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Returning and Direct Pathway Students: How the Decision-Making Process of Engineering Master's Degree Pursuit Is Influenced by Industry Experience

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Abstract

The decision making process to pursue an engineering graduate degree has long been a subject of interest for researchers. Recently, research has also been conducted regarding returner engineering master's students: those who returned to attend graduate school after over five years of working in industry. This paper aims to bridge the gap between these two genres of research and study the differences in the decision making process between returner and direct pathway students. A web-based survey of United States engineering master's students from a variety of universities was used to obtain data regarding many aspects of the master's program process. For this paper, the questions regarding the decision to attend graduate school were isolated and examined using standard statistical methods. From these statistical tests, we were able to obtain results which help us understand how priorities differ between these two student groups and may aid universities in their recruitment of graduate students from both backgrounds.

Introduction

The decision to pursue a master's degree is life-altering for an engineer. It changes the trajectory of one's career and can open many doors. However, pursuing a master's degree is not an easy process and requires significant commitment. Many factors contribute to the decision making process, and the decision can be made early on in one's education or a number of years into one's career. This time difference presents two distinct student populations:

- Direct pathway students - those who returned to complete a master's degree five years or less after finishing their undergraduate degree
- Returners - students who returned to attend graduate school after over five years of working in industry

The purpose of this study is to examine how the decision making process differs between these two groups of students. The decision making process begins when the student first contemplates whether to pursue a master's degree. Students must then use a variety of resources to select a particular university based on desired university characteristics. Once the university is selected, students are challenged with the task of making themselves an attractive candidate for the university's program. Many different factors are involved in this process, and this study sheds light on how time spent in industry can affect these factors.

Background and Literature Review

Decision Process

Many studies have been conducted pertaining to the factors which influence students to attend graduate school as well as which specific program they will choose. Several of these papers focus on the perspective of undergraduate students and how their experiences may influence their decision to enroll in the future [1] [2]. Other literature focuses on differences in the decision making process based on a range of characteristics. Differences between genders and races have been noted by researchers [3] [4], showing that the factors which influence students to attend graduate school are often not the same for each population. Members of different groups place different amounts of emphasis on certain factors over others. Differences in the decision making

process have also been noted among members of different socioeconomic statuses [5], as well as among students with varying undergraduate achievement levels [6]. This study aims to examine these important factors through another lens by comparing differences in their importance between two student populations.

Returners and Direct Pathway

Little research has been conducted regarding engineering direct pathway versus returner students. Previous research has focused largely on the experience of these populations while attending graduate school. One study examined engineering returners' view of their industry experience and how that experience shaped their time in their graduate program [7]. Another study addresses the differences in career development needed for the two populations in any educational discipline even at a graduate level, explaining that the needs of the two groups are incredibly different and counseling must be tailored to their specific needs [8]. This recognition of the differences in the needs of these two groups opens the door for a number of studies which delve deeper into the possible fundamental differences between these two groups.

Early work written by Daly and Peters on the subject of returners provided the foundation for subsequent research. However, the majority of that work, beyond the initial pilot study, was focused on doctoral students rather than master's students [9][10][11][12]. Much of the existing literature regarding returners and direct pathway master's students has been written by Peters and Gross. Early papers written by the two discussed the reasons why STEM professionals decide to pursue graduate degrees [13][14]. The following literature focused more specifically on engineering students, examining the confidence [15] and self-efficacy [16] levels of returners and direct pathway students as well as how varying levels of experience influenced their graduate education [17] [18]. This paper is a continuation of previous work. It will focus on survey questions pertaining to the decision to attend graduate school and how the decision process varies between the two groups.

Methodology

The data used in this study is part of a larger data set which was collected via a web-based anonymous survey of engineering masters' students. Participants were recruited through email. A number of colleges within the United States were contacted and asked to distribute the survey to masters' students. The pool of participants was limited to United States citizens or permanent residents, most of whom had also obtained their undergraduate degree in the United States, only in an attempt to limit the number of other variables, such as cultural differences, included in the test data. Questions related to the demographics of the students surveyed were asked. The reported demographics of participants in the survey are shown in Table 1.

