

Recruitment and Retention of International Graduate Students in US Universities*

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International students account for 3.5% of graduate students in the US with 17% enrolled in engineering programs in 2008. Recruiting and retention of International Graduate Students (IGS) is an essential and important consideration for US universities with increased competition from other countries. Understanding concerns and preferences influencing the IGS's decision to choose a school in addition to factors affecting decisions to continue advanced degrees at a university will help schools effectively recruit and retain better quality students and thus increase research productivity. This paper addresses the design of comprehensive online survey to find preferences and influential factors affecting the decision of IGS in choosing a graduate school. IGS and alumni at US schools were invited anonymously to participate and complete the survey. Survey results were analyzed and interpreted both quantitatively and qualitatively. Results indicate that preferences of IGS to choose a school depend on their nationality, gender, age and several other factors. The paper concludes with recommendations to improve recruitment and retention, considering preferences and concerns of different groups of IGS and strategizing the efforts in view of diversity of IGS.

Keywords: international graduate students; recruitment; retention; online survey

1. INTRODUCTION

AMERICAN UNIVERSITIES HAVE BEEN a leading host for international graduate students (IGS) from more than a decade [1]. Student recruitment and retention is important for academic institution throughout the world [2–4]. Advantages of having international students in graduate degree programs at US universities includes developing international ties, bring financial resources, maintain diverse intellectual pool of students and fulfill shortage of engineering talent in US.

Interests in international student education have increased in the past couple of decades due to globalization, enhanced awareness of better educational opportunities and improved efforts of US educational institutions to attract quality students [5]. Most countries recognize the need for global consciousness to compete in the international business economy and in technical fields. At present, about two million students worldwide study outside their home countries, with US being the leading country to host international students [5].

Culture and gender diversity among students in

academic institutions and among employees in the corporate world brings different perspectives to the academic and corporate environment and substantially help with growth. International students contributed around \$12.87 billion in the academic year 2003–2004 [4, 5]. These contributions included tuition, fees paid including expenditures on travel, food, housing, incidentals, and the cost of supporting a family by students. In return, international students got better research quality, global exposure, diversity, and an excellent education [6–9]. Several former Fulbright grantees and international alumni also benefit the US economic system and universities [5, 10].

Recruitment and retention of IGSs have been more challenging recently with the increased competition from other host countries like Australia, UK and Germany. This is a very important concern noted by MSNBC describing decline in recruiting foreign students [11]. Some of the reasons described by Krupnick (2006) [12] are ample job opportunities for students in home countries, more universities offering esteemed advanced degrees in the students home countries and the stringent visa rules after the 11 September attack. As a result, engineering student recruitment rate is declining [13]. In a survey conducted jointly

* Accepted 28 April 2010.

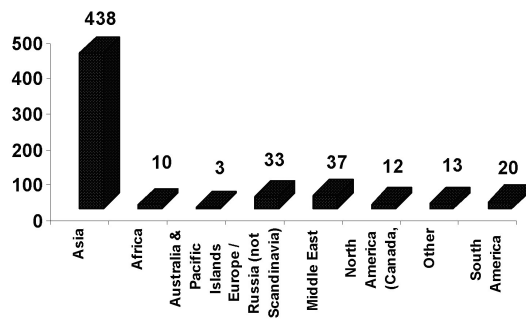


Fig. 1. Engineering students/alumni profile by region/ nationality who participated in the survey

by the American Council on Education (ACE), the Association of American Universities (AAU), the Council of Graduate Schools (CGS), National Association of Foreign Student Advisers (NAFSA): Association of International Educators, and the National Association of State Universities and Land-Grant Colleges (NASULGC), as well as around 250 institutions provided data regarding graduate applications from international students. Nearly half (47%) indicated a decline in applications, 38% thought application rates had not changed, and 14% indicated an increase in application numbers. All of these respondents indicated declines in international graduate applications [14].

Kramer *et al.* demonstrated a method to increase graduate enrollments and attract top quality students to graduate study by introducing concurrent BS/MS programs [15]. M. P. Sharma provided a valuable insight into the cause of the phenomena of declining graduate student applications and admissions in U.S. universities [16]. Typical global models to increase the enrollment of minority and IGSs have been presented by Najafi *et al.* [17]. They suggested that the department should develop videos on faculty development to educate faculty for active participation in recruitment and retention efforts. As reported in literature, several universities have taken special steps to ensure that the number of international students on their campuses do not decline [17]. These steps included new international programs or collaborations, followed by new staff or additional staff time devoted to international recruitment, recruitment offices located outside the U.S., and new funding for international recruitment trips and for marketing and promotion of programs.

There is a need for coordinated efforts to get the best quality international students by understanding the international student's preferences and influences to choose the school. This paper contributes to design an online survey for finding the various preferences, which influenced international student's decision to choose a particular school. Results presented are based on responses from 558

international engineering graduate students/alumni. Responses based on region/ nationality, age, gender and current students/alumni are analyzed and discussed here. Statistical analysis has not been included in this paper and will be part of future research studies.

2. SURVEY

2.1 Design

This survey was designed by a group of faculty members and student. The study was approved by International Review Board (IRB) at Mississippi State University to be implemented for electronic survey. Respondents were kept confidential and the survey was voluntary open to only IGS at US universities.

Student recruitment for this survey was accomplished by contacting student organizations, administrative offices and colleagues. The actual number of invited respondents and the response rate was not known, as respondents were not directly contacted. This study was based on an online survey using a commercial website (www.surveymonkey.com). There were 1180 students and alumni who took the survey from STEM fields at US schools. Among them, 558 students were from an engineering background, with 421 males and 137 females. Figure 1 shows the profile of engineering students/alumni from different regions/ nationalities.

2.2 Structure of questionnaire

The survey was divided into questions based on different phases (admission process, during graduate study, pre and post graduation) of graduate student life to determine concerns and influential factors before applying/attending the school. These concerns were listed and respondents were asked to rank them in order of personal priority. Questions were also asked about the challenges faced by students in their graduate study, influential factors before deciding on school, safety and security of campus, and services pertaining to various campus organizations. In the end of the survey, an open ended question was asked enabling the students to discuss any experience, issue or challenge during their graduate study at a US university.

