examining the racial composition of the two groups. When examining recruitment practices, both groups reported the most useful sources of information to be visits to campus, participation in student events on campus, and personal conversations with faculty. Findings also suggest that web-based information is critically important to the decision making process. Parents and/or guardians were found to be the most influential people in respondents' college-choice decision, followed by their high school agriculture teachers.

Introduction

Nationwide colleges of agriculture have struggled to meet the need for qualified graduates to fill jobs in the food, renewable energy and environmental industry sectors. Even with increasing enrollment in some disciplines, colleges of agriculture and natural resources are estimated to provide only 54% of the graduates needed to fill the expected job openings between 2010 and 2015 (Goeker et al.,2010). The remaining positions are expected to be filled by graduates from allied fields, such as science, engineering and business. Employers have expressed a preference for graduates from colleges of agriculture and life sciences as they tend to have stronger interests and work experience related to careers in food, renewable energy and the environment more so than those from allied fields of study. This preference is expected to continue (Goeker et al., 2010).

In an effort to meet the need for more qualified graduates, colleges of agriculture commit a great deal of time, energy and financial resources to their outreach and recruitment programs (Washburn et al., 2002). This has created a situation in which university administrators are looking to increase and improve recruitment efforts and utilize financial resources more efficiently in hopes of attracting more students.

Many institutions are still uncertain about which outreach and recruitment processes are effective (DesJardins et al.,1999). In some cases, administrators have begun to question the value of outreach activities that have traditionally been sponsored and coordinated by colleges of agriculture. Typically the decision to conduct such activities is based on tradition rather than empirical evidence. Acknowledging that a student's college-choice strongly influences his or her professional career (Hossler and Stage, 1992), colleges of agriculture should evaluate strategies to effectively attract students

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in an effort to continue producing the future professionals needed by the industries they serve.

To conceptualize the college-choice decision process of students, the researcher examined the literature related to student recruitment into colleges of agriculture. Participation in on-campus programs and events and conversations with a professor were found to be the most influential on the college-choice process of postsecondary agriculture students (Washburn et al., 2002). The same study also supported earlier findings by Cole and Fanno (1999) and Scofield (1995) that campus visits were beneficial to students during their selection process. In 2006, Burns found additional support for the usefulness of campus visits in a study of African American students entering a college of agriculture. Findings by Scofield (1995) and later by Cole and Thompson (1999) identified printed recruitment literature as being helpful in students' decision-making processes. Hossler et al., (1999) indicated that students gave college guides and college fairs low rankings, but considered visits to their high school by college admission representatives to be more helpful. Previous studies have identified parents as the strongest influence on students' decisions regarding post-secondary education (Cole and Thompson, 1999; Scofield, 1995; Washburn et al., 2002). While many of these studies provide insight into the information sources used by students to select an institution, these studies have not examined the decision-making process of those students who chose to attend another institution. This is an area of research that may provide the greatest benefit, as it might help improve the college's recruitment program and better utilize their limited financial resources. Herein lies the motivation for this study, which seeks to not only identify the factors that influenced students who chose to attend a college of agriculture, but also the factors influencing those students who chose to matriculate elsewhere.

Chapman's (1981) model of student collegechoice served as the theoretical basis for this study. Chapman's model suggests that significant persons such as parents, friends, role models and school personnel influence students' perceptions of a college. The model also identifies the fixed college characteristics that are meaningful in students' college-choice decisions. These fixed characteristics include cost, availability of financial aid, location and availability of particular academic programs. The fixed characteristics of the college combined with the influence of significant people and the college's efforts to communicate with the student have been found to have significant impact on students' expectations of college life at a particular institution, thereby impacting their final choice of institution. Adapted to this study, Chapman's model would suggest that gaining a better understanding of the role of influential people, the effectiveness of recruitment practices, and the institutional characteristics important to prospective students would enable colleges of agriculture to more efficiently use their recruiting resources.