Table 1: Demographics of Survey Participants

Ethnicity	Direct Pathway	Returner
American Indian/White	1	4
Asian	38	5
Asian/White	6	0
Black or African American	6	4
Black or African American/Latino/a	1	0
Hispanic/Latino/a	7	4
Hispanic/Latino/a, White	5	1
No Response	27	10
Other	3	1
White	148	59
Total	**242**	**88**

The survey consisted of questions covering a range of topics including preparation for schooling, confidence levels, and software utilization. The aim of this survey was originally to examine any similarities and differences in returner and direct pathway students' knowledge retention as well as how they found information needed to succeed in graduate school. While examining the data, researchers realized that a more in depth study could be conducted regarding the decision-making process which could provide helpful information for practitioners to recruit graduate students. This study will focus on questions regarding the decision to attend graduate school as well as the specific choice of graduate institution. This portion of the survey was comprised of the 8 questions listed below:

- How much did you consult with each group when you were deciding to go to grad school? (Not applicable, 1 - Not at all, 2 - A little, 3 - Some, 4 - A moderate amount, 5 - A great deal)
    - My partner/significant other
    - My family
    - My friends
    - My professional colleagues
    - Current graduate students
    - Undergraduate university academic advisors/faculty
    - Prospective grad advisers/faculty
- How supportive were the people listed below in your decision? (Not applicable, 1 - Very resistant, 2 - Somewhat resistant, 3 - Neither resistant nor supportive, 4 - Somewhat supportive, 5 - Very Supportive)
    - My partner/significant other
    - My family
    - My friends
    - My professional colleagues
    - Current graduate students
    - Undergraduate university advisors/faculty
    - Prospective graduate advisors/faculty
    - Other

- Please indicate how important each of these factors was in your decision to attend graduate school prior to enrolling (1 - Not at all important, 2 - A little important, 3 - Somewhat important, 4 - Important, 5 - Very important)
    - Family influence
    - A sense of personal achievement
    - A desire for more knowledge in my field of study
    - A desire to pursue a passion
    - A lack of something better to do
    - A desire to make new discoveries in the field
    - A desire for higher pay
    - A desire to teach
    - A desire to help others
    - The lifestyle of an engineer
    - A desire to conduct research
    - Poor economy/lack of available jobs
    - A desire to change careers
    - A desire to advance in my career
    - To obtain credential
    - The high regard in which engineers are held
    - The opportunity for me to apply undergraduate work to my Master's requirements
    - Other
- Please indicate the extent to which you utilized each of the following as strategies to increase your likelihood of acceptance into a Master's program (1 - Not at all, 2 - A little, 3 - Some, 4 - A moderate amount, 5 - A great deal)
    - Working with a professor to gain research experience
    - Networking/Relationship building
    - Achievement in undergraduate courses
    - Courses as a non-degree student
    - Other
- Did you do any of the following to get yourself into graduate school?
    - Letters of recommendation from undergraduate professors
    - Letters of recommendation from professors at other universities
    - Letters of recommendation from colleagues
    - Application essay
    - Personal statement
    - Other
- Please indicate how much you used each of the following sources of information when you were selecting a Master's program (1 - Not at all, 2 - A little, 3 - A moderate amount, 4 - A lot, 5 - A great deal)
    - University websites
    - Online or printed guides to graduate schools
    - Professors from my previous institution
    - Professors from the Master's degree institutions I was considering
    - Current Master's students
    - Others who have achieved their Master's degrees
    - Other

- Please rate how important each of the following was when selecting a Master's program (1 - Not at all important, 2 - A little important, 3 - Somewhat important, 4 - Important, 5 - Very important)
    - Funding
    - Tuition costs
    - Medical benefits
    - Academic programs/disciplines offered
    - Research opportunities
    - Course requirements
    - Admissions exam requirements
    - I chose a program that required a thesis
    - I wanted a program that did not require a thesis
    - Required time at institution to complete degree requirements
    - Master's level credit for undergraduate or other work
    - Estimated time to degree
    - Online option for courses
    - Information about specific professors
    - Information about the culture/makeup of the grad school population
    - Childcare options
    - Admissions requirements
    - Part-time options
    - The surrounding town or city
    - University culture
    - Proximity to work
    - Proximity to family
    - Ability to accommodate partner needs
    - Classes offered during the day
    - Classes offered during the evening
    - Other
- Indicate How Each of the Following Has Influenced Your Belief in Your Ability to Succeed in a Master's Program (1 - Very negatively, 2 - Somewhat negatively, 3 - Neither negatively nor positively, 4 - Somewhat positively, 5 - Very positively)
    - Socioeconomic status
    - Family Status (no children or no small children)
    - Age
    - Gender
    - Race
    - Sexual orientation
    - Disability status
    - Religion
    - Other

