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**MOTIVATIONS TO STUDY ABROAD AND UNIVERSITY RANKINGS:**

**AN ANALYSIS OF THE SCIENCE WITHOUT BORDERS PROGRAM**

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## MOTIVATIONS TO STUDY ABROAD AND UNIVERSITY RANKINGS?

## AN ANALYSIS OF THE SCIENCE WITHOUT BORDERS PROGRAM

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*To my father,*
*for being my everyday hero.*

# ACKNOWLEDGMENTS

# ABSTRACT

This study aimed to understand the relationship between university rankings and students' motivations to study abroad in addition to identifying possible differences in terms of perceived benefits and challenges. This case study on the Science Without Borders program is divided in two sections. The first presents an overview of the SWB program and how the placement process occurred. The second section presents the results of survey in which 679 students answered a series of questions regarding their motivations, in addition to perceived benefits and challenges. The analysis revealed the existence of three clusters - Ranking-oriented students, Experience-oriented students and Language-oriented students - with distinct motivations, foreign language proficiency level and academic performance prior to the SwB. Most Ranking-oriented students were placed in the Top 500 institutions while the majority of Language-oriented ones studied at institutions which were not part of the same group. These clusters also showed different levels in perceived benefits, with Experience-oriented students having the highest means of professional skills in the academic and internship phases of the program whereas Language-Oriented ones had the lowest. The latter also had the highest perception levels of challenges faced throughout the program. When analyzing only the students' host institutions' rank, students who studied at the highest-ranked institutions had the highest means of professional skills and the lowest of perceived challenges, while students in non-ranked institutions had the opposite. These results point to the importance of rankings in the decision-making process and how an institutions' rank may be associated with perception levels of benefits and challenges in mobility programs. This study also identified a series of barriers which contributed to flaws in the placement process and how some students' lack of commitment post-participation in the program affects the country's long-term goals.

**Key-words**: internationalization, Science Without Borders, study abroad, university rankings

# RESUMO

O presente estudo teve como objetivo compreender a relação entre rankings de universidade e motivações por parte dos alunos para participar de programa de mobilidade acadêmica além de identificar possíveis diferenças entre os benefícios e dificuldades percebidas. Este estudo de caso sobre o programa Ciência sem Fronteiras está dividido em duas partes. A primeira apresenta um panorama do programa e como o processo de distribuição dos alunos ocorreu, enquanto a segunda mostra o resultado no qual 679 alunos responderam a um questionário sobre as suas motivações e benefícios e dificuldades percebidas durante o programa. A análise mostrou a existência de três clusters de alunos - orientados para rankings, orientados para a experiência e orientados para a aprendizagem da língua estrangeira - com diferentes motivações, níveis de proficiência em língua estrangeira e performance acadêmica antes de participar no programa. A maioria dos alunos voltados para o ranking foram alocados para instituições que fazem parte do ranking top 500 enquanto alunos voltados para a aprendizagem da língua não fizeram parte do mesmo grupo. Os três clusters também apresentam diferentes maids de benefícios percebidos, com alunos voltados para a experiência obtendo a maior média de habilidades profissionais na fase acadêmica e de estágio e alunos voltados para a aprendizagem da língua tiveram a menor média. Este último também apresentou a maior média de percepção de dificuldade em comparação aos outros grupos. Ao analisar a partir do ranking da universidade no exterior, alunos nas universidades do top 100 obtiveram as maiores médias de habilidades profissionais e as menores das dificuldades percebidas, enquanto alunos de universidades não presentes no top 500 tiveram o fenômeno oposto. Estes resultados mostram a importância do ranking no processo de tomada de decisão e como o ranking da instituição pode estar associado aos níveis de percepção de benefícios e dificuldades em programas de mobilidade. O estudo também aponta a necessidade de rever quais alunos devem participar deste tipo de programa. Por fim, uma série de barreiras no planejamento e implementação contribuiu para que falhas no processo de alocação dos alunos ocorresse, incluindo a falta de comprometimento de alguns alunos após sua participação no programa afeta as metas do País.

**Palavras-chave**: internacionalização do ensino superior, Ciência sem Fronteiras, mobilidade acadêmica, rankings de universidades.

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| | |
|---|---|
| ACCC | Association of Canadian Community Colleges |
| ACT | American College Testing |
| ATN | Australian Technological Network of Universities |
| ARWU | Academic Ranking of world Universities |
| CALDO | Calgary, Alberta, Laval, Dalhousie & Ottawa Consortium |
| CAPES | Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Brazilian Federal Agency for the Evaluation of Graduate Education) |
| CBIE | Canadian Bureau for International Education |
| CIE | Centre for International Experience |
| CNPQ | Conselho Nacional de Desenvolvimento Científico e Tecnológico (National Council for Scientific and Technological Development) |
| DAAD | Deutscher Akademischer Austauschdienst (German Academic Exchange Service |
| EWB | English Without Borders |
| Go8 | Group of Eight |
| HBCU | Historically Black Colleges and Universities |
| HEI | Higher Education Institution |
| IBC? | International Branch Campus |
| IELTS | International English Language Testing System |
| IIE | Institute of International Education |
| LWB | Languages Without Borders |
| MEC | Brazilian Ministry of Education |
| MIT | Massachussets Institute of Technology |
| NOVA | Northern Virginia Community College |
| QS | Quacquarelli Symonds |
| SAT | Scholastic Assessment Test |
| STEM | Science, technology, engineering & math |
| SWB | Science Without Borders |
| THE-TR | Times Higher Education-Thomson Reuters |
| TOEFL | Test of English as a Foreign Language |

| | |
|---|---|
| UCAS | Universities and Colleges Admissions Service |
| UCLA | University of California, Los Angeles |
| UCSD | University of California, San Diego |
| UK/U.K. | United Kingdom |
| US/U.S. | United States. |
| UUK | University UK |

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# 1 INTRODUCTION

Policymakers, institutional leaders, and scholars agree that competition among higher education institutions - (HEIs) - has increased. (HAZELKORN, 2007). As a consequence and also pushed by globalization, HEIs were forced to broaden their horizons and internationalize more actively. (ALTBACH; KNIGHT, 2007; AYOUBI; AL-HABAIBEH, 2006;). Knight (2003, p.3) affirms that "[…] internationalization is changing the world of education and globalization is changing the world of internationalization".

Having constantly received attention from HEIs worldwide, the extent of engagement varies greatly, as well as the mix of activities offered, more noticeable at the local level. (JONES et al, 2016). Scholars tend to divide these activities into two types, the first consisting of student mobility programs and the second comprised of internationalization-at-home activities, which include offering courses and seminars on international themes, joint research, events with the purpose of integrating local and international students, foreign language classes, etc. (BEELEN; JONES, 2015; SORIA; TROISI, 2013).

McLeod et al. (2015) claim that the goal of most study abroad programs is "[…] to provide students with a set of life experiences that will broaden their perspectives and expectations and have a positive impact on the way they live and think". Their duration varies from short-term to year-long programs. (STEBLETON et al., 2013). The perceived benefits will differ at the individual level, but they include improvements in: language proficiency and language skills; the development of intercultural competence, teamwork, decision-making and problem-solving skills; academic performance; and personal growth.

To understand the benefits of engaging in this experience, policymakers must also take into account how the motivations to study abroad work, comprised of motivations to participate (BEERKENS et al., 2015), choice of destination (MAZZAROL; SOUTAR, 2002) and choice of institution.(MASSEY; BURROW, 2016). However, barriers could affect one's decision to study (STROUD, 2010). Being aware of the complexities in this process will consequently allow institutions to offer the best programs that meet their students' needs.

Motivations are directly linked to satisfaction (SANCHEZ et al., 2006) and contribute to one's achievement of goals. In this study, motivations are classified under five types: cognitive, behavioral and attitudinal; academic; private life; push factors; and receiving financial support (e.g. Erasmus scholarships). These may overlap with the motivations to choose a certain destination and also share common aspects with determining which institution

to study. At the university level, students might take into consideration the institution's reputation (MAZZAROL; SOUTAR, 2002) and ranking. (GONG; HUYBERS, 2015).

In a world where higher education and academic research are vital to economic growth and national competitiveness, rankings have become a source of important information. The different stakeholders - university administrators, students, parents, government, etc. - often use rankings to inform their own decision-making processes, exposing HEIs to international comparison. (HAZELKORN, 2014).

While classification systems provide a typology or framework according to an HEI's mission and type, rankings aim to grade HEIs adopting a series of indicators and metrics which may be used as proxies for quality. (HAZELKORN, 2007). Despite the myriad of rankings, sponsored by magazines or other for-profit organizations or not, flaws in methodologies are found in all of them (ALTBACH, 2016) including not observing a region's particularities.

For instance, Latin American HEIs have made several efforts to become internationalized, through scientific production in English (which often takes place in partnership with renowned institutions) and mobility programs for students and faculty members, among other initiatives. They are perceived as being at an earlier internationalization stage due to the low recognition in the international academia (AVILA, 2007) and the scarcity of data in the region. (GACEL-AVILA; MARMOLEJO, 2016). These institutions' focus is on what Deardorff (2006) refers to internationalization outputs, i.e. indicators which highlight the number of international students on campus, the number of study abroad programs, the number of students taking foreign language courses, etc. Such indicators are used as part of the portfolio presented to students despite their short-term aspect. Since they do not present any evidence on the long-term effects, i.e., internationalization outcomes - among them the number of interculturally competent students and employability - the study of the national initiatives which include study abroad programs becomes relevant.

Even though there has been a consistent growth in the number of students engaging in study abroad programs worldwide (RUMBLEY et al., 2012), its percentage is still considered low. Hence, the need to develop national and regional mobility programs is apparent. Among the most known regional programs are the Erasmus program and the 100.000 Strong in the Americas, which offer scholarships to students to participate in study abroad programs.

Another initiative is called the Brazilian Science Mobility Program, popular referenced as Science Without Borders (SWB), created in 2011 during Dilma Rousseff's presidency, with the aim of developing Brazil's human resources and establish strategic partnerships with other nations to become more competitive in the international scenario. During its four years of

existence, it sent more than 92,000 students and researchers to "the best and most relevant" HEIs worldwide, with above 70% of them at the undergraduate level. However, placing emphasis on these students caused controversy regarding its long-term outcomes and the possibility of developing important, long-term partnerships with foreign institutions.

Thus, considering Brazil's international education scenario, the following research question must be answered: How do students' motivations and the ranking of the host institution differ in terms of perceived benefits and challenges?

## 1.1 Objectives

Thus, the main objective of this study is to understand the relationship between university rankings and students' motivations to study abroad and how they differ in terms of perceived benefits and challenges faced during the SWB. Moreover, this study aims to achieve the following secondary objectives:

a) understand the context of the program and describe the student placement process;
b) identify and describe different student profiles according to their motivations;
c) identify students' perceived benefits of the activities they engaged during the SWB;
d) identify students' perceived challenges throughout the SWB program;
e) identify other factors that may have affected students' experience in the program;
f) propose suggestions for the design and implementation for future editions of the program.

## 1.2 Justification

Firstly, this study becomes essential to policymakers interested in utilizing university rankings as a decision-making source of information to develop internationalization strategies. In the case of the Brazilian Science Mobility Program, it is worth noting that students were allocated to a great amount of institutions overseas. Therefore, understanding whether standings in the rankings impact participants' perceived benefits and challenges is crucial.

Second, although the program is currently frozen, without a time for its return at the undergraduate level, this study provides tools for program administrators, policymakers and other stakeholders to make their decisions for the implementation of a new, improved version, based on student motivations and perceived benefits. In addition, the study may contribute to the field of internationalization in Latin American institutions, given that the implementation of effective policies in the regions is still lacking.

Furthermore, Anderson and Lawton (2015) propose as a suggestion for future studies to understand whether students with different motivations to study abroad differ in terms of learning outcomes and choice of destination. This study aims to address this issue by providing a series of student profiles based upon their characteristics. It also advances on offering an overview of how these profiles are linked to perceived benefits and challenges faced throughout the program.

Lastly, Beerkens, Souto-Otero, de Wit and Huisman (2016), after investigating the drivers and barriers for participation in the Erasmus program, suggest that the field of study abroad programs may learn more from other national policies, with the goal of understanding the particularities of different programs. Since the SWB has a strong emphasis on undergraduate study, offering students from Brazil the possibility to study overseas without any financial constraints, some aspects differ greatly in comparison to other programs.

This study is structured as follows: chapter two, the literature review, presents several aspects regarding internationalization, including its definition, its benefits for institutions and nations. It later introduces a brief discussion on academic mobility programs and internationalization-at-home activities. An important section in this chapter refers to the choice to study abroad process and the perceived benefits and barriers to participate, the main focus of this study. The fourth section of this chapter concerns international university rankings and how they contribute to the decision-making process for students and policymakers. The closing section presents the current Brazilian scenario and how internationalization is linked to its development and a brief introduction to the Science Without Borders, a national mobility program created by the last government.

The third chapter will present the methodology of the study, and is divided in two phases. The qualitative phase aimed to further the knowledge of the SWB program and how the placement process occurred. It included document analysis and interviews with professionals who worked on its creation and development. The quantitative phase of the study refers to a survey given to undergraduate students who participated in the program and it assesses their

motivations, barriers and perceptions on the program contributed to the development of student outcomes.

      The fourth and fifth chapters presents the analysis of the data and provides a better understanding of all the stages of the program implementation and also its students' perceptions. The last chapter contains the discussion that summarizes the main aspects of the study in addition to the contributions and limitations of this case study as well as recommendations for future studies.