Purpose and Objectives

The purpose of this study was to examine recruitment efforts as they relate to the college-choice decisions of undergraduate student applicants to the Jordan College of Agricultural Sciences and Technology (JCAST) at California State University, Fresno. The following research objectives guided the study:

- 1. Determine whether matriculants and non-matriculants differ based on cumulative grade point average, race, and selection of major.
- 2. Determine if a difference existed between matriculants and non-matriculants in terms of their use of information sources and their perceived level of usefulness of those sources.
- 3. Determine if a difference existed between matriculants and non-matriculants in terms of the influence of degree program characteristics, institutional characteristics, and selected individuals on their college-choice.

Methods

This descriptive census study focused on a target population that consisted of all undergraduate applicants to the Jordan College of Agricultural Sciences and Technology at California State University, Fresno for the fall 2011 semester (N=1907). The population was divided for comparison based on those students who matriculated (n=481) and those students who chose to attend another university or non-matriculants (n=1426).

Data were collected using an instrument modified from a Washburn et al. (2002) questionnaire, used to assess the use and usefulness of recruitment information sources and to examine when students began and finalized their college decisions. To establish face and content validity, the instrument was reviewed by an expert panel consisting of college of agriculture admissions personnel and teacher educators. A pilot test of 34 predominately sophomore agriculture students who were not involved in the study was then conducted to determine the internal consistency of the instrument (Washburn et al., 2002). A Spearman-Brown Split-half reliability analysis was performed resulting in a reliability of .70 (coefficient alpha).

For this study, the questionnaire consisting of 74 items was administered online and participation was requested via email to all students in the population.

After the initial email request directing students to the questionnaire URL, two additional follow-up email messages were sent at two-week intervals. A total of 275 usable instruments were received, resulting in a response rate of 14.4%. Non-response error was controlled by comparing non-respondents with respondents on student information obtained a priori (Linder, et al., 2001; Miller and Smith, 1983). A comparison of cumulative grade point average reflected that non-respondents (M = 3.12, SD = .49) were practically the same as the respondents (M = 3.20, SD = .45). Additionally, the non-respondent group had no notable differences when compared to respondents on race or selected major.

Results

To assess objective one, student data were collected from a report available from the University's student advising system. Evaluation of student data revealed that virtually no difference existed between matriculants and non-matriculants with regard to their cumulative grade point average. Matriculants (n = 169) had an average cumulative grade point average of 3.24 (SD = .46), while non-matriculants (n = 106) had an average cumulative grade point average of 3.14 (SD = .58).

A comparison of student race was also completed using the University's student data for respondents. An analysis of the data showed notable differences in the proportions of the specified ethnicities (Table 1). The majority of matriculants were Caucasian (60.9%) while non-matriculants appear to represent a more ethnically diverse group based on the higher percentages of minority students; however Caucasian students still represented 44% of the non-matriculant respondents.

	Table 1. Summary of M	latriculant
an	d Non-matriculant Resp	ondents' Race

	Matricular	nts (n = 169)	Non-matriculants ($n = 106$)			
Race	f(rank)	Percent	f(rank)	Percent		
Caucasian	103 (1)	60.9	47 (1)	44.3		
Hispanic	43 (2)	25.4	35 (2)	33.0		
Asian	9 (3)	5.3	7 (4)	6.6		
Not Reported	8 (4)	4.7	11 (3)	10.4		
African American	5 (5)	3.0	3 (5)	2.8		
Other	1 (6)	0.6	2 (6)	1.9		
Native American	0 (7)	0.0	1 (7)	0.9		

Matriculants (n = 169)Non-matriculants (n = 106)Majorf(rank)Percentf(rank)PercentAnimal Science54 (1)31.923 (1)21.7Agricultural Business28 (2)16.615 (3)14.2

Table 2. Summary of Matriculant and Non-matriculant Respondents' Majors

Agricultural Business 28 (2) 16.6 15 (3) 14.2 13.6 15.1 Child Development 16(2) Agricultural Education 18 (4) 10.7 6(7)5.7 Food and Nutritional Science 16 (5) 9.5 12 (4) 11.3 Plant Science 12 (6) 5 (8) 8 (6) Enology 6(7)2.4 2(10) 1.9 Agricultural Communication 4 (8) Viticulture 3 (9) 1.8 4 (9) 3.8 Industrial Technology 2(10)5 (8) 47