The analysis of this data was performed using standard statistical methods, with the Mann-Whitney Test used to determine the significance of the population differences for most questions. The p-Value generated by performing the Mann-Whitney next was compared to the significance level. If the p-Value was less than the significance level, the null hypothesis was rejected and the

differences was considered to be significant. In this case, our null hypothesis is that the two values are not different; therefore, if the p-Value was greater than our significance level, the difference between the average responses of the two groups is considered statistically significant. The Chi Squared test was also used in this study to determine the dependency on the variable of the results for the fifth question which did not use a five-point ranking scale.

Findings and Discussion

Significant differences between the two populations were found in every question in this portion of the survey, highlighting the large differences in the decision making process of the two groups.

When asked how much they consulted with certain groups when making their decision, both returners and direct pathway students relied most heavily on their partner. However, returners relied on their partners to a significantly higher degree. Direct pathway students, however, consulted their undergraduate faculty and advisors far more than returners, mostly likely due to their proximity to such staff. For every other proposed consultor, there were no significant differences between the two groups. The number of responses as well as the average response for each proposed group of consultors is shown in Table 2.

Table 2: Consultation of Others in Decision Making

	Returner		Direct Pathway		
	Number of Responses	Average Response	Number of Responses	Average Response	Significant or Insignificant Difference
Partner/Significant Other	**58**	**4.53**	**137**	**3.49**	**Significant**
My Family	78	2.89	217	3.17	Insignificant
My Friends	79	2.54	214	2.62	Insignificant
My Professional Colleagues	78	2.83	200	2.95	Insignificant
Current Graduate Students	71	1.94	199	2.27	Insignificant
Undergraduate University Academic Advisors/Faculty	**68**	**1.86**	**207**	**2.59**	**Significant**
Prospective Graduate University Academic	70	2.18	195	2.28	Insignificant

Advisors/Faculty					
Other	3	1.00	9	2.67	Insignificant

When asked how supportive the various people in their lives were about the decision to attend graduate school, the only significant difference in responses between the two groups was a difference in the support level of friends. Direct pathway students reported a slightly higher support level from their friends than returner students reported. However, both groups listed incredibly high levels of support from their friends as well as from all of the other options listed. Overall, both groups were highly supported in their decision. The results from this question are listed in Table 3.

Table 3. Support Level Received during Decision Making Process

	Returner		Direct Pathway		
	Number of Responses	Average Response	Number of Responses	Average Response	Significant or Insignificant Difference
Partner/Significant Other	59	4.78	136	4.74	Insignificant
My Family	73	4.55	210	4.71	Insignificant
My Friends	**72**	**4.39**	**199**	**4.55**	**Significant**
My Professional Colleagues	74	4.34	182	4.50	Insignificant
Current Graduate Students	40	4.30	137	4.39	Insignificant
Undergraduate University Academic Advisors/Faculty	38	4.47	161	4.47	Insignificant
Prospective Graduate University Academic Advisors/Faculty	48	4.31	128	4.46	Insignificant
Other	1	5.00	8	3.88	Insignificant

Participants were also asked to rank the importance of certain factors when deciding to attend graduate school. The results of this question are listed in Table 4. Many of these factors seemed

to be of similar importance to the two groups, with the sense of personal achievement, the desire to gain knowledge, and the desire to advance in one's career being the three highest ranking factors for both groups. However, it is interesting to note that the desire to advance was significantly higher among returners. This can likely be attributed to their experience in the industry. Their higher level of experience may have given returners a better idea of the advancement opportunities available to them. In a similar vein, the desire to change careers was also significantly higher in returners than direct pathway students. Direct pathway students are unlikely to have the experience necessary to know whether they desire a career change whereas returners likely have an understanding of their position as well as other possible careers in their field.