**2 LITERATURE REVIEW**

This section presents a discussion on the main themes of this thesis, which served as foundations for the development of the framework and the empirical study. The first part refers to the internationalization of higher education, a key element currently present in institutions worldwide in addition to being a demand by national governments as it contributes to a country's economic and scientific development. Among several international activities, study abroad programs are the most frequently offered in HEIs. In the study abroad section, I also introduce a discussion on motivations to study abroad, an important aspect in the development of the study, in addition to students' perceived benefits and barriers to study abroad. As an alternative to study-abroad programs, HEIs may develop a series of activities which can take place on their own campus, characterizing what is called internationalization-at-home. It becomes important to understand their role as to preparing students to study abroad.

The following section introduces the role of rankings in the internationalization process, and how all stakeholders - policymakers, students, higher education administrators, etc. - make their decisions. Current criticism of the use of rankings and methodological issues in their establishments are presented.

Lastly, the Brazilian context of internationalization of higher education closes this literature review. Its different aspects - academic production, standings in international rankings, and efforts to internationalize - are briefly discussed.

**2.1 Internationalization of Higher Education**

Globalization has provoked a shift in organizations worldwide, causing them to restructure. Higher education institutions do not differ in that sense, therefore making internationalization a key aspect (CHAN, 2004; AVILA, 2007), in which they desire to be known as international universities. (KNIGHT, 2015).

Knight (2005) lists a series of drivers which forced HEIs to change, such as the crescent focus on the knowledge society, a decline of public support for education, a rise in the number of international mobile workers and the advancement of information and communication technologies. Hudzik (2016) adds that HEI's missions and businesses are conducted across

borders and inserted in a global marketplace, and the view that customers of higher education - its stakeholders -  also live and work in this global environment.

Although that the term internationalization has been adopted by a great amount of HEIs, it may have different meanings. (KNIGHT, 2015). While for some it means having international activities, including classes with international themes, study-abroad programs, and international partnerships, for others it means having international branch campuses or face-to-face and distance classes. (KNIGHT, 2005). Therefore, the definition adopted in this study is the one provided by de Wit (2015) which refers to internationalization of higher education as:

> the intentional process of integrating an international, intercultural or global dimension into the purpose, functions and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff, and to make a meaningful contribution to society.

This definition presents important aspects: first, the intentional aspect is a major difference in comparison to Knight's (2003) definition. The international/intercultural global dimension are purposely present in the activities performed by the institution. Secondly, the delivery refers to offering courses and programs/activities at home or overseas, including the establishment of international branch campuses. In addition, it improves the quality of research and education of an institution. Lastly, it not only contributes to the university itself but also to society as a whole.

Hudzik (2011) asserts that both conceptual and operational internationalization aspects must be in a larger tent to in order to englobe all the possible dimensions, which would characterize it as *comprehensive internationalization*. The author (2011, p. 10) defines this term as:

> a commitment, confirmed through action, to infuse international and comparative perspectives throughout the teaching, research, and service missions of higher education. It shapes institutional ethos and values and touches the entire higher education enterprise. It is essential that it be embraced by institutional leadership, governance, faculty, students, and all academic service and support units. It is an institutional imperative, not just a desirable possibility.

This view is also shared by Gacel-Avila (2012), in which she stresses that such comprehensiveness should be transversal to the whole policy design, and impact all three levels:

macro (decision making and design of institutional policies), medium (curriculum structure and policy) and micro (teaching and learning process).

Internationalization became more evident in the 1990s, reflecting itself in the HEIs' mission and strategic planning, which began to include international and global themes (CORYELL et al., 2012) and promoted student and faculty mobility as well as curricula expansion with more frequency. (KNIGHT, 2015). Internationalization may also be perceived as a critical source of profits due to its direct link to social and curricular issues, quality, international prestige, national development and innovation. (RUMBLEY et al., 2012).

In addition to profits, Altbach and Knight (2007) list other HEI's rationales to internationalize: to enhance research and knowledge capacity; to increase cultural understanding on campus; to increase access to education by countries whose demand is higher than the offer; and to develop the quality and cultural composition of the student body.

It is essential to understand the connection between internationalization and quality. (KNIGHT, 2004). As internationalization becomes more important, the more institutions need to address quality assessment and quality assurance issues. (DE WIT, 2009a). Common practices such as accreditation, auditing, benchmarking, ranking and standards are among the forms in which quality assurance takes place. It not only contributes to institutions but also to developing national policies, given that the aim is to achieve international academic standards (KNIGHT, 2004).

Knight (2004) lists a series of international activities taking place in HEIs (Figure 1). Even though the author created this list twelve years ago, such activities are still current today. Internationalization activities promote a series of benefits for all the stakeholders. For students, it provides opportunities to participate in international research and study-abroad programs, develop their intercultural competence (COELEN, 2015) and increase their chances of employability. For policymakers and national leaders in education at a national level, it may help in the development of strategic alliances, human resources development, socio/cultural development, and promote economic growth and international competitiveness. (KNIGHT, 2004).

Even though there is a consensus on how essential internationalization is to maintain an institution competitive in the higher education industry, its indicators often relate it to the number of mobility programs, international students enrolled and academic activities which contain the word international in their titles. (KRAJEWSKI, 2011). However, such numbers are not enough to affirm that an institution is internationalized. (DEARDORFF, 2006). According to the Deardorff's internationalization model, one of the main outcomes which will

provide meaning to an institution's activities refers to students being interculturally competent. Internationalization strategies are essential to developing graduates' intercultural and cognitive skills required. (GACEL-AVILA; MARMOLEJO, 2016). They will also increase the relevance of innovation capacity and research quality.

Hans de Wit (2009a) points out that internationalization may be seen from different angles and there is not a singular model which explains it. Therefore, its measures will vary according to the logic, approaches and objectives of the institution, the region and country where it is located (DE WIT, 2009b) and its internationalization maturity level to ensure the quality and guarantee its international dimension. (DE WIT, 2009c).

At a national level, Knight (2005) presents a series of rationales for internationalization, such as:

a) the development of human resources - with an increasing emphasis on the knowledge economy and the growing labor force mobility, country leaders find themselves in need of developing and recruiting human resources through educational initiatives;

b) establishing strategic alliances - internationalization activities such as academic mobility and joint research may contribute to developing ties with other potential partners with the goal of having economic growth;

c) income generation - new opportunities may be created by having cross-border delivery of education. Having international students on campus is seen as profitable for a country, due to their expenses outside campus, including housing, food, tourism and others;

d) social and cultural development - despite not receiving the same level of attention as the others, promoting intercultural understanding reveals to be significant.

Table 1 - Institutional level programs for internationalization

| Type of activity | Examples |
| --- | --- |
| Academic Programs | Student exchange programs |
| | Foreign language study |
| | Internationalized curricula |
| | Area or thematic studies |
| | Work/study abroad |
| | Joint/double degree programs |
| | Cross-cultural training |
| | Faculty/staff mobility programs |
| | Visiting lecturers and scholars |
| | Links between academic programs and other strategies |

| Research and scholarly collaboration | Area and theme centers<br>Joint research projects and publications<br>International conferences and seminars<br>International research agreements<br>Research exchange programs<br>International research partners in academic and other sectors |
|---|---|
| Domestic and cross-border activities | *Domestic*<br>Community-based partnerships with NGOs or public/private sector groups<br>Community service and intercultural project work<br>Customized education and training programs for international partners and clients<br>*Cross border*<br>International development assistance projects<br>Cross-border delivery of education programs (commercial and noncommercial)<br>International linkages, partnerships, and networks<br>Contract-based and research programs and services<br>Alumni abroad programs |
| Extracurricular activities | Student clubs and associations<br>International and intercultural campus events<br>Liaison with community-based cultural and ethnic groups<br>Peer support groups and programs |

Source: Adapted from Knight (2004).

Even though some may consider income generation as an important rationale, the exact financial scope of internationalization activities is impossible to quantify. Nevertheless, the fact that education is part of a nation's industry, its impact upon the economy is meaningful. (ALTBACH; KNIGHT, 2007). In the case of the United States, more than one million international students have generated more than $32 billion to the local economy and supported more than 400.000 jobs in the past academic year. (NAFSA INTERNATIONAL STUDENT ECONOMIC VALUE TOOL, 2016).

Latin American nations started to include internationalization of higher education as part of the strategy to enhance its quality of education once a demand for the development of its human resources emerged. (AVILA, 2007). Knobel and Bernasconi (2016) refer to the potential of the region to be competitive for international talent and also to make their institutions *"more international in perspective"*. However, in comparison to Europe, The United States and Canada, internationalization is perceived as being at an earlier stage, in which institutions are still signing contracts with their partners without verifying the effectiveness of the outcomes. (AVILA, 2007). Despite the progress made since the author's claim, the region

is still characterized for having one of the lowest numbers of outgoing students, double/joint degrees, programs taught in foreign languages, students and scholars with international profile. (GACEL-AVILA, 2012). One indication of this is its low number of the universities present in world rankings. (MALDONADO-MALDONADO, 2011).

These numbers could be a result of the challenges the region faces to become more internationalized. Gacel-Avila (2012, 2014) and Gacel-Avila & Marmolejo (2016) list some of them:

a) the absence of a careful planned decision-making process;
b) a shortage of systematic information on the topic;
c) a lack of national leadership which leaves initiatives to be created and performed by institutions and individuals;
d) insufficient financial resources;
e) inflexible curriculum;
f) insufficient strategies for recruiting international students;
g) the least institutionalized and professionalized international offices;
h) institutions' staff's limited expertise and lack of proficiency in a foreign language;
i) the scarcity of data regarding internationalization.

The International Association of Universities conducts a Global Survey (EGRON-POLAK; HUDSON, 2014) every four years which provides data on advancements of higher education worldwide. The last edition, published in 2014, revealed that internationalization either remains or increases in importance for HEIs, with policies being implemented and led by those in the highest levels in the institutions. All internationalization activities have clear priorities, with most of them targeting student learning and mobility. In this scenario, it is imperative that all students have equal access to international opportunities.

The survey has also revealed some important aspects regarding Latin America and the Caribbean (11% of the 1,336 respondents). First, international rankings are one of the top three drivers for internationalization in the region, a fact which was previously ignored in the 2010 IAU survey. Language learning has become a top priority for the institutions. The top activities are: offering opportunities for students to participate in academic mobility programs, international joint research and the international content of the curriculum. The main priority partnerships are still for North American and European institutions, which shows the absence

of effective strategies to develop and enhance partnerships with other Latin American HEIs. Gacel-Avila and Marmolejo (2016, p. 144) attribute this to the "lack of confidence" in its own educational institutions or deficient organizational structures at the institutional level. Moreover, the authors suggest the focus on mobility programs instead of systematic strategies such as the curriculum and research is linked to a narrow view of international cooperation as a synonym of mobility programs.

The main risk of internationalization at the institutional level is the availability of international experiences to mostly students with financial resources, while at the national level it would be the unequal sharing of benefits of internationalization. In addition, this could be attributed to the lack of national and regional plans and programs concerning the issue. (KNOBEL; BERNASCONI, 2016). Despite the awareness of their weaknesses, the region still struggles to implement crucial reforms to solve issues such as access, equity, quality and relevance in higher education. (GACEL-AVILA; MARMOLEJO, 2016). Thus, new programs and political strategies must be planned and executed in the long term so as to overcome the growing focus on student and faculty mobility, which does not characterize as the transformative potential of comprehensive internationalization. (GACEL-AVILA, 2012; GACEL-AVILA; MARMOLEJO, 2016).

## 2.2 Study Abroad

As the number of student enrollment in postsecondary institutions increases, the amount of internationally mobile students follows the same trend. In 2013, 4.1 million students went abroad to pursue their studies, representing 1.8% of the total enrollment in HEIs. (UNESCO INSTITUTE FOR STATISTICS, n.d.). The latest edition of the Open Doors report (INSTITUTE OF INTERNATIONAL EDUCATION, 2016) revealed that the United States received 1,043,839 students, an increase of 7.1% in comparison to the previous year. While the country is the leader in hosting international students, it only sent 313,415 students to study overseas, with more than 50% in European HEIs. According to the same report, 1 in 10 U.S. students engages in study abroad activities before graduating.

China has been consistently the country which most sends students overseas. The Blue Book Report indicates that 523,700 students traveled abroad to study in 2015 (62.7% in the United States), an 11.1% increase. (ICEF, 2016). However, this growth is slowing, and this could be attributed to the increasing capacity of its own educational system, which includes the

establishment of international branch campuses in the country and investments on its quality education.

  With academic mobility being the most common activity offered by HEIs worldwide, it is worth distinguishing the terms study abroad program and exchange program, given that the focus of this thesis is on the first. Study abroad programs are unilateral, i.e. there is no need of reciprocity between the institution that sends students and the hosting one, with higher cost for the student. (MASSEY; BURROW, 2012). Academic exchange, on the other hand, requires a bilateral relation between institutions, which reduces the total cost. (BARNICK, 2006).

  The number of students in study abroad programs is often used as an indicator of institutional quality (STROUD, 2010), and policymakers develop strategies to attract international students to their university campuses. Increasing the number of students studying abroad has become a paramount policy goal among nations and regions (BEERKENS et al., 2015) caused by the economic, geopolitical and environmental globalization challenges, therefore demanding students to engage in international experiences. (SALISBURY et al., 2009). When developing study abroad programs and policies, university administrators and policymakers must consider students' motivations and barriers to study overseas as well as its benefits. (BEERKENS et al., 2015; SALISBURY et al., 2009).