2.3 Survey analysis

Survey data were analyzed using Microsoft Excel software. Data were sorted by status (current vs. alumni) as well as discipline (engineering vs. other science). Frequency of responses and ranks were compiled as relevant to each question. Results are presented graphically in pie charts, bar graphs, and radar graphs to better visualize the data.

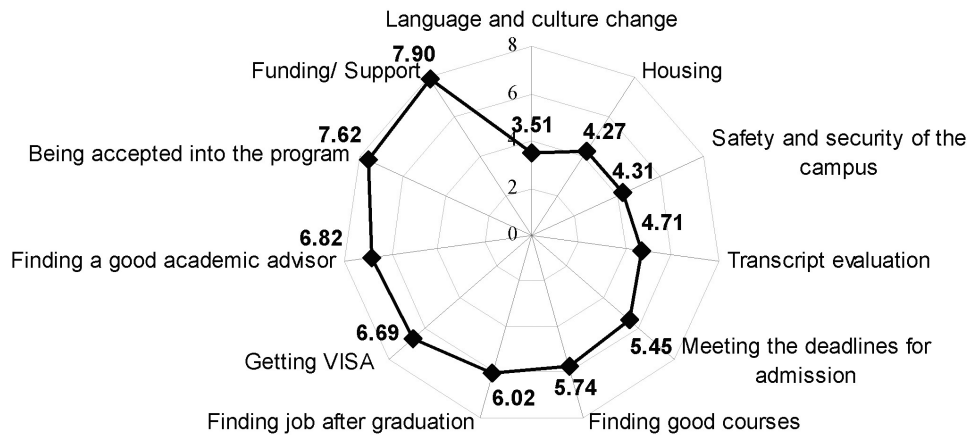


Fig. 2. Overall concerns of all the respondents.

3. RESULTS AND ANALYSIS

Survey results are presented in this section with qualitative and quantitative analysis. Summary of the key results is also provided at end of section.

3.1 Common concerns for prospective students

Respondents were asked to rank eleven common concerns they might have had as they applied to US institutions with 1 as the greatest concern and 11 as little or no concern. Common concerns were based on the experience of the authors and also on several previous papers [16, 18, 19]. The participants also had an option of providing the concerns which were not listed in the survey options. These common concerns are listed as: transcript evaluation, meeting the deadlines for admission, getting VISA, being accepted into the program, housing, language, and culture change, funding/ support, finding a good academic advisor, finding good courses, finding job after graduation, and safety and security of the campus.

Ranking data obtained by all respondents were averaged and inverted by subtracting from 11 (lowest rank possible) to find the composite average rank. As shown in Fig. 2, the top five concerns for all the respondents were:

1. Funding/ Support (composite rank of 7.92)
2. Being accepted into the program (composite rank of 7.62)
3. Finding a good academic advisor (composite rank of 6.82)
4. Getting VISA (composite rank of 6.69)
5. Finding job after graduation (composite rank of 6.02)

Student respondents had different concerns based on their nationality. The numbers provided after the countries, indicate the number of respondents for calculating the average rank. Funding and support was the top major concern for students from the following countries with number of students: Africa (16), Asia (554), North America (Canada and Mexico) (13) and South America (23). Middle Eastern students (43) gave equal importance to getting visa, being accepted into the program, and funding support as the major concerns before being accepted to a school as shown in Fig. 3 and Table 1. Australians (3) ranked finding good courses and meeting the deadlines for admission as the top major concerns.

As shown in Fig. 4, respondents were compared based on their age group. The top major concern, 'funding and support' remained the same for all age groups. For students of age >30 years, the

Table 1: Ranking of concerns expressed by survey respondents before deciding on graduate school

Nationality/Influential Factors	Africa	Asia	Australia	Europe	Middle East	North America	Others	South America
Funding/ Support	8.5	8.0	7.0	6.6	7.7	7.4	7.3	7.7
Being accepted into the program	7.4	7.8	7.0	7.2	7.7	5.8	6.9	7.0
Finding good academic advisor	5.8	7.0	7.3	6.6	6.8	6.1	4.8	6.3
Getting VISA	7.4	6.7	3.7	6.8	7.6	4.7	6.3	6.6
Meeting deadlines for admission	6.4	5.5	8.0	5.9	4.4	5.1	5.1	5.3
Finding job after graduation	6.2	6.3	7.0	5.1	4.9	4.5	5.7	4.4
Housing	6.0	4.0	7.0	5.8	4.2	4.8	4.8	4.7
Finding good courses	4.3	6.0	8.0	5.7	4.8	5.2	2.9	4.4
Transcript evaluation	5.4	4.7	6.3	4.5	5.1	3.9	4.7	4.3
Language and culture change	3.8	3.2	6.7	4.2	4.9	3.3	4.7	4.6
Safety/ security of campus	3.2	4.6	4.3	3.6	4.0	3.3	3.3	2.4

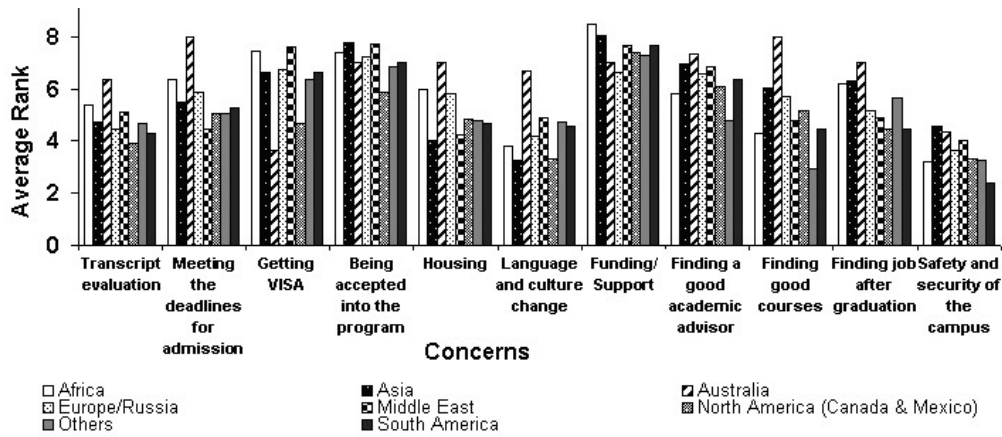


Fig. 3. Overall concerns of all the respondents by region/ nationality.