Direct pathway students placed far more importance upon the high regard in which engineers are held as well as the lifestyle of an engineer than returners. Though this may seem to be a strange result, it may again be attributed to the returners' time in the industry. They have already experienced the engineering lifestyle as well as the attitude toward engineers with only an undergraduate degree, so they are unlikely to view the attitude as a factor for attending graduate school. Additionally, direct pathway students had a higher desire to conduct research than returner students. This specific difference may require further research into what exactly these two groups of students hope to gain from their graduate degree.

Table 4. Importance of Factors in Decision to Pursue Master's Degree

	Returner		Direct Pathway		
	Number of Responses	Average Response	Number of Responses	Average Response	Significant or Insignificant Difference
Family Influence	80	2.93	218	2.89	Insignificant
A Sense of Personal Achievement	80	4.39	218	4.21	Insignificant
A Desire for More Knowledge in My Field of Study	80	4.58	218	4.43	Insignificant
A Desire to Pursue a Passion	80	3.95	217	3.96	Insignificant
A Lack of Something Better to Do	**80**	**1.83**	**218**	**2.20**	**Significant**
A Desire to Make New Discoveries in the Field	80	2.59	218	2.92	Insignificant

A Desire for Higher Pay	80	3.76	218	3.86	Insignificant
A Desire to Teach	80	2.13	218	2.22	Insignificant
A Desire to Help Others	80	3.39	218	3.30	Insignificant
The Lifestyle of an Engineer	**80**	**2.29**	**218**	**3.07**	**Significant**
A Desire to Conduct Research	**80**	**2.16**	**218**	**2.56**	**Significant**
Poor Economy/Lack of Available Jobs	79	1.85	218	1.99	Insignificant
A Desire to Change Careers	**80**	**3.19**	**216**	**2.21**	**Significant**
A Desire to Advance in My Career	**80**	**4.61**	**217**	**4.31**	**Significant**
To Obtain a Credential	80	3.56	217	3.47	Insignificant
The High Regards in Which Engineers Are Held	**80**	**2.70**	**217**	**3.17**	**Significant**
The Opportunity for Me to Apply Undergraduate Work to My Master's Requirements	**80**	**1.91**	**213**	**2.63**	**Significant**
Other	15	1.80	44	1.64	Insignificant

Survey participants were asked to share the extent to which they utilized certain strategies in order to gain acceptance into a master's program. The average response as well as the number of respondents of each group are shown in Table 5. In this particular question, the utilization of every strategy was significantly different between the two groups. Logically, returners relied more heavily on courses as a non-degree student whereas direct pathway students relied on their undergraduate achievement as well as working with a professor. A more surprising difference

may be noted in the results of the “networking” field. Direct pathway students reported a significantly higher utilization of networking and relationship building than returners. This may be attributed to the returners’ lower levels of interaction with university staff on a regular basis when compared to direct pathway students.

Returners reported a significantly higher utilization of “other” resources. It is interesting to note that, of the nine returners who selected “other " in this question, six of them listed their work experience as one of their strategies. Other additional strategies listed by returners included campus visits and certificate programs.

Table 5: Utilization of Strategies to Increase Likelihood of Acceptance

	Returner		Direct Pathway		
	Number of Responses	Average Response	Number of Responses	Average Response	Significant or Insignificant Difference
Working with a Professor to Gain Research Experience	**80**	**1.53**	**218**	**2.60**	**Significant**
Networking/ Relationship Building	**80**	**2.56**	**216**	**3.01**	**Significant**
Achievement in Undergraduate Courses	**80**	**3.21**	**217**	**4.04**	**Significant**
Courses as a Non-degree Student	**80**	**2.28**	**215**	**1.62**	**Significant**
Other	**22**	**2.41**	**44**	**1.66**	**Significant**

The sources of information used when selecting a masters program differed between the two groups as well. Both groups relied most heavily on the university websites. However, returners relied on these websites to a significantly higher degree. The other resources which showed significantly different utilization were sources which are much more easily accessible for direct pathway students. Direct pathway students are more likely to interact with their undergraduate staff and possibly current masters’ students on a daily basis when deciding to attend graduate school. Due to the lack of other resources for returners, their high usage of university websites is logical.