2.2.1 Motivations to Study Abroad

In order to understand how students choose to study abroad, it is important to highlight the complexity to make a decision. However, for the decision to take place, the student needs to be motivated at the point of making such decision. In this paper, I will classify motivations into the three dimensions presented here: motivation/intent, choice of destination, and choice of institution (Fig. 1). Nevertheless, students may also face a series of barriers in all three dimensions.

Figure 1 - Motivations to study abroad
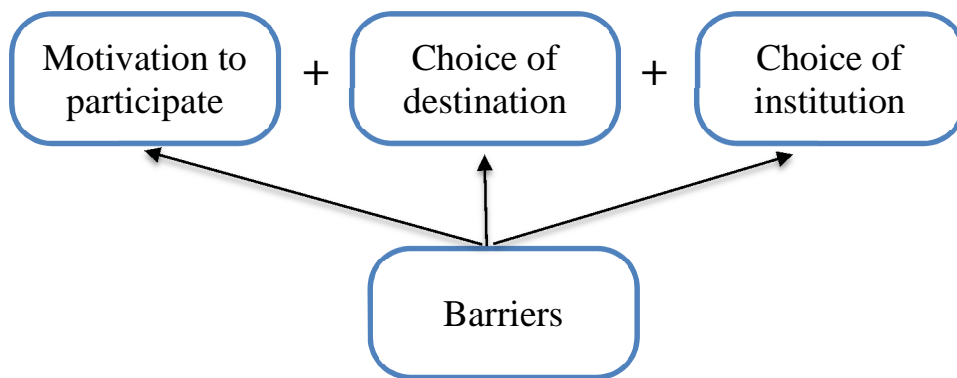


Source: Elaborated by the author.

The first dimension refers to the motivation of studying abroad an aspect that has been researched in depth recently. (LUO; JAMIESON-DRAKE, 2014). Sanchez et al. (2006) assert that motivations are the drivers to obtain satisfaction from a class of stimuli. Therefore understanding these motivations which shape students' decisions becomes imperative. (ANDERSON; LAWTON, 2015).

Students' motivations to study or intern abroad may vary and they can be classified in different ways. Krzaklewska (2008) classifies motivations into two dimensions, with the first consisting of experiential motivations, which could be personal or cultural, and the second comprised of career and academic motivations. Table 2 describes six studies which adopted scales to measure student motivation to study overseas.

Table 2 - Studies on motivations to study abroad

| Authors | Motivations |
|---|---|
| Mazzarol & Soutar (2002) | Overseas better than local<br>Course not available at home<br>Intention to migrate<br>Difficulty to gain entry at home<br>Better understanding of West |
| Sanchez, Fornerino & Zhang (2006) | Search for a new experience<br>Improve a professional situation<br>Improve social situation<br>Search for liberty/pleasure<br>Learn other languages |
| Nyaupayne, Paris & Teye (2011) | International experience<br>Escape<br>Academic reasons<br>Social |
| Li, Olson & Frieze (2013) | Neophilia (seeking for novelty)<br>Migration<br>Achievement |
| Anderson & Lawton (2015) | World environment<br>Entertainment<br>Personal growth<br>Career development |
| Beerkens et al. (2015) | Intercultural competence<br>Good match between home and foreign institution<br>Career perspectives<br>Erasmus grant<br>Administrative support |

Source: Elaborated by the author.

Considering that one of the objectives of this study relates to motivations to participate in the SWB program, the description of the main ones presented in the studies above must be discussed here. I classify these motivations into five groups (Table 3). The first group and the most researched is called *development of skills and competencies* and is comprised of cultural,

linguistic and career-related motivations. The student seeks to interact with people from different cultures, learn a new language and/or professional skills, such as working in teams or as a leader. The second group consists of *academic motivations*. In this scenario, the student engages in this experience with the purpose of learning specific aspects from the institutions, such as taking new classes with different methodologies and techniques. Those pursuing graduate study search  for institutions which offer the best programs in their field.

*Private life* is the third group. Students engage in a study abroad experience as a journey of self-discovery. In this scenario they may also take an advantage from the entertainment opportunities that are offered in this experience, such as travel and visit new locations, go out drinking and shopping. *Push factors* refers to students seeking to leave home and escape, or given the scenario, look for a better life. Those seeking migration choose universities which will provide them with such benefit. For instance, one of the criteria of the Express Entry point system - Canada's immigration point system - refers to obtaining a degree or having previously lived in the country, and their educational institutions have invested heavily in strategies to attract foreigners to study. The number of international students there has increased more than 80% from 2003 to 2013. (ICEF, 2015). Lastly, other students may participate in mobility programs because a scholarship or grant is being offered to study overseas. Having the financial support proved to be essential for students without the financial ability to participate in the Erasmus program. (BEERKENS et al., 2015).

After the student feels motivated and demonstrates intent, the following step is to choose the country where to study. The student may take advantage of different sources to make such a decision which include word-of-mouth, internet and, university representatives, among others. Some of the reasons to engage in study abroad experiences overlap with reasons to choose the destination such as migration (LI, OLSON; FRIEZE, 2013) and learning a new language/developing language skills. (BODYCOTT, 2009).

The third dimension involves the choice of the host institution. With a variety of options, students take into account different factors when determining the college or university to study. Massey and Burrow (2016) found that students choose an institution based on more than one factor. Table 4 presents a list of reasons for choosing the host institution.

| Group | Motivations | Explanation |
|---|---|---|
| Development of skills and competencies | Learn and/or develop language skills | Studying overseas allows the student to interact with individuals from the destination and apply learned language skills (CUBILLOS & ILVENTO, 2012). The study of Sanchez et al. (2006) revealed a positive relationship between the motivation to learn a new language and intent to study abroad. |
| | Intercultural competence | With the goal of being able to interact effectively with individuals of different cultures, universities have devoted efforts to develop this competence. (SORIA; TROISI, 2013). Byram's (1997) is the most agreed definition (DEARDORFF, 2006) and it is summarized as follows: "Knowledge of others; knowledge of self; skills to interpret and relate; skills to discover and/or to interact; valuing others' values, beliefs and behaviors; and relativizing one's self. Linguistic competence plays a key role"(p. 34). It is manifested at an individual level when interacting with others. (SPITZBERG; CHANGNON, 2009). Perceived as a complex process, its development requires multiple encounters among individuals. (STIER, 2006). |
| | Professional skills | Engaging in study abroad programs allows students to develop other professional skills such as adaptability, leadership and proactivity. (BEERKENS et al., 2015). These skills, among with language skills and intercultural competence contribute to one's employability. (POTTS, 2015). Brandenburg et al. (2016) concluded that 30% of the employers even mention that they hire candidates with such experience. Ripmeester (2016) found in her study that international study experiences may not be considered a prerequisite, but an advantage. |
| Academic life | Academic purposes | When studying abroad, students are able to attend classes and earn academic credit. (NYAUPAYNE; PARIS; TEYE, 2011). These institutions may be considered as good quality ones and and provide students with the opportunity to experience difference learning practices and teaching methods. (BEERKENS et al., 2015). |
| Private life | Personal growth | The study of Anderson and Lawton (2015) revealed that students may engage in these experiences with the goal of becoming more independent, increase their self-confidence and better understand themselves. |
| | Entertainment | Study abroad has often been the motive for students to visit new places and have new experiences. The study of Anderson and Lawton (2015) also shows that U.S. students frequently choose destinations based on the fact that the legal drinking age is lower in the host country. |
| Pull factors | Escape Migration | In this scenario, students may engage in international experiences with the goal of leaving the country and being away from family and social and legal responsibilities. (NYAUPAYNE; PARIS; TEYE, 2011). Depending on the country's situation, a student may take advantage of the opportunity to participate in this program with the intent of migrating (Li, Olson & Frieze, 2013). |
| Having a sponsor | Receiving a grant | The study of Beerkens et al. (2015) focused on finding out differences and similarities in terms of drivers and barriers to participate in the Erasmus program in seven countries. For students with limited resources, having the financial support provided by the program proved to be crucial for students to apply for the program. |

Table 3 - Groups of motivations to study abroad
Source: Elaborated by the author.

Table 4 - Reasons to choose a host institution

| Reasons | Explanations |
|---------|--------------|
| Academic reputation (MAZZAROL; SOUTAR, 2002) (MASSEY; BURROW, 2016) | Students may look for the best institution in their field and that are known for being of good quality. |
| Standing in the rankings (CHOI; NIEMINEN, 2013) (GONG; HUYBERS, 2015) | The experiment of Gong and Hubers (2015) revealed that Chinese students assign larger values of university rankings than to other factors. |
| Academic Programs (BEERKENS et al., 2015) (MASSEY; BURROW, 2016) | For those that are motivated by academic purposes, they tend to look for a "good match" between the home and host institutions (Beerkens et al., 2015). |
| Partnerships (MAZZAROL; SOUTAR, 2002) | Saffu and Mamman (1999) define strategic alliances as: the collaborative relationship between a local university and an overseas counterpart, which may be public or private, encompassing agreements to co-operate in joint activities such as the development of onshore or offshore offerings, teaching, research and consultancy, technology and, marketing new or existing courses to a new market. (p.281). In this scenario, students choose a university which has a partnership with his/her home institution to study overseas. |
| Location (MASSEY; BURROW, 2016) | Location plays an important part but the influencing factors for the choice are complex. |
| Considerable numbers of international students (MAZZAROL; SOUTAR, 2002) | Students may be looking for diversity in the study abroad institution in order to feel more welcome and/or interact with people from different origins. |
| Alumni references (Mazzarol & Soutar, 2002) (MASSEY; BURROW, 2016) | Massey and Burrow (2016) refer to students as getting advice on where to choose the destination based on alumni opinions, which facilitates the process once they do not tend to know the institution. |
| Easy of university entrance (GONG; HUYBERS, 2015) | Students may choose a destination based on the low requirements for admission, e.g. proficiency exams such as the TOEFL or IELTS (Gong & Huybers, 2015). |

Source: Elaborated by the author.

However, barriers may affect one's decision to study abroad, and they can occur in any of the dimensions (motivation to study, choice of destination and choice of institution). For instance, the lack of proficiency in a foreign language may cause the student to give up on the idea of studying abroad or choose a different destination/institution based on its language requirements. Thus, it is worth listing the barriers for students` to participate in mobility

programs, including lack of confidence with one's level of proficiency in a foreign language (BEERKENS et al., 2015); leave the country, global issues, such as terrorism, war and the environment (KNIGHT, 2005); and fear of suffering racism and/or discrimination in another country. (SAWIR et al., 2012). Certain students' majors and professional programs - such as engineering, medicine, nursing and occupational therapy - are also negatively related to one's plan to study abroad due to differences in how these areas are structured in higher education (STROUD, 2010). However, the high costs to participate are the most frequently mentioned by several scholars (Table 5).

Table 5 - Barriers to engage in study abroad experiences

| Barrier | Authors |
| --- | --- |
| Lack of interest | Beerkens et al. (2015) |
| Lack of proficiency | Sawir et al. (2012); Foster (2014); Beerkens et al. (2015); Lorz et al (2016) |
| Financial reasons | Shaftel, Shaftel, and Ahluwalia, 2007; Salisbury et al. (2009); Brux and Fry (2010); Simon and Ainsworth (2012); Massey and Burrow (2012); Foster (2014); Beerkens et al. (2015); Lorz et al (2016) |
| Academic scheduling/ disruption of studies/ inability to transfer credits | Shaftel, Shaftel, and Ahluwalia (2007); Brux and Fry (2010); Stroud (2010); Beerkens et al. (2015) |
| Family/home responsibilities | Brux and Fry (2010); Stroud (2010); Foster (2014); Beerkens et al. (2015) |
| Alternative expectations | Beerkens et al. (2015) |
| Lack of institutional support | Brux and Fry (2010); Simon and Ainsworth (2012) |
| Work responsibilities | Brux and Fry (2010) |
| Cultural capital | Simon and Ainsworth (2012) |
| No desired program | Brux and Fry (2010); Stroud (2010) |
| Low socio-economic status | Salisbury et al. (2009) |
| Climate and Food | Foster (2014) |
| Safety concerns | Brux and Fry (2010); Knight (2005) |
| Being part of a non-academic family | Salisbury et al. (2009); Lorz et al (2016) |
| Being a minority | Sawir et al. (2012); Simon and Ainsworth (2012); |

Source: Elaborated by the author.

Even though there is a sparse body of literature on motivation to study abroad (ANDERSON; LAWTON, 2015), most research focuses on the North American and European population. The study of Zhuang, King and Carnes (2015) demonstrated that beliefs, perceived value and behavioral intentions vary according to Chinese, French and U.S. students. Hence, one of the goals of this study is to contribute to the literature on the Latin American region, which presents unique characteristics regarding its internationalization process.

2.2.2 The Benefits of Study Abroad Programs

Study abroad programs are considered high-impact educational activities, which requires student engagement and an intentional strategy to develop a series of global competencies and awareness among postsecondary students. (STEBLETON et al., 2013). These international experiences positively affect student behaviors and go beyond the individual level, contributing to the broader society (MURPHY et al., 2014). However, the perceived benefits may vary after engaging in such activity.