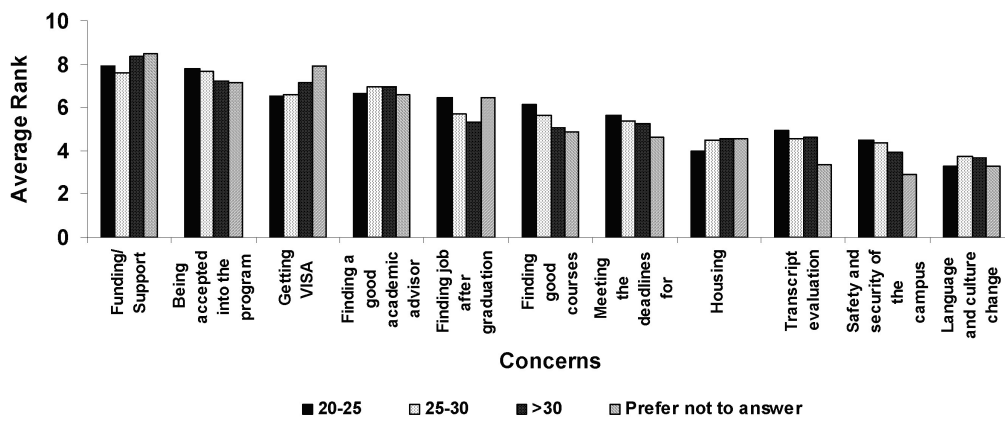


Fig. 4. Overall concerns of all the respondents by age.

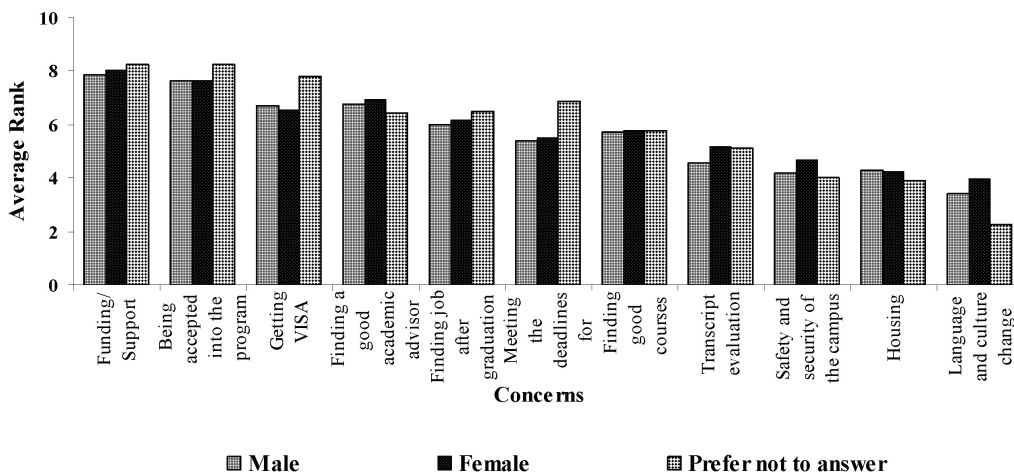


Fig. 5. Overall concerns of all respondents by gender.

second major concerns were ‘getting visa’, ‘being accepted to the program’ and ‘finding a good academic advisor’. ‘Finding a good academic advisor’ was the second main concern for students in the age group 25–30 years and ‘being accepted to the program’ ranked second for students under 25

years of age. Students under 25 years ranked finding job after graduation higher than students above 25 years of age whereas getting visa was ranked high for age groups above 30 years.

Based on responses by gender, the concerns were ranked almost similarly except in some cases.

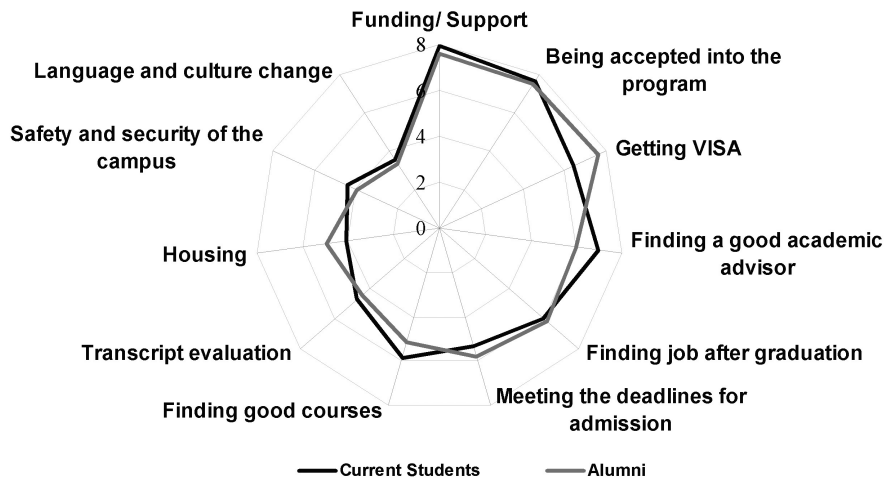


Fig. 6. Overall concerns of all respondents by status of student.