10 (5)

9.4

2 (10)

To accomplish the final part of objective one, a comparison was made between the academic majors of the matriculant and non-matriculant groups. In doing so, the researcher found the distribution of majors in each group to be similar (Table 2). Animal Science majors were the most prevalent in both groups with 32% of the matriculants and 22% of the non-matriculants. Agricultural Business ranked second with 17% of the matriculants and third with 14% of the non-matriculants. Child Development followed with 14% of the matriculants and 15% of the non-matriculants.

In objective two the researcher set out to answer two questions. The first being to determine if a difference existed between matriculants and non-matriculants in regards to the sources of information they most frequently utilized when deciding to attend the University. Secondly, the researcher examined whether any differences existed between matriculants and non-matriculants in terms of the level of usefulness of the sources of information. In the questionnaire, both groups of students were asked to indicate whether they had or had not used each of seventeen different sources of information. Additionally, respondents indicated the level of usefulness they attributed to each source of information they had used.

As shown in Table 3, "University information on a website," "visit to campus," and "degree program information on a website" were found to be the three most commonly used sources of information by matriculants. Non-matriculants reported the same three sources of information as their most commonly used, however the rank order differed slightly. Non-matriculants also used "University information on a website" the most, followed by "degree program information on a website" and "visit to campus." All 17 of the sources of information were used more frequently by the matriculant group than the non-matriculants. The most notable being the three items that were reported to be the most used sources of information, "visit to campus" used by 27% more matriculants than non-matriculants (84% vs. 57%), "participation in student activity event on campus" used by 24% more matriculants than non-matriculants and "personal conversation with a professor" which

showed the greatest differential with 48% more matriculants using this source than non-matriculants (71% vs. 23%).

When examining the level of usefulness of the 17 sources of information, matriculants identified the three previously mentioned sources as the most useful: "visit to campus," "participation in student activity events on campus" and "personal conversation with a professor." Non-matriculants identified the same three sources, however the top two differ in rank with "participation in

Family and Consumer Science

	Matriculants ($n = 169$)			Non-matriculants ($n = 106$)		
	Used ^z	Usefulness ^y		Used ^z	sed ^z Usefulness ^y	
Source of Information	Percent	M (rank)	SD	Percent	M (rank)	SD
Visit to campus	83.5	4.25 (1)	1.04	56.7	3.98 (2)	1.23
Participation in student activity events on campus	60.4	4.20 (2)	1.07	36.0	4.13 (1)	1.31
Personal conversation with a professor	71.2	4.11 (3)	1.15	23.4	3.81 (3)	1.60
Participation in an on-campus recruitment program	61.2	3.99 (4)	1.08	24.5	3.47 (8)	1.48
Degree program information on a website	82.7	3.98 (5)	1.06	74.8	3.71 (5)	1.20
University information on a website	85.6	3.96 (6)	1.01	78.3	3.67 (6)	1.20
Information mailed and/or emailed from a professor	61.8	3.90 (7)	1.22	26.1	3.34 (11)	1.65
College information on a website	67.6	3.88 (8)	1.09	36.0	3.40 (9)	1.41
Participation in athletic events on campus	43.2	3.88 (8)	1.04	18.9	3.38 (10)	1.69
Personal conservation with a University admissions/outreach representative	60.4	3.73 (9)	1.22	29.7	3.27 (12)	1.55
Information mailed and/or emailed from a University admissions/ outreach representative	69.7	3.73 (9)	1.15	48.9	3.47 (8)	1.30
Information mailed and/or emailed from a College representative	54.6	3.67 (10)	1.24	27.0	3.23 (13)	1.46
Personal conversation with a College representative	56.8	3.63 (11)	1.10	20.1	3.21 (14)	1.60
Printed University publications	70.5	3.63 (11)	1.11	54.1	3.47 (8)	1.32
Visits by College representative to your school	43.8	3.62 (12)	1.36	14.4	3.50 (7)	1.70
Visits by University representative to your school	54.7	3.58 (13)	1.33	33.3	3.76 (4)	1.34
TV, radio, newspaper, or magazine advertisements.	46.0	2.95 (14)	1.34	24.5	2.79 (15)	1.57

student activity events on campus," "visit to campus" and "personal conversation with a professor" as their most useful sources of information. Both groups indicated the least useful source of information was "TV, radio, newspaper, or magazine advertisements."