Several studies have analyzed the impact of study abroad programs. Table 6 lists the outcomes of the experience. The most common outcome refers to language proficiency. Intercultural competence is frequently studied in international higher education papers and is often considered one of the main outcomes of the internationalization process. (DEARDORFF, 2006; STIER, 2006). Developing such competence, however, has not been proved to have occurred in a few studies. Root and Ngampornichai (2012) conclude that students developed their cognitive, affective and behavioral skills but not necessarily increased their intercultural competence levels. Even though it may increase students' contact with students from diverse cultures, no effect on growth may be perceived, which would not make this experience as transformative. (SALISBURY et al., 2013). In order to be more successful, institutions should provide adequate pre-departure orientation and activities prior to the study-abroad experience (STEBLETON et al., 2013) and also have a sense of how it makes them understand their own background in comparison to what they had just participated.

In addition to the perceived gains, few studies have investigated how program duration impacts on outcome development. Dwyer (2004) compares students who studied overseas and identified that students who spent a full year had considerable gains, such as intercultural competence, engaging in international work/volunteerism and personal growth. Rowan-Kenyon and Niehaus (2011) analyzed the benefits of a weeklong study-abroad program. Among

their findings, they highlight that students who engaged in subsequent activities after the experience perceived to have more gains in comparison to others who did not.

Table 6 - Outcomes after students participate in study-abroad programs

| Outcome | Study |
|---|---|
| Language Proficiency/ Communication Skills | Ingraham and Peterson (2003), Williams (2005), Cubillos and Ilvento (2012), Root and Ngampornchai (2013), Stebleton, Soria and Cherney (2013), Watson and Wolfel (2013), Jochum (2014), Luo and Jamieson-Drake (2014) |
| Intercultural Competence Development | Stebleton, Soria and Cherney (2013), Watson and Wolfel (2013), Heinzmann et al. (2015), |
| Cultural Awareness/Global issues Awareness | Ingraham and Peterson (2003), Root and Ngampornchai (2013), Custer (2014), Luo and Jamieson-Drake (2014) |
| Ability to Work with Other People | Stebleton, Soria and Cherney (2013), Custer (2014), Potts (2015) |
| Improvement in Academic performance | Ingraham and Peterson (2003), Luo and Jamieson-Drake (2014) |
| Development of Decision-making/ Problem-solving and Analytical Skills | Root and Ngampornchai (2013), Potts (2015) |
| Personal Growth | Ingraham and Peterson (2003); Root and Ngampornchai (2013), Custer (2014) |
| Better Living Skills (cooking, using public transport, etc.) | Root and Ngampornchai (2013) |
| Self-esteem and Locus of Control | McLeod et al. (2015) |

Source: Elaborated by the author.

Altbach and Knight (2007) assert that mobility programs contribute to compounding existing inequalities, which benefits well-developed education systems and institutions. Therefore, in order to facilitate and increase student participation in mobility programs, national and regional countries have been implemented. For instance, the Erasmus Program, an initiative created and financed by the European Commission in 1987, has already engaged more than three million students from more than 4,000 HEIs. The requirements to participate are clear: the student must be enrolled at an institution awarded with the Erasmus Charter for Higher Education and it must have a previous agreement with the host institution. Students from the European Union may receive scholarships but are still required to contribute to part of their

funding. All students, whether or not they receive a scholarship, are exempt from paying tuition, registration, and university fees.

Individual nations have also implemented initiatives regarding academic mobility. President Barack Obama created the *100,000 Strong in the Americas* with the aim of underscoring the critical relationship between broader educational opportunity and greater regional prosperity. The program has aimed to send 100,000 students from the United States to Western Hemisphere and host the same number of students from the region.

The popularity of academic mobility programs has increased in the past decades, and Rumbley (2015) suggests that it will continue to grow in the future. At an institutional level, having international students and faculty contributes to campus diversity (KNIGHT, 2005) but does not necessarily mean that such institution is internationalized. (DE WIT, 2011). It is also worth mentioning that, opposite to student mobility, internationalization-at-home activities are open to all students, not being a privilege only of those who could afford a study abroad experience (BEELEN; JONES, 2015) and may still offer opportunities for students to develop their intercultural competence. (JONES, 2016).

Despite institutions and countries' dominant focus on academic mobility, de Wit and Hunter (2014) mention the importance of internationalization at home initiatives. Beelen and Jones' (2015, p. 69) define internationalization at home as "the purposeful integration of international and intercultural dimensions into the formal and informal curriculum for all students within domestic learning environments".

The formal and informal curriculum is an important aspect of this definition. Soria and Troisi (2013) corroborate to this, mentioning that international experiences which are integrated into the curriculum may contribute to students' development of their intercultural competence. In this context, they are exposed to students from diverse cultures, explore contents of global interests, enhance their knowledge and situate themselves in a larger environment. Jones (2016) criticizes that HEIs may fail when they do not offer opportunities to develop such competence. Adding few theoretical courses may not contribute either. (BRUSTEIN, 2007). In regard to the informal curriculum, Beelen and Jones (2015) also refer to the possibilities outside the home campus, such as opportunities to work in cultural, ethnic and religious groups, and engage in activities with international students.

Soria and Troisi (2013) found that students participating in co-curricular activities with global/international themes, interacting with international students and enrolling in global/international coursework perceived greater benefits than study-abroad in terms of developing global, international and intercultural competencies. International students may be

seen as a cultural resource for developing intercultural competence, but the study of Urban and Palmer (2011) reveals that they are not engaged as they would have liked to be, demonstrating the need for universities to develop strategies to engage their students in different activities to explore such exchange.

Even though the focus of this study is on student mobility, once the student arrives at a foreign institution he/she will engage in activities on campus, develop friendships and become an asset for home students to interact and learn more about the culture. In addition, students can participate in activities in their own campus prior to start their study abroad experience, including pre-departure orientation programs. Hence, understanding the concept of internationalization at home becomes relevant.

## 2.3 University Rankings

Although university rankings have existed in the U.S. scenario for decades, their popularity and interest around the world became more apparent in the late 1990s. (HAZELKORN, 2008). They have significantly impacted individual institutions and national educational systems. (ORDORIKA; LLOYD, 2013). Because international rankings have greater penetration and significance, individual nations have also developed their own rankings. (HAZELKORN, 2008).

University rankings have become essential in the decision-making process for stakeholders at all levels. Consumers, either students or those close to them, may utilize them as a valuable tool to make decisions on where to study. Highly-qualified applicants could regard "top-tier" institutions more strongly than institutions in lower rankings. (BOWMAN; BASTEDO, 2009). The best institutions, in their opinion, provide better options during their studies in addition to higher employability rates. (ALTBACH, 2015).

Universities might also compare themselves with other universities in the home country and overseas since rankings have reached a level of "public legitimacy and aura of credibility". (ALTBACH, 2015). In the competitive world of higher education, they contribute to HEIs' legitimation (ORDORIKA AND LLOYD, 2013), prestige, strategies concerning student and faculty recruitment among other investments (ALTBACH, 2015) and serve as a source of information to establish partnerships. (HAZELKORN, 2008). Hazelkorn (2007, p. 90) describes how rankings can be utilized as "proxies" for quality:

information on the student cohort is often used or interpreted as an indicator of institutional selectivity; the number of citations and publications in internationally-rated journals is used as an indicator of academic quality; the financial spend denotes the quality of infrastructure; employment record and patterns indicate the quality of graduates; while reputation is measured by an aggregate of its overall status and standing.

Bastedo and Bowman (2010) found that the U.S. News and World Report College Rankings, commonly used by students wishing to apply for U.S. institutions, have a significant impact on future peer assessments. Rankings could also impact faculty morale. (HAZELKORN, 2008). The author presents evidence that good rankings are associated with *"pride and honor"* and on academic behavior, while poor rankings may disappoint the staff.

For governments and policymakers, rankings are important sources of information on where to invest resources (BORNMANN, 2014; ALTBACH, 2015), providing the knowledge required for economic growth. (HAZELKORN, 2014). In emerging countries, including Brazil, Russia, India and China, the gains obtained by research are the greatest. As a consequence of the Chinese government's investments, the nation has already included more universities in the rankings. (HAZELKORN, 2014).

However, the use of rankings raises several concerns. First, it highlights the fact that English is the international language of the academic world, a detrimental aspect in publication (LIU et al., 2005; ORDORIKA; LLOYD, 2013), which benefits institutions from the United States, Canada and Europe, excluding institutions from other regions whose scholars do not communicate in English. Citation counts improve American universities' chances of being higher in the rankings since American researchers tend to cite other American authors (ALTBACH, 2015) and scholars from other countries, in order to be able to publish in more renowned journals, will also cite American and British authors. Van Raan (2005, p.134) criticizes the use of journal citations as a source of scientific knowledge in certain fields such as the social sciences and humanities:

> For instance, journal articles are not in all fields the main carrier of scientific knowledge; they are not 'equivalent' elements in the scientific process, they differ widely in importance; and they are challenged as the gold standard by new types of publication behavior, particular electronic publishing.

Third, rankings do not usually include scores for teaching quality. (ALTBACH, 2015). Fourth, the stress on the hard sciences over humanities is also troublesome. Because medical

and engineering schools often receive more funding in comparison with other disciplines, institutions with a focus on the humanities may not position themselves high in the rankings. Fifth, Bowman and Bastedo (2011) refer to reputation assessments scores as being troublesome. They maintain the status quo, making it difficult for significant changes in the ranking unless the contrary is proved, which adds to Hazelkorn's (2014) argument that they are based on personal and/or professional experiences, compromising their credibility. Lastly, commercial rankings may favor institutions which hire their services with the promise of improving their standings (ORDORIKA; LLOYD, 2013).

The following section presents the two most reliable rankings - The Academic Ranking of World Universities and The Times Higher Education/ World University Rankings - (ALTBACH, 2016), with a brief review of their history, criteria and bring some important data on the results of the latest editions. These rankings were adopted in the framework for their specific contributions - research and internationalization - and are often consulted by policymakers worldwide.

2.3.1 The Academic Ranking of World Universities

Using research and internationally comparable data (LIU; CHENG, 2005), the Institute of Higher Education at Shanghai Jiao Tong University in China published their first edition of the Academic Ranking of World Universities in 2003, with the initial aim of discovering the gap between Chinese institutions and "world-class" universities (LIU et al., 2005).

According to its website, "ARWU considers every university that has any Nobel Laureates, Fields Medalists, Highly Cited Researchers, or papers published in Nature or Science.". Hence, those institutions without any field prize winners or specialized in other fields other than STEM and biological areas are at a disadvantage. The ranking also includes institutions with a significant amount of publications indexed by Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI).

The ranking, with 60% of its criteria based solely on scientometrics (LIU et al., 2005), measures education quality by the number of alumni who have received Nobel Prizes and Field Medals. The top institution in each indicator receives a score of 100, followed by the remaining on the list which will receive a percentage of that score. The criteria, indicators, and corresponding weights are shown in Table 7. It is worth noting that the number of highly-scored researchers comes from Thomson Reuters index and for those institutions with a focus on the

humanities and social sciences, the score for papers in nature and science is not considered, and its weight is relocated to the other indicators.

Hazelkorn (2014, p.15) claims that ARWU "marked the era of global rankings" and "the gold standard". Other authors, however, express a series of concerns. Despite the clarity in the criteria, the ranking may be considered limited due to its extensive focus on research, offering an incomplete perspective. (ALTBACH, 2016). Van Raan (2005, p. 139) adds to that, claiming that the Shanghai Group considers all types of papers in its bibliometric analysis. An example that illustrates this issue comes from reviews. The fact that they are not necessarily "original scientific work" and only a presentation of state-of-the-art research and therefore should not be considered. Another piece of criticism refers to the emphasis on the award indicator. Van Raan (2005, p.42) poses an important question: "*What does having educated a Nobel Prize Winner at a bachelor's level have to do with the quality of institution in today's ranking?*".

Table 8 shows the distribution of the top 500 universities in each region in the last ranking (2016) in comparison to its first version in 2003. One must notice a shift in the figures, which highlights a significant increase of Asian institutions, from 74 in 2003 to 102 in the present. There has also been an addition of ten institutions from Australia and New Zealand. On the other hand, a marked decline in the number of institutions from the United States, Canada and Europe, which in the beginning comprised 400 and currently have 357 institutions in the rankings.

Table 7 - ARWU'S criteria and their respective indicators

| Criteria | Indicator | Code | Weight |
|---|---|---|---|
| Quality of Education | Alumni of an institution winning Nobel Prizes and Fields Medals | Alumni | 10% |
| Quality of Faculty | Staff of an institution winning Nobel Prizes and Fields Medals | Award | 20% |
| | Highly cited researchers in 21 broad subject categories | HiCi | 20% |
| Research Output | Papers published in Nature and Science* | N&S | 20% |
| | Papers indexed in Science Citation Index-expanded and Social Science Citation Index | PUB | 20% |
| Per Capita Performance | Per capita academic performance of an institution | PCP | 10% |

Total                                                                     100%

Source: ARWU's website (2016).

Table 8 - Top 500 institutions per continent in 2016 and 2003

| Region | Top 100 | 101-200 | 201-300 | 301- 400 | 401- 500 | Total in 2016 | Total in 2003 |
|---|---|---|---|---|---|---|---|
| United States and Canada | 53 | 24 | 34 | 24 | 21 | 156 | 193 |
| Europe | 30 | 51 | 39 | 36 | 45 | 201 | 207 |
| Asia | 10 | 19 | 20 | 25 | 28 | 102 | 74 |
| Africa | -- | -- | 2 | -- | 3 | 5 | 4 |
| Latin America | -- | 3 | -- | 4 | 2 | 9 | 7 |
| Australia and New Zealand | 6 | 3 | 6 | 10 | 2 | 27 | 17 |
| | | | | | | 500 | 502 |

Adapted from ARWU's website 2016 and Liu et al. (2005).