One area in which a difference was expected, but was not found in the data was the utilization of professional colleagues. Returners are likely to have daily interactions with professional colleagues as full time employees whereas direct pathway students are more likely to have

limited interactions with colleagues. Due to their closer proximity to their colleagues, returners were expected to utilize their colleagues as sources of information to a higher degree, however the data shows no significant difference. The data obtained regarding the sources of information used by the two groups is shown in Table 6.

Table 6: Sources of Information Used in Decision Making

	Returner		Direct Pathway		
	Number of Responses	Average Response	Number of Responses	Average Response	Significant or Insignificant Difference
University Websites	**80**	**4.34**	**217**	**3.96**	**Significant**
Online or Printed Guides to Graduate Schools	80	2.31	218	2.38	Insignificant
Professors from My Previous Institution	**80**	**1.65**	**218**	**2.50**	**Significant**
Professors from the Master's Degree Institutions I Was Considering	80	2.18	217	2.46	Insignificant
Professional Colleagues	80	2.41	218	2.43	Insignificant
Current Master's Students	**79**	**1.68**	**218**	**2.16**	**Significant**
Others Who Have Achieved Their Master's Degrees	80	2.16	217	2.28	Insignificant
Other	20	1.95	39	1.54	Insignificant

When rating factors regarding selecting a masters program, direct pathway students showed far more concern for factors pertaining to the university location and culture than returner students. Believing that these results may be related to part-time versus full-time status rather than specifically returner versus direct pathway, the results for each group were split into part-time and full-time students. As expected, the results for the surrounding town or city as well as the university culture were significantly different when full time returners and direct pathway students were compared to part time. This suggests that the full time students are more likely to

value the location and culture of the university due to their increased amount of time spent on campus.

Despite it being the highest-ranked factor for both groups, returners reported significantly higher concern for the academic programs and disciplines offered than direct pathway students. This difference is highly unexpected. However, the difference may be explained by the concern direct pathway students held for other factors. Returners were focused more on the purely educational aspects of the university whereas direct pathway students showed significantly higher concern for a number of other factors. Table 7 shows the average ratings of factors considered when selecting a master's program.

Table 7: Importance of Factors when Selecting Master's Program

	Returner		Direct Pathway		
	Number of Responses	Average Response	Number of Responses	Average Response	Significant or Insignificant Difference
Funding	79	3.33	218	3.30	Insignificant
Tuition Costs	80	3.51	218	3.56	Insignificant
Medical Benefits	80	1.40	218	1.57	Insignificant
Academic Programs/ Disciplines Offered	**80**	**4.56**	**217**	**4.30**	**Significant**
Research Opportunities	79	2.46	218	2.84	Insignificant
Course Requirements	80	3.63	217	3.50	Insignificant
Admissions Exam Requirements	80	2.91	218	2.74	Insignificant
I Chose a Program That Required a Thesis	79	2.13	218	2.21	Insignificant
I Wanted a Program That Did Not Require a Thesis	80	3.00	218	3.01	Insignificant
Required Time at	80	2.94	217	3.13	Insignificant

Institution to Complete Degree Requirements					
Master's Level Credit for Undergraduate or Other Work	**80**	**1.56**	**218**	**2.14**	**Significant**
Estimated Time to Degree	**80**	**3.04**	**218**	**3.41**	**Significant**
Online Option for Courses	80	3.26	218	2.98	Insignificant
Information about the Culture/Makeup of the Graduate Student Population	80	2.08	217	2.28	Insignificant
Childcare Options	80	1.11	217	1.14	Insignificant
Admissions Requirements	80	3.21	217	3.16	Insignificant
Part-Time Options	79	2.99	217	2.69	Insignificant
The Surrounding Town or City	**80**	**2.28**	**217**	**2.82**	**Significant**
University Culture	**80**	**2.46**	**217**	**2.91**	**Significant**
Proximity to Work	80	1.95	217	2.11	Insignificant
Proximity to Family	79	2.13	218	2.32	Insignificant
Ability to Accommodate Partner Needs	**78**	**2.27**	**218**	**1.81**	**Significant**
Classes Offered during the Day	**79**	**1.72**	**218**	**2.17**	**Significant**
Classes Offered during the Evening	79	2.19	218	2.19	Insignificant
Other	**23**	**2.83**	**44**	**1.73**	**Significant**

When asked which factors influenced their belief in their ability to succeed in a Master's Program, direct pathway students reported significantly higher influence from three factors. The first, family status, was highly expected. Direct pathway students are likely younger than their returner counterparts, thus less likely to have children. Interestingly, direct pathway students were also more influenced by their age than returners. This suggests that direct pathway students view their young age as an advantage which will increase their success. Age was the third highest scoring factor for both groups which also implies that returners largely view their age, and perhaps maturity, as an advantage as well. The influence of one's disability status was also ranked higher by direct pathway students than returners. This result is a bit surprising and suggests that further research may be necessary to determine whether this difference may be attributed to a generationally different view of disability or some other factor. The data obtained from this question is shown in Table 8.