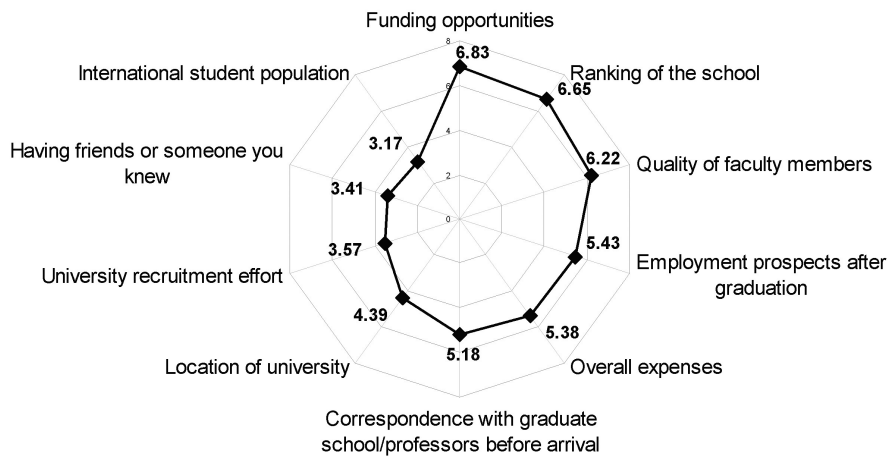


Fig. 7. Average ranking for influence on choice of school by all participants.

Safety and security of campus, language and culture change, and transcript evaluation ranked higher compared with their male respondents as shown by the graph in Fig. 5. Funding and support along with being accepted to the program remained the top two concerns for both male and female students.

Comparison between current students and alumni indicates major differences in concerns related to getting VISA, and finding a good academic advisor. Alumni ranked getting visa as a major concern whereas current students ranked being accepted into the program as a major concern as seen in Fig. 6.

3.2 Recruiting effort by US universities and student preferences

Many universities have recognized that attracting the best quality international students is important and are active in recruiting efforts. The following section of the survey sought to determine which factors are important from the student's

perspective to decide on a particular school. Survey respondents were asked to rank the following factors based on which influenced most in their decision to apply to a particular university with 1 as greatest influence and 10 as little or no influence. Here are the options given to respondents: university recruitment effort, correspondence with graduate school/professors before arrival, funding opportunities, ranking of the school, international student population, location of university, quality of faculty members, employment prospects after graduation, overall expenses, and having friends or someone you knew.

As demonstrated in Fig. 7, respondents ranked funding opportunities as a major influence on their choice of schools. There were other major factors, which influenced the student's decision to decide about school. The top six concerns listed were:

1. Funding opportunities;
2. Ranking of the school;
3. Quality of faculty members;
4. Employment prospects after graduation;

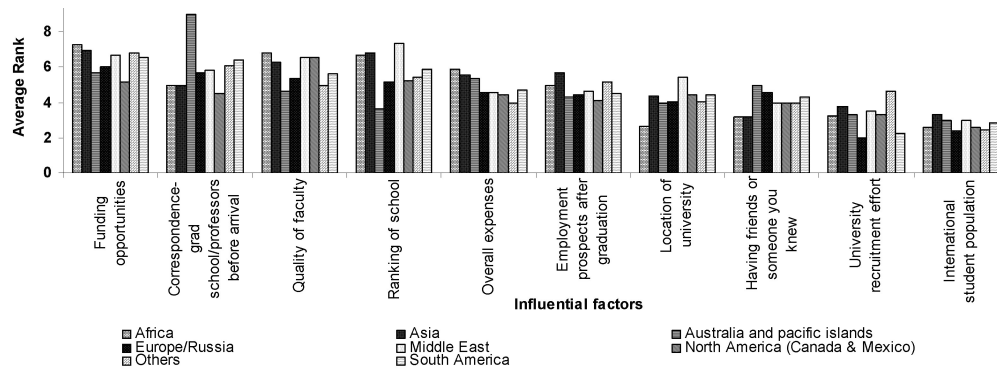


Fig. 8. Average ranking for influence on choice of school by all participants based on region/ nationality.

5. Overall expenses.
6. Correspondence with graduate school/professors before arrival.

As shown in Fig. 8 and Table 2, factors in choosing a school varied by student region/ nationality, but general trends are discernable (i.e. international student population is least important for all nationalities). The main influential factor was funding opportunities for students from Asia, Africa, Europe/Russia, and others (includes US Virgin Islands, Central America, and Carribean). For students from Middle Eastern countries, ranking of the school was the biggest influence on choice, whereas students from North America (other than USA) think that quality of faculty members is most important. Respondents from Australia decided on a particular school based on their correspondence with graduate school / professors.

Respondents' age also made a difference in prioritization of school choice factors. The main influential factor for age group >25 years was funding opportunities, but <25 years of age students looked for ranking of school. The second main influential factor for students under 25 years was funding opportunities whereas ranking of the school was a factor considered by >25 years age group. The third most important influential factor remained quality of faculty members

for all the age groups of students as shown in Fig. 9. Respondents of different genders were influenced by diverse factors when choosing a school to attend as shown in Fig. 10. In general, female respondents considered all of the factors to be more important on average compared to their male counterparts. Male respondents listed funding opportunities and ranking of the school equally important to choosing a school whereas female respondents were slightly more influenced by funding opportunities. The location of the university was a greater influencing factor for female respondents.

A comparison between current student and alumni was made as shown in Fig. 11. Funding opportunities was a major influential factor for both current students and alumni in choosing a school. But current students gave more importance to 'Ranking of school', 'Quality of faculty members', and 'university recruitment effort'. But 'having friends or someone you knew' was considered an important factor by alumni. All other factors were ranked similarly by current students and alumni population in choosing a school.