2.3.2 The Times Higher Education World University Rankings

After the split with Quacquarelli Symonds (QS) in 2009, the Times Higher Education group partnered with Thomson Reuters to create a new ranking system based on a set of criteria which also consisted of research indicators in addition to teaching, knowledge transfer and international outlook, the four core missions of world-class universities.

To be part of the rankings, universities must teach undergraduate students, and have at least 1,000 articles published from 2011 to 2015 (and at least 150 a year). In case the university devotes at least 80% of their activities to one of their subject areas they may also be excluded from the ranking. Its methodology uses thirteen performance indicators to assess the four core missions with universities' institutional data being released for use by THE-TR. If certain data is not provided, the average of the other indicators provides a low estimation (25th percentile) and this score is used instead. The indicators and corresponding weights are described in Table 9.

A few differences must be noticed in comparison to the ARWU rankings. First, the inclusion of teaching criteria is comprised of a reputation survey, three ratios (student-to-staff ratio, doctorate-to-bachelor's ratio, and doctorates-awarded-to-academic-staff ratio) and institutional income. The latter would indicate the institution's general status and provide important information on infrastructure and facilities available. (TIMES HIGHER EDUCATION, 2016B).

The second criteria consist of research indicators. Concerning research activity, which refers to the number of papers published in academic journals has changed its methodology in the past year. In addition to journal articles, more than half-million books and book chapters have been included as part of the research activity indicator, which would favor the arts, humanities and social sciences according to one of the editors. (BOTHWELL, 2016a). All the publications are in Elsevier's Scopus database, and more than half of the books and chapters come from the areas previously mentioned. These criteria also include the university's reputation among its peers and the income provided to research.

The third criteria refer to the number of citations from the 23,000 academic journals indexed by Elsevier's Scopus database and all indexed publications between 2011 and 2015. Moreover, the citations to these publications in the 2011-2016 period are also included. The presence of the citation criteria is justified (TIMES HIGHER EDUCATION, 2016B):

> The citations help to show us how much each university is contributing to the sum of human knowledge: they tell us whose research has stood out, has been picked up and built on by other scholars and, most importantly, has been shared around the global scholarly community to expand the boundaries of our understanding, irrespective of discipline.

Table 9 - THE-TR World University Rankings' criteria and indicators

| Criteria | Indicator | Weight | Total |
|---|---|---|---|
| Teaching (the learning environment) | Reputation survey | 15% | 30% |
| | Student to staff ratio | 4.5% | |
| | Doctorate-to-bachelor's ratio | 2.25% | |
| | Doctorates-awarded to academic staff ratio | 6% | |
| | Institutional income | 2.25% | |
| Research | Reputation survey | 18% | 30% |

| (volume, income and reputation) | Research income | 6% | |
| | Research activity | 6% | |
| Citations | Number of citations | 30% | 30% |
| International outlook | International-to-domestic student ratio | 2.5% | 7.5% |
| | International-to-domestic staff ratio | 2.5% | |
| | International collaboration | 2.5% | |
| Industry income | Knowledge transfer | 2.5% | 2.5% |

Source: Times Higher Education's website.

The fourth criteria include scores for international students and faculty, which increases the importance of investing in internationalization strategies (JONS; HOYLER, 2013). However, that only accounts for 5% of the total. Lastly, the industry income criteria, which consist of a knowledge transfer indicator, refers to how much research income an institution earned from industry, demonstrating businesses' willingness-to-pay to obtain innovation, inventions, and consultancy.

This ranking system has been criticized by several authors. As opposed to the ARWU rankings, the THE-TR has changed its approach and methodology multiple times. (HAZELKORN, 2014). In regard to research income, the THE-TR mentions that this topic is subject to discussion, considering that such indicator depends on national policies and economic circumstances. (TIMES HIGHER EDUCATION, 2016B). However, they justify its inclusion because income is essential to the "development of world-class research". As previously mentioned by Altbach (2015), the number of citations favors publications published in English and in well-known journals.

Hazelkorn (2014) also criticizes the use of reputation indicators, since it considers respondents' perceptions on universities they know or must choose from a list based on their own experience, "prone to being subjective, self-referential and self-perpetuating". Coelen (2009) criticizes the use of the indicator for international students since their amount varies according to the field of study, and harm non-English teaching universities which already attract fewer international students due to a possible language barrier. Bowman and Bastedo (2011) observed an anchoring effect on the assessment of institutional reputation, in which peers may

have had their judgment influenced in subsequent surveys. The authors conclude that reputation scores may add insignificant value to university ranking systems, maintaining the status quo. Nevertheless, if such scores were removed, changes would benefit recently founded universities in comparison to traditional ones.

Both ARWU and THE-TR rankings share some similar aspects (Table 10). First, the predominance of institutions from the United States and the United Kingdom in the top 20 is noticeable. While the ARWU ranking has 15 U.S. and 3 UK institutions, the THE-TR rankings include 15 from the United States and 4 from the United Kingdom. The Swiss Federal Institute of Technology Zurich (Switzerland) is present in both, but with some disparity caused by the criteria adopted in each ranking system (9th place in the THE-TR and being in the top 10 for a decade while it is only ranked 19th in the ARWU rankings). This also caused the number one institution to differ significantly in each ranking since Harvard leads the ARWU rankings but it is only top 6 in the THE-TR ones, and the University of Oxford leading in the latter but only occupying the 7th position in the ARWU rankings.

Table 10 - Top 20 institutions in the ARWU and THE-TR rankings

| Rank | ARWU Rankings | THE-TR Rankings |
|---|---|---|
| 1 | Harvard University (US) | University of Oxford (UK) |
| 2 | Stanford University (US) | California Institute of Technology (US) |
| 3 | University of California, Berkeley (US) | Stanford University (US) |
| 4 | University of Cambridge (UK) | University of Cambridge (UK) |
| 5 | Massachussets Institute of Technology (US) | Massachussets Institute of Technology (US) |
| 6 | Princeton University (US) | Harvard University (US) |
| 7 | University of Oxford (UK) | Princeton University (US) |
| 8 | California Institute of Technology (US) | The Imperial College of Science, Technology and Medicine (UK) |
| 9 | Columbia University (US) | Swiss Federal Institute of Technology Zurich (Switzerland) |
| 10 | University of Chicago (US) | University of California, Berkeley (US) |
| 11 | Yale University (US) | University of Chicago (US) |
| 12 | University of California, Los Angeles (US) | Yale University (US) |
| 13 | Cornell University (US) | University of Pennsylvania (US) |
| 14 | University of California, San Diego (US) | University of California, Los Angeles (US) |

| 15 | University of Washington (US) | University College London (UK) |
|----|-------------------------------|-------------------------------|
| 16 | Johns Hopkins University (US) | Columbia University (US) |
| 17 | University College London (UK) | Johns Hopkins University (US) |
| 18 | University of Pennsylvania (US) | Duke University (US) |
| 19 | Swiss Federal Institute of Technology Zurich (Switzerland) | Cornell University (US) |
| 20 | University of Tokyo (Japan) | Northwestern University (US) |

Source: Elaborated by the student based on both rankings.
Note: Underlined institutions are only present in one of the rankings in the top 20.

It is worth noting some important changes in this year's THE-TR rankings. The University of Oxford has become the first UK institution to top the ranking since its first edition twelve years ago, taking over California Institute of Technology's place after five years being the leader. Oxford's rise to the top is attributed to an improvement in all four main indicators, an increase in the institution's research income, its publications have become more influential and strategies to attract more international talent. (BOTHWELL, 2016a). In addition, the presence of Asian institutions must be highlighted, such as the National University of Singapore at 24th, Peking University at 29th, and Tsinghua University at 35th.

The presence of Latin American institutions is still low in league tables despite their impact on the continent. Whereas the ARWU rankings includes nine universities (six from Brazil; Argentina, Chile and Mexico with one each), the THE-TR rankings only contain five - two Brazilian (University of Sao Paulo and University of Campinas), two from Chile (Federico Santa María Technical University and University of Chile) and the National Autonomous University of Mexico. This could be attributed to low funding for research (ORDORIKA; LLOYD, 2013) and the constant publication in academic journals whose official language is Portuguese and Spanish.

The latest edition of the THE-TR Latin American ranking (BOTHWELL, 2016b) is also controversial. Due to adaptations in the criteria to be in accordance with the region's characteristics, some of the universities in the top 10 do not appear in the same order as they are in the world rankings (Table 11). For example, the Monterrey Institute of Technology and Higher Education, which ranks at number 8 in the Latin American rank, the National Autonomous University of Mexico (number 9) and the University of the Andes (number 10) are part of the 501-600 world university rank. On the other hand, the Federal University of

Minas Gerais, which is part of 601-800 group, is above, placed at number 7 in the Latin American rank.

Another aspect refers to the number of publications in the Scopus database, criteria which account for 30% of THE-TR rankings. It is possible to notice that some of the institutions with the highest numbers are not well-ranked, such as the National Autonomous University of Mexico, top 2 with more than 21,000 publications and currently occupying the number 9 spot in the Latin American Ranking. São Paulo State University with almost 20,000 and the Federal University of Rio Grande do Sul (almost 16,000) did not make the top 10.

Leaders from several Latin American universities participated in a UNESCO meeting in 2011, where they positioned themselves against the rankings. Among their reasons is the lack of clarity concerning the criteria adopted in the rankings, the limited number of indicators and the undesirable effect of the rankings by the media which consequently forces institutions to alter their practices in order to follow such logic. (IESALC, 2011). This logic actually works against what had been included in international declarations on higher education by UNESCO in 1998. (ORDORIKA; LLOYD, 2013). These authors also highlight the fact that the areas in which Latin American institutions excel - concerning humanistic and societal missions - are definitely absent from the criteria adopted in rankings.

Table 11 - Top 10 Latin American institutions in the THE-TR rankings

| 2016 LA Rank | 2016 World University Rank | Institution | Country | Number of publication in the Scopus database in all subjects and its rank in LA |
|---|---|---|---|---|
| 1 | 251-300 | University of São Paulo | Brazil | Above 54,000 (1) |
| 2 | 401-500 | State University of Campinas | Brazil | Above 18,000 (4) |
| 3 | 401-500 | Pontifical Catholic University of Chile | Chile | Above 7,000 (12) |
| 4 | 501-600 | University of Chile | Chile | Above 9,000 (9) |
| 5 | 601-800 | Federal University of Rio de Janeiro | Brazil | Above 16,000 (5) |
| 6 | 601-800 | Pontifical Catholic University of Rio de Janeiro | Brazil | Above 2,000 (29) |
| 7 | 601-800 | Federal University of Minas Gerais | Brazil | Above 12,000 (7) |
| 8 | 501-600 | Monterrey Institute of Technology and Higher Ed. | Mexico | Above 1,000 (37) |
| 9 | 501-600 | National Autonomous University of Mexico | Mexico | Above 21,000 (2) |

| 10 | 501-600 | University of the Andes | Colombia | Above 2,000 (32) |

Source: Adapted from Bothwell (2016b).

## 2.4 Where does Brazil fit in all of this?

After presenting an overview of what internationalization is, its components and how rankings contribute to the decision-making process, it is important to understand some aspects regarding internationalization of higher education in Brazil, which has expanded since the beginning of the 1990s, but far away from completed. (LAUS; MOROSINI, 2009). Lucchesi (2011) describes two different models, the first involving private institutions, through agreements, fusions, and takeovers, and the second has active Ministry of Education's projects with the aim of encouraging student and faculty mobility among Latin American countries and other developing ones. The level of internationalization will depend upon the institution and whether activities are part of its roots and strategies. (LAUS; MOROSINI, 2009). The authors also propose that in some it may still be nonexistent or at an embryonal phase.

Some of the actions developed by the Ministry of Education (MEC), along with *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (Brazilian Federal Agency for the Evaluation of Graduate Education - CAPES) and the *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (National Council for Scientific and Technological Development - CNPQ) have been in existence for more than two decades, with graduate student mobility being one of them mainly as a result of academic cooperation between Brazilian and foreign institutions. (LAUS; MOROSINI, 2009). Another initiative refers to the rating system of graduate programs - master and doctorate ones - in which those with the highest scores (6 and 7) are considered as performing in the same level as international institutions. (COMISSÃO DE APERFEIÇOAMENTO DE PESSOAL DE NÍVEL SUPERIOR, 2015a). Among the criteria to reach these levels is the number of publications in international journals with high impact factors.

The country has historically occupied an inferior position in comparison to more developed ones and struggled to maintain symmetrical partnerships in higher education, demonstrating a weakness of the system. The study of Canto and Hannah (2001) concluded that the partnership between the Brazilian federal agency responsible for funding higher education

and the British Council, despite facilitating academic mobility between members of both nations, still had uneven requirements. While Brazilian students needed proficiency in the English language to study or research in the UK, British ones did not need to know Portuguese. Furthermore, researchers would come to Brazil to study, not to be actual partners, which illustrates Brazil's subordination. Guazzelli, Raymundo, Varjabedian, and Akerman (2015) identified that private institutions occupy an inferior position in comparison to more developed countries, in which they must subject themselves to the decisions of transnational corporations. The solution for these institutions would be to look for international partners willing to establish symmetrical knowledge exchange.