Table 8: Influence of Factors Affecting Belief in Ability to Succeed

	Returner		Direct Pathway		
	Number of Responses	Average Response	Number of Responses	Average Response	Significant or Insignificant Difference
Socioeconomic Status	79	3.62	218	3.67	Insignificant
Family Status (no children or no small children)	**79**	**3.68**	**217**	**4.00**	**Significant**
Age	**79**	**3.41**	**218**	**3.95**	**Significant**
Sexual Orientation	78	3.13	216	3.18	Insignificant
Disability Status	**78**	**3.08**	**216**	**3.24**	**Significant**
Race	79	3.15	218	3.33	Insignificant
Religion	79	3.05	216	3.14	Insignificant
Gender	78	3.22	218	3.39	Insignificant
Other	14	3.14	36	3.00	Insignificant

The actions taken to get into graduate school were largely the same for the two groups. Two of the three significant differences were highly expected. The percentage of students from both groups which selected each action is shown in Table 9. Returners utilized letters of recommendation from colleagues whereas direct pathway students utilized letters from professors at their undergraduate university due to the groups' differing proximity to these individuals. The third significantly different action was the "other" category. Approximately 16.25% of returners marked "other" compared to approximately 2.75% of direct pathway

students. Project portfolios, letters of recommendation from sources not included in the question options, and resumes were among the other strategies listed. The responses obtained from this question are shown in both Table 9 and Figure 1.

Table 9: Strategies to Gain Graduate Program Acceptance

	Returner		Direct Pathway		
	Number of Responses	Percent of Returners	Number of Responses	Percent of Direct Pathway	Dependent on or Independent of Student Status
Letters of Recommendation from Undergraduate Professors	**30**	**37.5%**	**188**	**86.24%**	**Dependent**
Letters of Recommendation from Professors at Other Universities	10	12.5%	17	7.80%	Independent
Letters of Recommendation from Colleagues	**72**	**90%**	**121**	**55.5%**	**Dependent**
Application Essay	44	55%	138	63.3%	Independent
Personal Statement	70	87.5%	185	84.86%	Independent
Other	**13**	**16.25%**	**6**	**2.75%**	**Dependent**