Regarding the usefulness of information, the most notable differences were on the following: "participation in athletic events on campus" (matriculants M=3.88 vs. non-matriculants M=3.38), "information mailed and/ or emailed from a professor" (matriculants M=3.90 vs. non-matriculants M=3.34) and "participation in an on-campus recruitment program" (matriculants M=3.99 vs. non-matriculants M=3.47). Only one of the seventeen sources of information, "visits by university representative to your school," was rated more useful by non-matriculants than their matriculant counterparts.

Objective three sought to determine if a difference existed between matriculants and non-matriculants in terms of the influence of degree program characteristics,

Table 4. Summary of Level of Influence of Degree Program Characteristics Matriculants (n = 169)Non-matriculants (n = 106) Characteristic $M^{z}(rank)$ SD M^z (rank) SD Career opportunities available 4.25(1)1.04 3.86(1) 1.36 Quality and reputation of courses 3.97(2) 1.21 3.69 (2) 1.36 3.57 (4) 1.38 Quality and reputation of the faculty 3.89 (3) 1.18 1.22 3.58 (3) 1.29 Quality of facilities 3.87 (4) Quality and reputation of the students 3.50 (5) 1.33 3.22(5)1.36 3.10 (6) 1.29 1.43 3.41 (6) Number of students in major 3.28 (7) 1.40 3.05 (7) 1.41 Mean reported for scale: 5 = Very Influential ... 1 = Not Influential

institutional characteristics and selected individuals on their decision to attend the University. An examination of the seven degree program characteristics showed that both groups reported similar degrees of influence (Table 4). In both the matriculant and non-matriculant groups, the availability of career opportunities was identified as the most influential characteristic in their selection of an academic major. The only difference between the two groups was in their ranking of "quality of facilities" and "quality and reputation of the faculty." Non-matriculants ranked quality of facilities over faculty, whereas the matriculant group ranked quality of faculty above facilities.

Table 5 presents the level of influence that institutional characteristics had on students' college-choice. Matriculants and non-matriculants were found to share three of their top four institutional characteristic influences. These included "opportunities after graduation," "variety of majors offered" and "cost."

Looking beyond those three common influences the researcher found very notable differences. Non-matriculants ranked "city in which campus is located" as the most influential institutional characteristic of all 17 items, however matriculants ranked this item 10th. Although non-matriculants were most influenced by the city the institution was located in, they were much less

influenced by the distance it was from their home. Non-matriculants ranked "distance from home" as their 11th most influential characteristic of the institution. whereas matriculants ranked it higher as their 4th most influential. Both groups were influenced the least by the same five characteristics: "availability of financial aid," "size of classes," "campus safety and security," "competitiveness of admissions standards" and "prominence of university athletic teams." Overall mean responses for 16 out of 17 items were greater for matriculants than for non-matriculants. The most notable difference being "distance from home" (matriculants M = 3.82 vs. non-

matriculants M = 3.25) and "opportunities after graduation (matriculants M = 4.00 vs. non-matriculants M = 3.56). The only institutional characteristic that was more influential for non-matriculants was "city in which campus is located" (non-matriculants M = 3.75 vs. matriculants M = 3.55).

Parents or guardians were found to be the most influential people for both matriculants and non-matriculants in this study. However, there was a notable difference found between groups with matriculants reporting a mean of 3.71 (5 point scale), while non-matriculants had a mean of only 2.98 (Table 6). High school

agriculture teachers were the second most influential people for both groups with the matriculant group again having a higher mean than the non-matriculants (matriculants M=3.37~vs. non-matriculants M=2.92). The least influential people for matriculants were their high school science teachers, while the non-matriculants felt that graduates of JCAST influenced them the least.