3.3 International organization's service to students

Figure 12 indicates the satisfaction of the service provided by the respondent's own school's international students' organization. Majority of respondents rated ISO service as helpful or very

Table 2. Ranking of influential factors by region/ nationality

Region/Concerns	Africa	Asia	Australia	Europe	Middle East	North America	Others	South America
Funding opportunities	7.3	6.9	5.7	6.0	6.7	5.2	6.8	6.6
Correspondence- grad school/ professors before arrival	4.9	5.0	9.0	5.7	5.8	4.5	6.1	6.4
Quality of faculty	6.8	6.3	4.7	5.3	6.6	6.5	5.0	5.6
Ranking of school	6.7	6.8	3.7	5.1	7.4	5.2	5.4	5.9
Overall expenses	5.9	5.6	5.3	4.6	4.6	4.4	4.0	4.7
Employment prospects after graduation	4.9	5.7	4.3	4.5	4.6	4.1	5.1	4.5
Location of university	2.6	4.4	4.0	4.1	5.5	4.5	4.1	4.4
Having friends or someone you knew	3.2	3.2	5.0	4.6	4.0	4.0	4.0	4.3
University recruitment effort	3.3	3.8	3.3	2.0	3.5	3.3	4.7	2.2
International student population	2.6	3.3	3.0	2.4	3.0	2.6	2.5	2.8

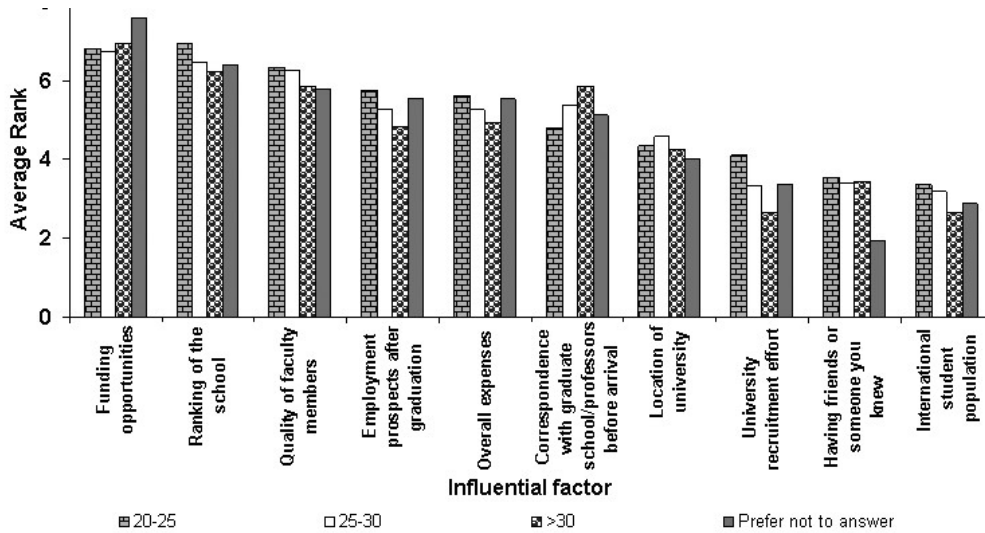


Fig 9. Average ranking for influence on choice of school by all participants based on age.

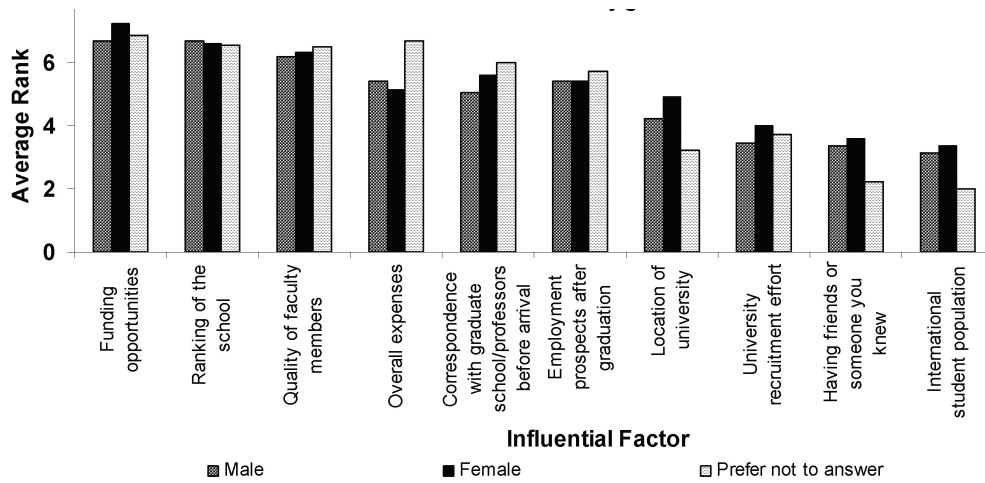


Fig. 10. Average ranking for influence on choice of school by all participants based on gender.

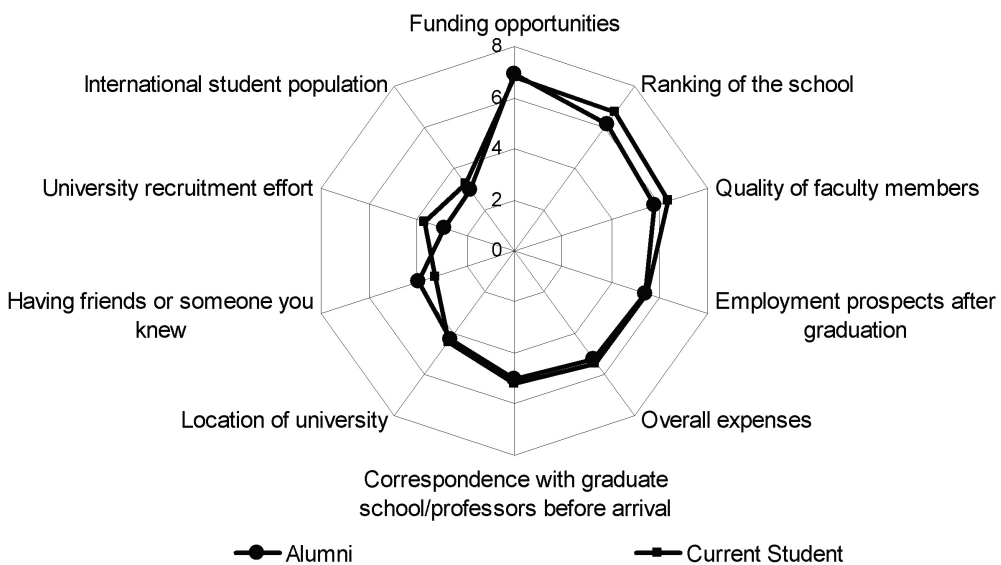


Fig. 11. Average ranking for influence on choice of school by all participants based on status of student.