Other initiatives reveal the country's interest in establishing ties with partners in developing regions. UNILA, the Federal University of Latin America Integration has students from Brazil, Paraguay, and Argentina. UNILAB, the University of Integration of Lusophone African- Brazilian promotes the integration of the country with countries in Africa whose official language is Portuguese (Angola, Cape Verde, Guinea-Bissau, Mozambique, Sao Tome and Principe, in addition to East Timor). Both institutions were created with the aim of establishing cooperation among southern countries (South-South) with scientific, cultural, social and environmental dimensions. (MENEGHEL; AMARAL, 2016).

The absence of an expressive amount of empirical studies on internationalization in Brazil in international journals may be linked to the lack of effective policies regarding the issue. Another explanation is the majority of publications written in Portuguese, therefore not establishing a dialogue with other international researchers.

The study of Morosini (2011) contributes towards an understanding of Brazil's scientific production, which mainly takes place at the graduate level. Two levels of international cooperation are presented: the horizontal international cooperation at an earlier stage, in which more fragile partners collaborated to strengthen their own scientific capacity, and the current traditional international cooperation one, based on competitiveness and conquering space in a globalized world.

Luce, Fagundes and Mediel (2016) analyzed international students' quality perceptions of one of the most "internationalized" universities in the country (still at an earlier phase if compared to European ones). Even though there is interest from both local and international students to learn from each other, some barriers, including few opportunities to learn Portuguese and to have meaningful intercultural interactions, point to internationalization-at-home issues.

Because of investments in developing partnerships with foreign HEIs, Brazilian universities have been able to attract international students to study. According to the Ministry

of Foreign Affairs, the number of visas given to international students more than doubled in the last eight years, going from 5,770 to 12,547. (CRESCE…, 2015). Among some of the reasons for this increase are currency devaluation, the possibility of establishing business or partnerships with Brazilian companies (CRESCE…, 2015), the fact that the country hosted the World Cup in 2014, the Olympic Games in 2016, and sightseeing in the different parts of the country. (BRASIL…, 2015). It is estimated that international students spent $151 million in 2014, a 147% increase in comparison to 2005. (GASTO…, 2015).

Concerning university rankings, Brazil is the Latin American country with the highest number of universities in the ARWU list, with a total of six institutions. University of São Paulo has gone from the 152-200 group to the 101-150 one and Paulista State University also improved their position in the rankings, leaving the 401-500 group to the 301-400 one. University of Campinas and the Federal University of Rio de Janeiro, however, are currently in lower standings in comparison to the first ranking. Furthermore, Brazil is one of the few countries which had more universities appearing in the ARWU rankings since its beginning. The Federal University of Minas Gerais entered in the rankings in 2007 and is currently in the 301-400 standings. The Federal University of Rio Grande do Sul appeared first in 2008 and is currently in the 401-500 group.

In the THE-TR ranking the situation changes. The country only has two institutions in the top 500, and their ranks have declined in the latest edition. University of Sao Paulo was in the 201-250 group and is currently in the 251-300, while University of Campinas which was in the 351-400 rank is now in the 401-500 group. This could be attributed to two possible explanations (BOTHWELL, 2016b): first, a lower investment in education caused by the oil crisis, which also affects other oil-rich countries such as Mexico and Chile; second, the culture around higher education, due to inheriting the Spanish and Portuguese Napoleonic model of education, oriented to training professionals and government-funded. On a positive note, in the Latin America rank, the situation is considered positive as Brazil currently has 23 universities in the top 50.

The last President, Dilma Rousseff created along with the Ministry of Education and the Ministry of Innovation and Technology, the Science Without Borders program, in which students would be sent to the best universities overseas to do part of their studies. Motivated by developing the workforce's scientific and professional knowledge and also establishing partnerships with key economic players including the United States, the program sent more than 100,000 students to higher education institutions worldwide. However, as an astonishing number of students did not have enough proficiency in the English language, the program

decided to offer participants the opportunity to study English at a foreign institution before the academic phase (IDIOMA…, 2013), and also created the English Without Borders[1] program, with the aim of developing students' proficiency in the language in Brazil prior to studying abroad. This program now has been extended to more foreign languages and it is called Languages Without Borders.

The framework (Figure 2) presents an overview of what has been discussed in this literature review. With study abroad being one of the main internationalization activities, it is important to understand the motivations and reasons to study abroad and how the choice of destination and institution works (and how they overlap each other) as well as the barriers interfering in this process and the outcomes of participating in this experience. Lastly, the role of rankings as a source of information for students on where to study and for policymakers when establishing their internationalization activities, and in this specific case, making their choices of which institutions to send students.

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[1] Information from MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO - MCTI; MINISTÉRIO DA EDUCAÇÃO - MEC. Inglês sem Fronteiras. Available at: http://www.cienciasemfronteiras.gov.br/web/csf/ingles-sem-fronteiras. Retrieved on: September 2, 2016.

**Rankings as Sources of Information**
Altbach (2015, 2016), Hazelkorn (2007, 2008)
Ordorika and Lloyd (2013)

**Motivations to Study Abroad**

**Motivations to participate**
Nyaupayne, Paris and Teye (2011)
Anderson & Lawton (2015)
Sanchez et al. (2006)

**+**

**Choice of Destination**
Li, Olson and Frieze (2013)
Bodycott (2009)
Nyaupayne, Paris and Teye (2011)
Mazzarol and Soutar (2002)

**Choice of Institution**
Beerkens et al. (2015)
Mazzarol and Soutar (2002)
Massey & Burrow (2016)
Gong and huybers (2015)

**Barriers**
Foster (2014), Brux and Fry (2010),
Sawir et al. (2012),
Salisbury et al. (2009), Stroud (2010)

**Study Abroad Experience**
Beerkens et al. (2015), Massey and Burrow
(2016), Mazzarol and Soutar (2002)

**Perceived Benefits**
Ingraham and Peterson (2003) Williams (2005)
Cubillos and Ilvento (2012) Root and
Ngampornchai (2013) Stebleton, Soria and
Cherney (2013)

Figure 2 - Framework for this study

Source: Elaborated by the author.

## 3 METHODOLOGY

With the following research question in mind - *How do students' motivations and the ranking of the host institution differ in terms of perceived benefits and challenges?* - the most appropriate approach to develop the present study was a case study. Yin (2010) suggests that case studies be preferred when:

a) examining contemporary events in which behaviors may not be manipulated;
b) the limits between the phenomenon and the context are not clearly evident;
c) researchers have access to a variety of evidence materials and research methods;
d) the investigation benefits from previous studies which will guide the data collection and analysis phases;
e) the case is representative or typical.

In this approach, the researcher may use more than one method to collect data and provide triangulation and increase validity. (YIN, 2010). Therefore, the investigation is comprised of the combination of document analysis regarding the program, interviews with senior managers involved in the planning and implementation of the program and a survey with students who obtained the grant. This study aims to statistically generalize the results concerning student motivations to participate in a specific study abroad program in addition and perceived benefits and challenges of engaging in such experience.

The SWB as a whole is the main unit of analysis because of the unique characteristics it possesses in terms of goals, the expressive amount of undergraduate students and hosting institutions that participated during the five years the program existed as well as the structure developed to allocate students. Since the last edition of the program (undergraduate level) finished in 2016 with the last group of students returning to the country, the findings may provide important insights on the development of the program and two of the actors' perceptions - students and the national agencies - will contribute to further understand its complexities.

Table 12 - Sources of data

| Phase | Goal | Source of data |
| --- | --- | --- |

| | | |
|---|---|---|
| | Understand the program's motivations and goals | Governmental documents<br><br>Interviews |
| Qualitative: emphasis on the program | Understand how the program is structured in regards to student selection and allocation | Calls for applications<br><br>Program's institutional website - *Bolsistas pelo Mundo* and *Painel de Controle*<br><br>Interviews<br><br>Students' Lattes CVs |
| | Identify advancements in terms of managerial aspects in regards to the program | Studies (MA thesis and journal articles)<br><br>Interviews |
| Quantitative: emphasis on the student | Identify students' motivations to participate in the program and how they chose their destination and institution | Survey |
| | Identify students' perceived benefits of participating in the program | |
| | Create students' profiles according to their motivations, benefits, type of institution and demographics | |

Source: Elaborated by the author.

## 3.1 The Exploratory Phase

This phase had the following goals: to understand the context in which the program occurred and how it was designed and implemented in terms of student selection and allocation; also, it aimed to identify the foreign institutions which hosted SWB students, and the Brazilian HEIs which send the most students. To achieve this goals, I performed two types of data collection methods: document analysis and interviews.

3.1.1 Document analysis

In order to familiarize myself with the program and understand the rationales and results, I collected and analyzed a series of institutional documents and studies pertaining to the program, which include:

a) governmental documents describing the program, program objectives and structure;

b) calls for student applications with the goal of identifying the minimum requirements;

c) studies written by other researchers (MA thesis and journal articles);

d) program's institutional websites which describing the origin and destination of the students and their corresponding field of study;

e) students' Lattes CVs.

This phase also aimed to find essential information regarding international university rankings and two rankings were consulted: ARWU World University Rankings 2016 and THE-TR World University Rankings 2016. The idea was to have a list of the top 500 institutions in each ranking. All the data was compiled into two spreadsheets, listing the SWB hosting institutions present on each ranking.

These also included a series of studies performed since the SWB's foundation in order to identify other aspects which could impact students' motivations and perceived benefits of the program. When searching for the keywords "Ciência sem Fronteiras" or "Science Without Borders" on *EbscoHost*, *Google Scholar* and *Plataforma Capes*, only the following papers described in Table 13 appeared. It is worth noting that part of these studies are MA theses, and only a few journals were published in scientific journals with the highest level in the Qualis list - the index which classifies Brazilian and international journals according to the field and impact factor to evaluate graduate programs - being B2, the fourth highest level.

Document (d) required special attention and must be described in depth due to the richness in the data obtained and because of the inconsistencies in how they are displayed and the absence of important information. First, in order to allow the public to know some of the results of the program, the Ministry of Education created two special pages linked to the SWB.

The first, called *Painel de Controle[2],* reports important numbers regarding the origin of the students and their home HEIs in Brazil.

The second, called *Bolsistas Pelo Mundo[3],* shows all the universities in a world map and lists all the students who received the scholarships studied and also included their corresponding period of study, level of study, home institution in Brazil and field of study according to the areas required to participate in the program. Since the focus of this study is on undergraduate students, I have only observed this population.

With the aim of identifying how many students were sent to the top 500 institutions in both rankings, I followed a determined procedure on the website comprised of six steps as indicated below.

1. selecting the option to only view undergraduate students;
2. selecting each of the 27 countries in which students were sent the corresponding institutions;
3. with the use of the spreadsheet, searching for the institutions that were in the ARWU and THE-TR rankings;
4. for each institution that was in the ranking (e.g. Harvard University), locating the number of students (Figure XX) and transferred to the spreadsheet. In the end of this step I found the total number of students which were in the top 500 institutions in each ranking system;
5. for the students studying at the top 20 universities in the rankings (1-20), copying the following information: name of the student; name of the university in Brazil; name of the priority area of study; period in which the student participated in the program;
6. most students had a link to their Lattes CV and I could also find information on their major/program of study and whether they had updated it during or after they finished the program. It would reveal whether they mentioned the program in the CV as well as any journal article published.

Table 13 - Studies on the SWB

| Study | Type | Topic and method | Findings/comments |
|---|---|---|---|
| | | | |

| Silva and Neto (2012) | Paper | Interviewed representatives from agencies which partnered with CAPES and also authorities who worked in the management of the program to understand how the programs which existed previously could contribute to a better management of the SWB. | Cooperation programs provide institutional and personal relationships that impact positively on undergraduate programs. They also contribute to the development of qualified personnel and research centers of excellence. No significant results regarding the demand of economic development. |
|---|---|---|---|
| Judd (2014) | MAT | Through interviews with actors involved in the design and implementation of the SWB, the author aims to verify whether the program is a demonstration of a Development Network State (DNS) model in Brazil. | The author concludes that the program is more similar to the current Developmental Bureaucratic State (DBS). The SWB did not establish strong partnerships with the private sector and the short amount of time between planning and implementation in addition to the amount of students contributed for a less effective program. |
| Spears (2014) | Paper | Provides a conceptual analysis of the program from a critical economic policy perspective at the national, international and global levels. | Program should provide special attention to the areas which did not receive any scholarships, such as the social sciences, arts and the humanities. It must also be able to demonstrate to its population a return on the investment not only from an economic perspective but also in terms of increasing undergraduate students' employability chances. |
| Borges (2015) | MAT | With the use of a survey, the author identified the SWB students' profile according to race, gender and social class and how these are linked to their English language proficiency. | In spite of the program's initiative to reduce inequalities, the program revealed that most students are caucasian, male and from upper class families. It also reflected the fact that English language teaching in Brazil is inadequate. |
| Grieco (2015) | MAT | Through interviews with SwB students at University of Toronto, she identified the potential benefits of participating in the program. | Structural issues due to insufficient planning prevented all participants from benefiting equally. Those who started their studies with an English course perceived more benefits. Better collaboration between key players is required. |
| Archanjo (2016) | Paper | The author aimed to identify challenges faced using a survey with students who participated in the program. | The main challenge would be the lack of foreign language proficiency. |
| Iosif et al. (2016) | Paper | Through document analysis, the authors discuss the relationship between Brazil and Canada under the light of the SWB. | Despite being seen as an important initiative that promotes integration between both countries, the internationalization model adopted does not fully contribute to achieve the desired goals. |

| Rivas & Mullet (2016) | Paper | Authors present a discussion on how globalization and localization affect internationalization of science and analyze SWB's institutional trajectory. | The geographic diversification of grants contribute to a lack of training for global skills, with language proficiency being the main challenge. Students would not have developed strong skills to develop professional and institutional partnerships. |
|---|---|---|---|
| Sarmento, Thiago & Andreotti (2016) | Paper | The authors analyzed SwB students' Lattes CVs after completing their program in Canada. Lattes CVs should mention participation in the program and therefore be considered a measure of the program's accountability. | 522 students' CV lattes were divided in three levels of disposition towards updating their Lattes CV: low, medium and high disposition. 31.42% of the students showed low disposition, i.e., did not update their CV after finishing the program. 58.04% had high disposition, and 44 of them went on to pursue graduate study. |

(to be continued)

Source: Elaborated by the author.