Several other differences did exist between the two groups in this area, the most obvious of which was the level of influence of "relative who attended the University." Matriculants reported that relatives that attended the University were the third most influential people, while the non-matriculants ranked this group of people ninth. Other notable differences were found in the influence of JCAST faculty and staff (matriculants M = 3.01 vs. non-matriculants M = 1.98) and current JCAST students (matriculants M = 2.99 vs. non-matriculants M = 1.82). Overall matriculants indicated higher levels of influence from all 13 categories of people.

Table 5. Summary of Level of Influence of Institutional Characteristics				
	Matriculants $(n = 169)$		Non-matriculant	s (n = 106)
Characteristic	M ^z (rank)	SD	M ^z (rank)	SD
Opportunities after graduation	4.00(1)	1.17	3.56 (3)	1.41
Variety of majors offered	3.89 (2)	1.30	3.71 (2)	1.38
Cost	3.83 (3)	1.25	3.50 (4)	1.44
Distance from home	3.82 (4)	1.34	3.25 (11)	1.63
Preparation for employment	3.80 (5)	1.26	3.46 (6)	1.37
Quality of facilities	3.79 (6)	1.12	3.45 (7)	1.27
Quality and reputation of the faculty	3.78 (7)	1.13	3.48 (5)	1.28
Academic reputation of the university	3.75 (8)	1.13	3.50 (4)	1.30
Availability of other financial aid	3.56 (9)	1.42	3.29 (10)	1.51
City in which campus is located	3.55 (10)	1.41	3.75 (1)	1.46
Quality and reputation of the students	3.43 (11)	1.26	3.42 (8)	1.28
Scholarships awarded	3.42 (12)	1.44	3.25 (11)	1.47
Campus safety and security	3.42 (12)	1.34	3.24 (12)	1.38
Prestige of the university	3.39 (13)	1.18	3.38 (9)	1.27
Size of classes	3.19 (14)	1.29	2.96 (13)	1.38
Competitiveness of admission standards	3.14 (15)	1.28	2.95 (14)	1.42
Prominence of university athletic teams	2.40 (16)	1.50	2.22 (15)	1.47
^z Mean reported for scale: 5 = Very Influential 1 = Not Influential				

Table 6. Summary of Level of Influence of People in the Selection of the University					
	Matriculants $(n = 169)$		Non-matricular	nts (n =106)	
	Mz (rank)	SD	M ^z (rank)	SD	
Parent or guardian	3.71 (1)	1.33	2.98 (1)	1.56	
High school agriculture teacher	3.37 (2)	1.62	2.92 (2)	1.59	
Relative who attended the University	3.35 (3)	1.66	2.30 (9)	1.57	
Friend in college	3.34 (4)	1.51	2.68 (3)	1.63	
College faculty and/or staff	3.01 (5)	1.59	1.98 (11)	1.51	
Current College student	2.99 (6)	1.62	1.82 (12)	1.28	
Friend in high school	2.94 (7)	1.49	2.62 (4)	1.63	
High school guidance counselor	2.93 (8)	1.54	2.39 (8)	1.40	
Community college instructor	2.81 (9)	1.65	2.40 (7)	1.62	
Other high school teacher	2.80 (10)	1.60	2.54 (5)	1.60	
Graduate of College	2.79 (11)	1.66	1.57 (13)	1.14	
Community college counselor	2.54 (12)	1.61	2.46 (6)	1.56	
High school science teacher	2.42 (13)	1.59	2.19 (10)	1.40	
² Mean reported for scale: 5 = Very Influential 1 = Not Influential					

Conclusions/Recommendations/ Implications

The purpose of this research was to examine the influence of recruitment efforts and establish if differences exist between admitted students to JCAST who matriculated and those who chose to attend another institution. In terms of their academic performance and their major, no notable differences were found between matriculants and non-matriculants. Interestingly, notable differences did exist when examining the racial composition of the two groups. It appears that nonmatriculants represent a slightly more diverse group of students than those that chose to attend the University, which is evident in Table 1, where the matriculant group is comprised of 60.9% Caucasian students to only 44.3% in the non-matriculant group. The non-matriculant group had 33.0% Hispanic students, while the matriculants were only 25.4% Hispanic. These findings do warrant further investigation given the University's desire to improve its recruitment efforts and create a more diverse student body. Additional research may be needed to examine the

possible ethnic, cultural and/or background influences that affect students' decision to matriculate. Future research may help the College to better understand what other influences may impact minority students' decision to attend the University.