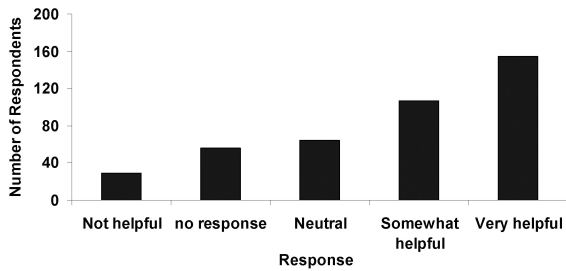


Fig. 12. Experience with International Students Organization.

helpful. Approximately 60 respondents were neutral, while almost 150 respondents indicated that international service organization was not helpful to some degree. From the open-ended responses, respondents indicated that they were not helpful in paperwork associated with filing taxes, internships, curricular practical trainings (CPT) and optional practical training (OPT). Additional information about these options can be found in [20].

As an open ended response, survey participants, who rated ISO service as less helpful, commented, “Tax workshop should be provided by the international student association” and “Networking opportunities with locals and Americans. Social interaction with graduate students and students in other departments”.

3.4 Support for graduate study

A major influential factor expressed by respondents, when considering a specific school, was funding resources. In the third section of the survey, a question was asked about type of funding support the respondent had during their graduate study. As shown in Fig. 13, 38% of the population or respondents had research assistantship and 10% had scholarships or fellowships from their host university. Many students had multiple sources of funding, for instance, a student had some partial funding through on campus job combined with personal funding. In some cases, the student had both research and teaching assistantships.

In the open-ended response section, respondents

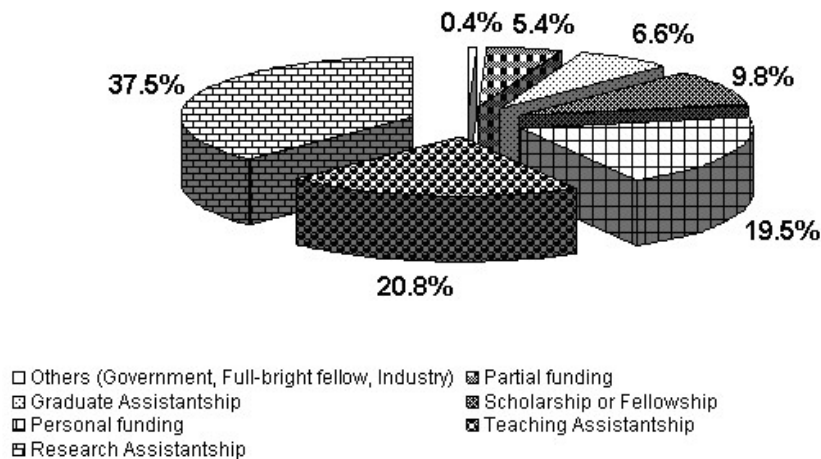


Fig. 13. Support for IGS.

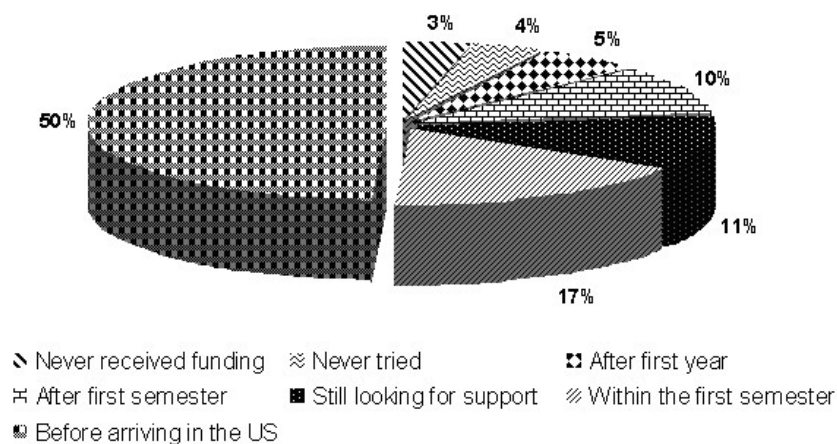


Fig. 14. Average time period when international student received support for graduate study.

indicated they transferred to another school due to funding availability. However, some did not transfer to another school even if they were not satisfied with the school's funding opportunities. Results suggest that the main concern among IGS is funding and support. Some of the student's responses were:

The funding in my department isn't very good. In fact there is no funding!

My reason is more of a funding scenario. I'd like to move to university with good funding;

I wasn't given any chance of funding at other universities, so didn't transfer.

Less funding for International students.

Unless you are rich, never try to come to any university for studies if you don't have funding support.

The survey tool was also designed to assess the average time a student received any form of financial support (types shown in Fig. 13). As demonstrated in Fig. 14, 50% of the survey respondents received support prior to coming to the U.S. At the other end of the spectrum, about 18% of the respondents indicate that they never received funding or were still looking for support. Comments include:

Due to recession New York State raised the tuition fee for international students by \$1200. This is very disgusting. If you do not have money, why rob the students. Also, I don't know about other universities, but professors at my university are biased and provide assistantships to only those who are from their country.

Life is very expensive for me, as an international student. The amount of money I get from the funding is not comparable to the living expenses especially for a married student with spouse (not allowed to work) and children.

3.5 Campus safety and security

The survey inquired further about safety and security of the campus and location. As discussed in Fig. 7, this was the seventh most influential factor for the average student to decide about a particular school. Overall, respondents were either very satisfied or extremely satisfied with campus safety and security as shown in Fig.15. On the other hand, approximately 10% of international students were neutral or not satisfied with campus safety and security. Open feedback indicated students transferred to another university.

A student says, "Many international students live outside campus to cut costs and in the absence of any modes of transport it becomes very difficult, also safety outside the campus is a big concern".