Step 4 became challenging mainly because the name of the university in the SWB website, the ARWU's and THE-TR's website often differs. The name in these websites could also be different from the institution' own name in its native language. Therefore, it was required to find the official name of the university in order to be able to find it in the *Bolsistas pelo Mundo* website. Here are some examples:

a) Universities in Italy containing the expression *degli studi*, including *University of Florence* (Universita degli Studi di Firenze) and *University of Padua* (Universita degli Studi di Padova);

b) Universities in France did not necessarily present the name in the same order, e.g. *Paul Sabatier University* (Toulouse 3) (Universite Toulouse III Paul Sabatier);

c) Universities in Germany present the names of people, such as *Heidelberg University* (Ruprecht-Karls-Universitat Heidelberg), *University of Erlangen-Nuremberg* (Friedrich-Alexander-Universitat-Erlangen-Nurnberg).

Universities may also present abbreviated names (LIU; CHENG, 2005) such as the RWTH Aachen University, which is short for *Rheinisch-Westfälische Technische Hochschule Aachen*. Other institutions were considered by the SwB website as having two different campuses, while the ranking only presents one, eg. *University of Montpellier* (University Montpellier 1 and University of Montpellier 2 Sciences et Techniques). Some public universities from the United States were considered by the SwB website as being part of a

system, including the *University of Minnesota - Twin Cities*, (*University of Minnesota System*) and the *University of Madison - Wisconsin* being referenced as (*University of Madison System*). One entry in the SwB website had misspelling issues and was included twice, eg. the *University of Western Australia* and the *universitywestern Australia*. The *City College of New York* is actually called *City University of New York City College*. The SwB sent students to four of their campuses, but only one contains the corresponding address in the *Bolsistas pelo Mundo* map and therefore being the only one considered in the study.

Figure 3 - Step 4 of the Identification Process.



Source: Adapted from SWB´s Institutional Website.

After compiling all the numbers, the results obtained in this stage were analyzed and revealed patterns as well as inconsistencies which needed further explanation. Among these patterns and inconsistencies four must be highlighted:

a) A low portion of the total attending the top 25 institutions overseas;

b) A predominance of students from certain Brazilian institutions attending the highest ranked universities;

c) A low number of students who updated their Lattes CVs after finishing their program;

d) Students who appeared in certain institutions from the top 25 did not do their undergraduate studies in these places. Their Lattes CVs (of those who

updated it) showed that they were attending these institutions at a masters' level, which meant that they received a second SWB scholarship.

Figure 4 - Step 5 of the Identification Process
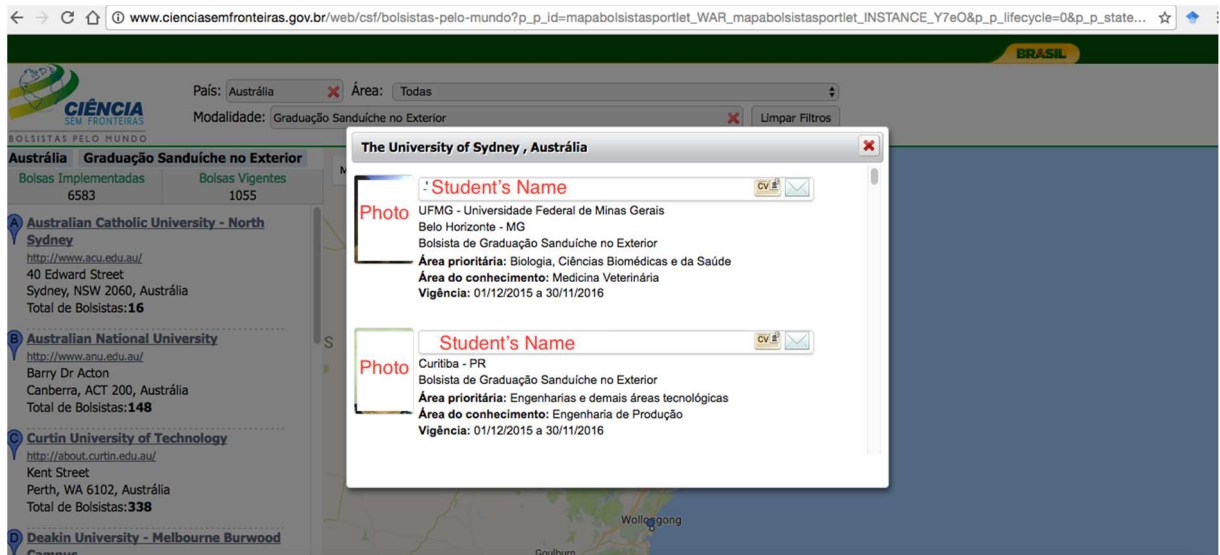


Source: Adapted from SWB´s Institutional Website.

## 3.1.2 Interviews

With the goal of understanding the context and the allocation process, I performed two interviews with coordinators from CNPq (E1) and CAPES (E2) involved in the planning and implementation of the program who answered the questions and also manifested interest in the study. The interviews occurred online through Skype and followed a semi-structured set of questions (Appendix A) which contained questions related to the program's design, implementation as well as the outcomes of the program. These questions were created upon the readings made for the literature review and data analysis. The total duration was 82 minutes and 36 seconds. The interviews were then transcribed. Because of issues in the audio quality of the Skype call, only parts of E2 could be transcribed. I analyzed their contents comparing them to what had been found in the document analysis phase. The most important aspects were highlighted and are discussed in the data analysis section.

## 3.2 The Descriptive Phase

This phase aimed to identify students' motivations to participate in the program, their reasons to choose the country and host institution and the perceived benefits of participating in the program. Thus, based on the studies mentioned on the literature review and the documents and interviews performed in the exploratory phase, I designed a survey (Appendix B) which was sent to the undergraduate students who participated in the program.

The survey consists of six sections which refer to the objectives of this study. It is a reflection of what has been found in the literature of motivations to study abroad, motivations to choose a destination and host institutions and lastly the perceived benefits and barriers of engaging in this experience. In this study, I will use the word challenges instead of barriers, due to the fact that the studies that refer to barriers often consider them as being prior to participation. (SALISBURY et al., 2009; STROUD, 2010). In this study, they are seen as issues prior and during the students' experience. Table 14 presents these sections and the sources/studies that served as references. Section 5 was a request made by one of the interviewees since CAPES and CNPq are interested in understanding the impact of the program on the student academic journey and whether he/she was able to transfer credits to his/her home institution.

The instrument was first created in a Microsoft Word document and then sent to three specialists (two experts in the field of internationalization of higher education and who have knowledge of the SWB and one statistician) to be validated. I modified certain aspects such as wording and the structure of the questions based on their suggestions. The following step consisted of transferring it to the Survey Monkey platform. For students who did not participate in the internship stage of the program and/or English language studies, the set of questions regarding those topics would not be shown and they would skip to the following set of questions.

Table 14 - Survey sections

| Section | Topic | Type of question | Studies | Source from the qualitative phase |
|---------|-------|------------------|---------|-----------------------------------|

| 1 | Motivations to study abroad | Ranking in terms of importance | Mazzarol and Soutar (2002)<br>Sanchez et al. (2006)<br>Nyaupayne, Paris and Teye (2011)<br>Cubillos and Ilvento (2012)<br>Li, Olson and Frieze (2013)<br>Anderson & Lawton (2015)<br>Beerkens et al. (2015) | Institutional websites |
|---|---|---|---|---|
| 2 | Choice of destination and institution | Ranking in terms of importance | Mazzarol and Soutar (2002)<br>Bodycott (2009)<br>Nyaupayne, Paris and Teye (2011)<br>Choi and Nieminen (2013)<br>Li, Olson and Frieze (2013)<br>Gong and Huybers (2015) | Interviews<br><br>Institutional websites |
| 3 | Perceived benefits | Likert scale | Ingraham and Peterson (2003)<br>Williams (2005)<br>Cubillos and Ilvento (2012)<br>Root and Ngampornchai (2013)<br>Stebleton, Soria and Cherney (2013)<br>Watson and Wolfel (2013)<br>Jochum (2014)<br>Luo and Jamieson-Drake (2014) | Interviews<br>Institutional websites<br>Governmental documents<br><br>Grieco (2015) |
| 4 | Challenges | Likert scale | Shaftel, Shaftel and Ahluwalia (2007)<br>Brux and Fry (2010)<br>Stroud (2010)<br>Sawir et al. (2012)<br>Simon and Ainsworth (2012)<br>Foster (2014)<br>Beerkens et al. (2015)<br>Lorz et al. (2016)<br>Massey & Burrow (2016) | Interviews<br><br>Judd (2014)<br>Grieco (2015)<br>Archanjo (2016) |
| 5 | Credit transfer | Open-ended questions (insert a numeric value) | Shaftel, Shaftel and Ahluwalia (2007)<br>Stroud (2010)<br>Beerkens et al. (2015) | Interviews<br><br>Grieco (2015) |
| 6 | Demographics and academics | Multiple choice, open-ended questions | All of the above | Institutional websites<br>Borges (2015)<br>Interview |

Source: Elaborated by the author.

To reach the students who studied in the top 20 institutions individually (and selected institutions in the top 500 and others which were not present), I sent an email through the

*Bolsistas pelo Mundo* website to 4,054 students. In addition to sending to all students in the top 20 institutions, students who were hosted by top 100, top 200, top 300, top 400, top 500 institutions and non-ranked institutions also received the email. The website only allows people to send five emails a day per email account, therefore I had to create multiple email accounts to send a higher amount daily for a period of two months. Initially, E2 declared that CAPES and CNPq would be interested in sending out the survey to all students, which would facilitate the process of sending emails, but CAPES did not confirm it. Therefore, I removed section 5 because it was not the focus of this study.

Next, I performed a series of analyses and tests using SPSS to discover different aspects of the population, which include their motivations to participate in the program as well as motivations to choose the country and institution and how these are related to their perceived benefits and challenges. These are the following analyses:

a) descriptive analysis to find out student demographics and academic information, such as priority area, year in which they began the program, ENEM score, host country, etc. Students' host institutions were then grouped according to their ranking - Top 20, Top 100, Top 200, Top 300, Top 400, Top 500 and Not Present. For the top 20, both ARWU and THE-TR rankings were considered, and for all the other groups I selected the ARWU rankings only due to its focus on research metrics. Students' testing proficiency levels were also grouped and respected the guidelines in Appendix C. The Common European Framework of Reference for Languages (CEFR) establishes six different levels of proficiency (FIGUERAS; NORTH, 2009; VERHELST; VAN AVERMAET; TAKALA) and the following exams - Test of English as a Foreign Language (TOEFL) and the International English Language Testing System (IELTS) - respect these levels but adopt scores. With the goal of increasing the number of applicants, MEC offered the TOEFL iTP, a version of the exam which only tests reception skills - listening and reading - in addition to grammar and vocabulary sections, leaving behind the production skills (speaking and writing) present on the TOEFL iBT. Students who went to Spain and Germany took proficiency tests which already classify them according to their CEFR level;

b) cluster Analysis to discover how students' motivations to participate in the program and choice of host country and institution are related to academic aspects. These contributed to establishing student profiles for posterior testing. Because students' motivations and students' academic aspects differ among themselves, this method

allows the researcher to perform a series of analyses utilizing different variables to form a cluster variate. Thus, it represents a mathematical representation of the selected set of variables which compares  similarities among objects. (HAIR; BLACK; BABIN; ANDERSON;  TATHAM, 2009). This process became essential due to the amount of students who answered the survey. The following variables were selected: 1) students' main motivation to participate in the SWB; 2) students' main reason to choose the host destination (country); 3) students' main reason to choose the institution; 4) students' foreign language proficiency according to the CEFR; and 5) the host institution's rank.

c) factorial Analysis of the perceived benefits of the academic phase and the internship (separately) in addition to the challenges students could have faced during their program. This analysis serves to identify the structure of the relationships among a large number of variables that are highly interrelated (HAIR et al., 2009). This was important to reduce the number of variables to factors, and as suggested by Dancey and Reidy (2006), the number of participants must be at least comprised of 100 members and also five times larger than the number of variables (in this study it is comprised of 2 sets of 14 perceived benefits and 1 set of 16 challenges);

d) since the cluster analysis revealed the existence of three clusters (explained in the following chapter), I performed an Analysis of Variance - ANOVA - to identify significant differences regarding the factors obtained in the previous phase. I also performed ANOVA considering only a few selected demographic variables, such as students' ENEM and proficiency exams scores.

After performing these analyses, I will describe the profiles of the three clusters according to their characteristics and present the results the analysis in chapter 5. I also present a comparative analysis of the perceived benefits and challenges of participating in the program. The results contribute to an understanding of the population and how policy makers can design and implement a program which meets their interests and the program's goals.