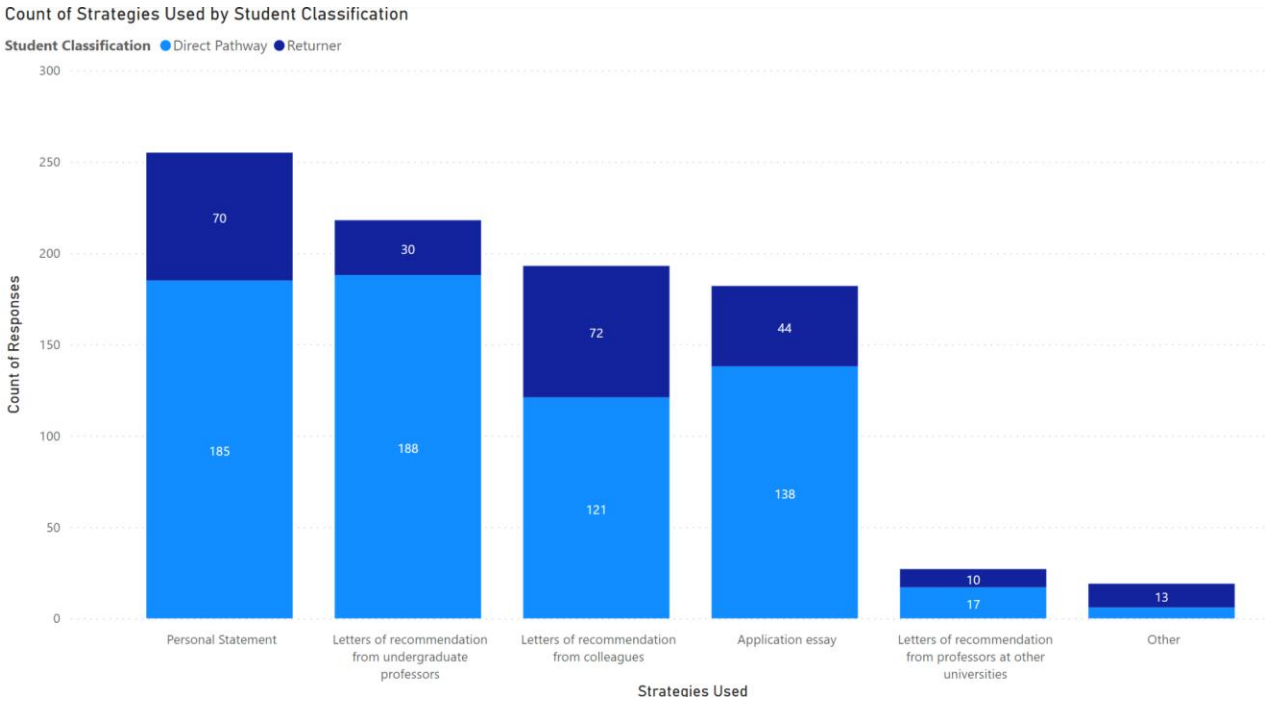

Figure 1: Strategies Used to Gain Acceptance by Student Classification

Implications

Though the most important factors of the decision making process were largely the same, returners and direct pathway students differed significantly in a number of important ways, most notably in the categories of sources of information, important university characteristics, and strategies for acceptance which will be discussed in more detail below. Universities hoping to recruit more graduate students should consider the differences between the two groups as well as the most important factors reported by both groups and tailor their marketing strategies toward them. Factors which were of high importance to both groups are likely to have broad applicability to master's students as a whole. Universities may use such factors to appeal to a broad range of master's students. Factors which are more specific to one group over another can be used to recruit specific groups and diversify the master's program at a university.

Sources of Information and Important University Characteristics

Both returners and direct pathway students reported heavy utilization of universities' websites. In order to attract such students, universities may consider improving the graduate program section of their website. It should be easy to navigate and contain all information a prospective graduate student may require. Focusing on factors which were of high importance to both groups, such as course requirements and academic programs offered, may help draw in a larger number of graduate students of both types.

Strategies for Acceptance

Nearly all returners reported the use of a letter of recommendation from a colleague rather than a professor. While it is likely that professors are aware of the information necessary to include in a graduate school recommendation, those outside the academy may not have such knowledge. Including either in the application or on the university website what information is helpful in a letter of recommendation will help returners submit higher quality recommendations and could increase their chances of acceptance.

Many returners also noted the use of a project portfolio as supplemental material in their application. Because returners have worked in industry for a substantial amount of time, project portfolios are more likely to be an accurate indication of their current capabilities than an outdated undergraduate GPA. Colleges hoping to recruit and enroll returners should consider adding a project portfolio to their list of required or recommended application materials. They may even consider using such a resource as an alternative to the undergraduate GPA.

A fair number of returners cited courses as a non-degree student as an action they took to increase likelihood of graduate school acceptance. Offering and advertising classes which will help prepare returners for graduate school during the evening could help draw in prospective students. Welcoming those who are not yet in a program rather than pressuring them to join a program after a certain number of courses may encourage returners to explore possible paths and eventually commit to the university.

Conclusions

The results of this survey indicate that, while there are definite similarities between returner and direct pathway engineering master's students, there are also a fair number of significant differences in the decision making process of the two groups when deciding to pursue a master's degree. The conditions under which these two groups are making their decision are vastly different, so the factors impacting their decisions are expectedly different. The factors examined in this study can aid universities in their recruitment efforts and offer some insight into the needs of two very distinct student populations.

Because the differences between these two populations are so substantial in terms of their decision making process, this study suggests a need for further studies of the differences between these two populations throughout their graduate experience. In order to properly support the two groups, an increased understanding of the differences in the needs of both populations is necessary.

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