3.6 Campus departments' assistance with initial paper work

A question was included in the survey to assess how helpful IGSs found departments with the initial student paperwork after admission. The

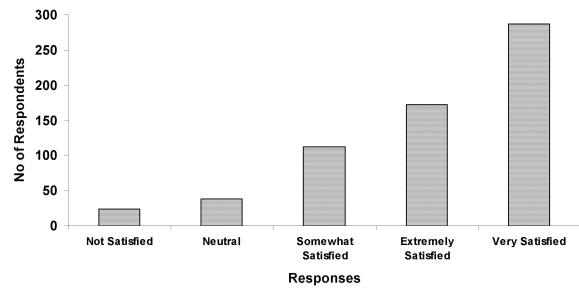


Fig. 15. Impact of campus safety and security

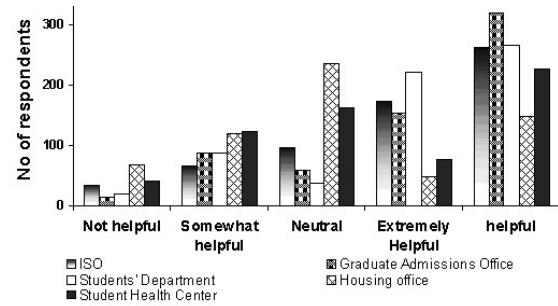


Fig. 16. Service of different departments across university with initial paperwork.

departments listed were International Service Organization (ISO), graduate admissions office, host academic department, housing office and health center. They were asked to rate the helpfulness of each of these departments.

From Fig. 16, ISO, Graduate admissions office, students' home department and student health center were helpful, but respondents primarily had a neutral opinion about the housing office. Relevant respondent comments indicated limited help from international student organizations to some of the students:

I find other universities offering more help to international students.

No nice housing for graduate students.

In some cases, the department, which the student was admitted to, was misleading and a student says, "Sometimes your department lies to you that waste your time. That is what my university did".

3.7 Experience with faculty members/ advisors

The survey also included a section to ascertain IGS perceptions of faculty members and their research advisors. The goal was to determine the faculty's role in retaining and recruiting good students. One question asked about the experience IGSs had with their faculty mentors during their graduate study. There were five options including 1) Very Helpful 2) Helpful 3) Neutral 4) Not helpful 5) Too busy to talk with me. Figure 17 represents the responses of students about the experience they had with their faculty members.

About 45% of the population thought faculty

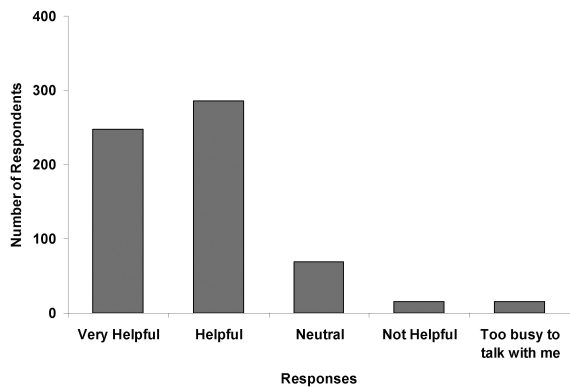


Fig. 17. Experience with advisors/ faculty members during graduate study.

members were helpful with an additional 39% who felt their advisor was very helpful as shown in Fig. 17. Eleven percent of respondents were neutral while 4% rated advisors negatively.

Relevant essay responses indicate some of the issues that exist with faculty mentors.

The teachers are not as good as in my country.

If you are not doing directly relevant research, faculty advisor does not care a weed about you.

Some faculties treat the students in different manner. They have pre-determined mind set about the few countries and they have different opinion about the students who are coming from the country.

It's very difficult to overcome the strong negative impact of a too ambitious, too selfish academic advisor.

The advisors often exploit the international students but they can't do it with American students.

There should be more protection for the international students.

3.8 Did the student transfer to another university? Why or why not?

The survey followed up by asking the students/ alumni an open ended question whether they transferred to another university and why or why not. The response to this question quantitatively can be interpreted as satisfactory because only 13% of the respondents transferred to another university. The reasons for transfer were mostly based on financial, ranking of school, quality of faculty members and technical interest. Responses included: "Funding Problem"; "expensive"; "I did not get funding from my previous university"; "to find a good project for my Ph.D."; "The advisor at my first University and I were a bad match".

Respondents in the remaining 87% who did not transfer to a different university also listed their reasons, which indicate they did not want to transfer due to the visa issues, academic policies, funding issues, delay experienced in graduate study

if transferred to a different university, and faculty advisor issues.

The paperwork is becoming more difficult.

I did not want to because I have to re-adjust to the new atmosphere and take extra courses (after transferring courses). I did not want to waste a semester.

Because I have spent a lot of money already, now I don't have much left for additional expenses in transferring. But believe me, my university is pathetic.

I tried after my first semester. It was very difficult to get funding in other universities. So I continued in my school though it is poor.

I'm already accepted to a university. I don't want to go through extra paperwork.

Transfer of credits is limited by 6 credits which is the major problem as we had to pay the fee for the courses again in the new university, not because we had to do the courses again.

3.9 Summary of key results

Table 3 highlights the top three concerns by region/ nationality of the survey respondents, by gender, age and status of the student. The concerns changes for sub-groups as shown. In Table 4, top three influential factors for choosing a graduate school are shown for all the sub-groups.

4. DISCUSSION AND RECOMMENDATIONS

The factors presented in section 3 influence the recruitment and retention of IGSs. The survey resulted in knowing the students needs and difficulties faced during their graduate studies. If these issues are addressed by the universities, government or faculty members to the extent possible, a better graduate life and experience could be created for them. After examining the data, the authors interpreted reasons behind trends / choices.

In Fig. 6, the survey addressed some overall concerns of the IGSs in choosing a school. The results show that funding was a major concern among current students whereas alumni were more concerned about acceptance to a school. This possibly indicates that the quality of students coming into the program is declining in spite of an increase in international students coming to US universities for graduate studies, as they are more concerned about funding compared to any other concerns, such as acceptance, coursework, campus security, housing, quality of school, etc. There can be several other reasons to cause this observation.