In terms of the effectiveness of the recruitment practices used by JCAST addressed by this study, the researcher found that nearly 84% of the matriculants visited campus while only 57% of non-matriculants made a visit. Additionally, on-campus student events were used by over 60% of the matriculant group compared to only 36% of the students who did not matriculate. These findings do lend support to the college-choice literature, which consistently states the important role of campus visits in the college-choice process (Cunningham and Fickes, 2000; Walters, 1997; Yost and Tucker, 1995; Carnegie Foundation for Advancement of Teaching, 1986). Similarly, 71% of matriculants had a personal conversation with a professor while only 23% of nonmatriculants had such a conversation. Together these findings highlight the essential nature of campus visits, on-campus events and student contact with faculty as recruitment practices and it further demonstrates the significant impact these activities have on a student's decision to attend the University. In working with JCAST administration, the need for support of student events on campus, such as FFA contests, 4-H field days, high school class field trips, and student tours of the University farm laboratory is demonstrated by these findings. Given this information, further support is warranted to sustain and in some cases increase the number of students visiting campus for events and provide them with opportunities to have a dialogue with faculty.

Further examination of the most used and useful sources of information showed that websites played an important role for both groups of students. This finding suggests that web-based information is critically important to prospective students. Drawn from this finding is a recommendation that the University, JCAST, and departments take a critical look at their websites and make sure that adequate resources are available to make their websites as information rich and user friendly as possible. The web provides many prospective students their first impression of the institution, therefore websites and web resources should be given the attention needed to ensure that this is a positive experience.

In terms of the institutional characteristics that most influenced matriculants and non-matriculants, both respondent groups reported that they were concerned with the availability of career opportunities after graduation, the variety of majors offered by the University and the cost of their education. However, the most notable finding in this area wasn't the similarities

found, but rather the differences. Results showed an obvious difference existed between non-matriculants, who ranked the "city the campus was located in" as their most influential characteristic, and matriculants, who ranked the item 10th. This finding does create a problem for the University's outreach staff since relocating the University is not an option. In this case, the best course of action would be greater effort being placed on improving prospective students' perception of the community and location of the institution. Promotional materials, advertising and correspondents to applicants should include messages that focus a positive light on the strengths of the University's location, giving mention to the local attractions, close proximity to travel destinations and recreational areas and the prevalence of student internships and career opportunities in the region's agricultural industry.

Interesting findings were gleaned from the comparison of matriculants and non-matriculants in terms of the role other people have in their college-choice process. The strong influence of parents and guardians in the college-choice process is well documented in the literature (Broeckemier and Seshadri, 1999; Rosato, 1993; Hossler and Stage, 1992). However, in this study the high school agriculture teacher seems to have had a notable impact. In both groups of students, high school agriculture teachers were found to play a major role in the college-choice decision. This is particularly intriguing when considering the non-matriculant group, which as a group felt their high school agriculture teacher was nearly as influential as their own parent (M = 2.98 vs.M = 2.92). These findings have strong implications for practitioners as they show that recruitment practices targeting parents and guardians are justified; however high school agriculture teachers should be treated as equally important. When compared to the small degree of relative influence students reported regarding high school guidance counselors and other high school teachers, the role agriculture teachers play is further highlighted. Agriculture teachers should be made aware that among all high school personnel, they have the greatest potential to influence their students' college choice. Agriculture teachers should also be the targets of recruitment materials and information from colleges of agriculture. As a front line of information for their students, agriculture teachers have the opportunity to be very influential when equipped with current and accurate information about colleges of agriculture and potential majors for students to consider.

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