There were several open ended responses from the survey respondents. One question concerned about the service offered by the International Student Organization. Overall, the responses were favorable as seen in Fig. 12, but some IGSs who responded negatively wanted international student organizations to provide more opportunity

Table 3. Top three concerns for different sub-groups

Dependencies		Top 3 concerns		
Overall		Funding Support	Being accepted into program	Finding a good academic advisor
Region/Nationality	Africa	Funding Support	Getting VISA	Being accepted into program
	Asia	Funding Support	Being accepted into program	Getting VISA
	Australia	Finding good courses	Meeting deadlines for admission	Finding a good academic advisor
	Europe	Being accepted into program	Getting VISA	Funding support
	Middle East	Being accepted into program	Funding support	Getting VISA
	North America	Funding Support	Finding a good academic advisor	Being accepted into program
	Others	Funding Support	Being accepted into program	Getting VISA
	South America	Funding Support	Being accepted into program	Getting VISA
Status of Student	Current	Funding Support	Being accepted into program	Finding a good academic advisor
	Alumni	Getting VISA	Funding support	Being accepted into program
Gender	Male	Funding Support	Being accepted into program	Getting VISA
	Female	Funding Support	Being accepted into program	Finding a good academic advisor
Age	20-25	Funding Support	Being accepted into program	Finding a good academic advisor
	26-30	Being accepted into program	Funding support	Finding a good academic advisor
	>31	Funding Support	Being accepted into program	Getting VISA

Table 4. Top influential factors ranked by survey respondents considered when choosing a school

Dependencies		Top 3 Influential Factors		
Overall		Funding Opportunities	Ranking of School	Quality of Faculty Members
Region/Nationality	Africa	Funding Opportunities	Quality of Faculty Members	Ranking of School
	Asia	Funding Opportunities	Ranking of School	Quality of Faculty Members
	Australia	Correspondence with Grad School/Professors	Funding Opportunities	Overall Expenses
	Europe	Funding Opportunities	Correspondence with Grad School/ Professors	Quality of Faculty Members
	Middle East	Ranking of School	Funding Opportunities	Quality of Faculty Members
	North America	Quality of Faculty Members	Ranking of School	Funding Opportunities
	Others	Funding Opportunities	Correspondence with Grad School/ Professors	Ranking of School
	South America	Funding Opportunities	Correspondence with Grad School/ Professors	Ranking of School
Status of Student	Current	Funding Opportunities	Ranking of School	Quality of Faculty Members
	Alumni	Funding Opportunities	Ranking of School	Quality of Faculty Members
Gender	Male	Funding Opportunities	Ranking of School	Quality of Faculty Members
	Female	Funding Opportunities	Ranking of School	Quality of Faculty Members
Age	20-25	Ranking of School	Funding Opportunities	Quality of Faculty Members
	26-30	Funding Opportunities	Ranking of School	Quality of Faculty Members
	>31	Funding Opportunities	Ranking of School	Correspondence with Grad School/ Professors

for IGSs by arranging local trips and by organizing networking and social activities session where they can adapt to American culture by mingling with domestic students.

Survey responses based on alumni and current students indicated that funding was a major concern in choosing a school as shown in Fig. 11. From the open ended responses, the authors conclude that betterment of funding scenario would retain IGS in US universities. Also, some of the universities have been constantly increasing tuition fees without increasing stipend for graduate students, which makes it hard to retain students.

Campus safety and security survey responses were satisfactory in general as shown in Fig. 15, but some IGSs responded negatively to safety of campus housing as indicated in open response of a survey respondent. University should help provide on-campus housing to students, if possible at a subsidized rate, so that students feel safe and secure to attend the university. Sometimes the classes are held at night and if the housing is outside campus it poses a problem, if the location of the university is not safe and secure.

One of the survey questions asked about the service and help provided by the various departments in their university during their initial days of coming to US, such as housing, graduate school, international service office, student's department, and faculty. Satisfactory responses were given by the survey respondents as seen in Fig. 16, but open ended responses provided some contradictory opinions. The responses were neutral with regards to the housing office. So, the authors think that universities should focus on improving housing options and also provide more guidance through international service organizations with their issues related to rules and regulations to improve the experience.

The survey also addressed the quality of faculty in US universities. The survey respondents ranked the experience with faculty members as "Helpful". There was also an open ended response section with the question, so that the respondents could provide a better view of faculty and not just the options provided in the question. Based on these responses, faculty members can retain good students by not showing any bias towards international or American students. They should set standard guidelines regarding traveling, attending conferences, and other social activities. They should try to induce cultural diversity by having a potluck

lunch/dinner, celebrating international festivals, attending cultural fiestas at schools and by helping international students with paperwork and graduation. There are also many open resources available for faculty members on mentoring graduate students, especially international students, and the importance of mentoring [21–24].

The survey also addressed the drop out problem by asking, why, if any survey respondent transferred to a different university or what made them to stay in the same university. Based on their open responses, we conclude that more than 20% of the students among 87% who did not transfer, were hesitant due to issues related to school policies, faculty and government rules and regulations. This also shows that the students were retained only because paperwork involving course credit transfer is difficult, I20 issues, and funding would be lost if they transfer. Also adjusting to the new atmosphere was much more difficult if they opted to transfer.

5. CONCLUSIONS

This paper considered concerns and influences affecting recruitment and retention of international graduate students through the results from a comprehensive online survey. Survey results showed that preferences and concerns for international graduate student changes depended upon International Graduate Students (IGS) subgroups like gender, age, nationality, and status. Results are useful in their isolation, but also when examined holistically indicate that a university may improve recruitment and retention efforts by catering to preferences and influencing factors of subgroups among international graduate students. Conclusions presented here are based on the results and interpretations from the open ended responses of the entire survey dataset. This is followed by tangible advice for universities and faculty members on how they can improve recruitment and retention in changing global times. This information has the potential to be used to help universities recruit better quality students and thus produce higher impact research and more influential graduates for their programs.

Acknowledgements—Authors would like to thank all the volunteers who responded to this survey along with all friends, colleagues and faculty members who distributed this survey.

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