# 4 THE PROGRAM

The Brazilian Science Mobility Program, also called Science Without Borders, is perceived as "the largest effort by the Brazilian Government to raise the profile and capacity of universities and students within the international scientific community". (RIVAS; MULLET, 2016). With countries such as China and India sending thousands of students abroad, the program would prove Brazil's economic and political power in the international scenario by being a stronger commercial partner of the United States and standing in a favorable position for foreign capital investments and bilateral innovation in the science and engineering fields. (SILVA, 2012; SPEARS, 2014).

The program, created after a meeting between Presidents Barack Obama and Dilma Rousseff after his visit to Brazil (JUDD, 2014), was officially released in December 2011 by the Minister of Education, Aloizio Mercadante. Its main goal was to "promote the consolidation and expansion of science, technology and innovation in Brazil by means of international exchange and mobility". To achieve this, the program envisioned a series of goals[4] which include:

      a) increase the presence of students, scientists and industry personnel from Brazil in international institutions of excellence, negotiating the existence of support from the private sector for the payment of the fees involved or the exemption of these fees with universities or local governments

      b) encourage young talents and highly qualified researchers from abroad to work with local investigators in joint projects, contributing to the capacitation of human resources and promoting the return of Brazilian scientists working overseas;

      c) induce the internationalization of universities and research centers in Brazil by encouraging the establishment of international partnerships and a meaningful review of their internal procedures in order to make the interaction with foreign partners feasible.

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[4] Available at: <http://www.cienciasemfronteiras.gov.br/web/csf-eng/goals>. Retrieved on: September 1, 2016.

The program represents an expansion of the idea that mobility programs mean intercultural exchange and language learning (SPEARS, 2014). Furthermore, Silva (2012, p. 23) further characterizes the program creation as an "inflection process in the evolution of international academic cooperation and internationalization of higher education", which is also an effort to raise the profile and capacities of Brazilian students and HEIs within academia (RIVAS; MULLET, 2016). As for the latter, the program would also be an initiative to tackle important issues, as mentioned by Judd (2014): the lack of effective actions to foster student interaction with other countries/cultures; lack of foreign language proficiency; low patent registration rates; and low international cooperation in Brazilian publications. Other motivations include a low rate of Ph.D. holders relative to population and to enhance the interaction between academia and both the business sector and civil society[5].

To do so, MEC established 17 priority knowledge areas, taking into consideration the deficiency in the number of professionals needed. For instance, engineering students represent only 4% of the total enrollment in Brazilian HEIs (CIÊNCIA…, 2015). Since STEM and basic sciences were considered to be Brazilian society's future development constraints, investments on the creation of a program of this magnitude became a necessity (KNOBEL, 2011). The priorities reflect national interests and the demand to become a neoliberal global nation (SPEARS, 2014).

The program had the goal to send 101,000 students, with 75,000 being sponsored by the government and the remaining 26,000 by the private sector. Such number was already criticized by Knobel (2011) claiming that "nobody understands how this magic goal was set" as it poses a challenge to find enough qualified students with the minimum language requirements and capable to study abroad at top universities. According to one coordinator (E2), this number was set based on the meeting between both presidents when Obama mentioned the 100,000 Strong in the Americas program.

The program offered the following types of scholarships to study abroad:

a) full scholarships (64,000) to undergraduate students (bachelor's and technological courses) from the STEM areas enrolled in Brazilian universities who had concluded at least 20% of their credits and at most 90%. Their duration varied from 9 to 13 months, and could include a foreign language course (for those with lower foreign

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[5] MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO - MCTI; MINISTÉRIO DA EDUCAÇÃO - MEC. (n.d.d). Motivation. Available at: <http://www.cienciasemfronteiras.gov.br/web/csf-eng/motivation>. Retrieved on: September 2, 2016.

language proficiency levels) and a professional internship in foreign institutions or a research assistantships at the same institution or a different one;

b) scholarships to doctoral students also from the STEM areas studying in Brazilian HEIs to do their sandwich program (15,000) which could last from three to twelve months;

c) full Ph.D. scholarships (4,500) in foreign institutions for a maximum of 60 months (if renewed);

d) post-doctorate scholarships (6,440) in foreign institutions for a maximum of 24 months (if renewed);

e) grants (7,060) for internships and courses for professionals for a maximum of 12 months;

f) full master of science scholarships at universities in the United States in STEM programs (created after the implementation).

CAPES has offered programs for graduate and faculty mobility for more than 60 years (JUDD, 2014), but one important aspect of the SWB refers to sending undergraduate students, being the first of its kind and magnitude. (ARCHANJO, 2016). Here, the main difference between undergraduate study mobility and doctorate mobility is that in the latter the student had the opportunity to choose the university he/she would be attending. Students at the undergraduate level, despite mentioning in their application where they would like to study in the country, could still be placed at a different HEI for their study abroad experience in case there were no vacancies available at the desired institution.

Furthermore, the program offered two types of grants for foreigners, with the first being called *Special Visiting Researcher* (2,000 scholarships), for those with international experience to develop research for periods which could last at most 90 days. The researcher would have to return to his country and then could come back in the following year and continue the research for the same period. SWB also offered the Young Talents program (2,000 scholarships) for researchers to develop projects which could have a duration of at most three years in the STEM areas.

To achieve such goals at the undergraduate level, the program, managed by CAPES and CNPq, released more than a hundred calls for applications to 27 different countries. Each country had at least one institution responsible for assisting with developing partnerships with host universities and providing assistance to university officers as well as students once they were admitted. Table 15 shows the top 5 host countries in terms of scholarships provided, the

number of admitted students and calls for applications and the corresponding partner institutions. These five destinations hosted more than half of the students who participated in the program.

|  | Partner institutions | Calls for applications | Applicants | Scholarships provided |
|---|---|---|---|---|
| United States | IIE, NOVA, HBCU | 9 | 86,908 | 22,776 |
| United Kingdom | UUK | 5 | 24,805 | 8,725 |
| Canada | CALDO, CBIE, ACCC, CIC | 13 | 15,162 | 5,365 |
| Australia | Go8, ATN | 9 | 13,643 | 5,153 |
| Germany | DAAD | 5 | 11,065 | 4,391 |
| Total |  | 38 | 151,583 | 45,510 |

Table 15 - Number of applicants and scholarships provided in five countries
Source: Elaborated by the author based on SWB's institutional website.

To be considered for admission, applicants needed to meet a series of requirements, which included (COMISSÃO DE APERFEIÇOAMENTO DE PESSOAL DE NÍVEL SUPERIOR, 2015b):

a) a minimum score of 600,00 points on the ENEM[6] (National Exam of Secondary School), an exam required for admission in selective universities;

b) be enrolled in an undergraduate major that is part of the 17 priority areas;

c) have the minimum proficiency in a foreign language according to the country of destination;

d) have finished at least 20% and at most 90% of the credits required for graduation.

e) students who received awards in STEM competitions - e.g. Physics Olympiads - would have an advantage in case of a tie in the application process.

The grant includes full tuition expenses, airfare, health insurance, funding for accommodation and food, funding for initial expenses and the purchase of a computer/laptop. For those students studying in cities with higher costs of living such as New York City, Boston, London, etc., an additional stipend would be provided (COMISSÃO DE APERFEIÇOAMENTO DE PESSOAL DE NÍVEL SUPERIOR, 2015b).

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[6] ENEM was not required in the first calls for applications (pilot).

Nonetheless, the program has generated concerns among academics and policymakers and some of them have also been confirmed in the interviews. In July 2016, the program for undergraduate students was suspended due to the high costs and a significant number of unprepared students. (GOVERNO…, 2016). The average cost per student for a one-year program was R$100,000.00. If the program continues in the following years, it will be focused on graduate education, and its offer may be amplified. (MEC…, 2016, July 25). Throughout the entire duration of the program, problems in its design and implementation harmed its effectiveness. I classify them in 12 different categories, which can be referred as barriers at the program level. Such denomination adds to the framework previously presented, which only describes the barriers at the student level.

1. Presidential initiative - To begin with, the program is considered a presidential initiative[7], created without any consultation or public deliberation on how to design and implement it properly, which includes the priority areas established (SÁ, 2016). The author also claims (2016, p.18) that "given the president's association with the program, the government is not likely to simply terminate it, which would signal failure", meaning that alterations might occur for future editions of the program;

2. Time constraints - The short amount of time between planning and implementing the SWB caused the program not to achieve some of the desired goals, including the number of undergraduate students sent to the best institutions in the rankings. One coordinator mentioned: "*We realized that (the program) needed better planning that it had. It was a program that we implemented in six months with these dimensions*";

3. Emphasis on the priority areas - Critics of the program mention the strong focus on the priority areas, with students and professionals from other areas perceiving themselves as being of lesser value (IOSIF; ZARDO; SANTOS; OLIVEIRA, 2016; SPEARS, 2014);

4. Unilateral program - Knobel (2011) even describes that it "should be a real exchange programme, with reciprocity from the counterpart university to support and stimulate their students to perform academic study in Brazil" because it would foster internationalization in Brazilian institutions;

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[7] This study does not have the intention to promote discussions of a political and/or ideological nature , therefore being restricted to the analysis of the program with the goal of developing students' skills.

5. High costs - The program never had its own funds, having actually received money from other projects which resulted in budget cuts for them (SÁ, 2016). As a consequence, representatives mention lack of investments in laboratories (CIÊNCIA…, 2015) and internet access (DEBATEDORES…, 2015);

6. Emphasis on undergraduate study - Some authors criticize the strong emphasis on sending undergraduate students overseas. Rivas and Mullet (2016) mention the low probability of these students developing long-term networks which would integrate Brazil into the academic community since they do not have the academic proficiency required to interact productively (DEBATEDORES…, 2015). In one of the Senate meetings, Senator Omar Aziz claims that priority should be given to graduate students since they tend to disseminate information more effectively to a wider audience. According to him, the cost should not go to the individual, making the student feel as if he "did not owe anything" (NOVE…, 2015).

7. Concentration of certain student profiles - Not only researchers criticize the predominance of white, male and upper-class students participating in the program (BORGES, 2015), government representatives demonstrated concern and demanded affirmative actions to include more students of color in the program since its creation (KOSHIMIZU, 2012);

8. Public/private partnership - The initial idea of the program was to send 26,000 students with funds from the private sector, but disagreements over goals and objectives between the federal agencies and leaders from private organizations led to companies to withdraw support (Judd, 2014);

9. Home universities' low engagement - Both agencies and the home institutions shared responsibilities, with the latter being responsible for following the student's experience in the foreign institution due to the program's magnitude. However, one coordinator (E1) revealed that not all institutions engaged in this activity as expected: "*Our point of view is that the home institution in Brazil still continued to have responsibilities, and should still closely follow the student, providing orientation on which were the most adequate courses that they should choose, how they were performing in these courses, and often the agencies had to assume these responsibilities…we don't have the expertise to follow all students in every course*". The same coordinator attributes the low number of foreign researchers and visiting students to the fact that most universities do not offer many courses in foreign languages: "*We realized that our universities are not prepared, because they require*

*that the person come and speak Portuguese. For instance, few universities have a graduate course in English*";

10.     Incompatibility among curricula - Due to the short amount of time, the program could not articulate proper agreements among home and hosting institutions and rose several issues which include: students being admitted to programs in other fields instead of theirs; taking unrelated coursework; and inability to transfer credits to their home institutions (JUDD, 2014; SÁ, 2016);

11.     The absence of metrics - Even though the SWB was created with the aim of improving Brazil's economic scenario, its design and implementation did not include any policy evaluation metrics, which must occur continuously (SILVA, 2012). Sá (2016) expresses his concern: "the risks of policy failure, wasteful spending, adverse unintended consequences are clear with a program of this magnitude." (p. 18). The author believes that some of the mistakes previously mentioned were all avoidable. With an investment of US$ 3 billion, meaningful results - student and institutional levels - are expected but no systematic efforts to evaluate the program's impact on society are found (RIVAS; MULLET, 2016);

12.     Brain drain - The report presented by the Senate revealed that 53% of the students intend to establish a career in Brazil and 24% intend to work overseas after finishing the program. Half of the students had the desire to work abroad during the SWB experience, while the other half already manifested their wish before departing. Such fact generates concern among representatives due to the amount invested in these students (NOVE…,2015) and understand they must find ways to maintain them in the country. Although the program requires students to return and remain in the country for a year after they finish (interstice), 199 of them decided to suspend their permanence in Brazil, with R$1.7 million being returned (DATASENADO…, 2015).

Even though students have manifested satisfaction with the program, its permanence is questionable, with some government representatives in its favor but concentrating efforts on graduate study (COMISSÃO…, 2016). There is currently a bill to institute it as a state policy. (BUARQUE, 2015). Authors such as Iosif et al. (2016, p.36) claim that for the program to be consolidated as a state policy, government leaders must find "alternatives to promote a more horizontal internationalization model and funded in more democratic and emancipatory internationalization initiatives".

**4.1 The Placement Process**

Another part of specific objective (a) refers to describing the placement process of the program. One important aspect of the study abroad experience refers to destination, as mentioned in different studies (BODYCOTT, 2009; LI; OLSON; FRIEZE, 2013; MAZZAROL; SOUTAR 2002; NYAUPAYNE; PARIS; TEYE, 2011). Consequently, because the program presents a singular manner of placing students in the host institutions, it becomes essential to understand its process.

Table 16 shows the expected numbers of scholarships according to study level in its creation and the final numbers after the implementation. It is worth noting that the program since its beginning had an emphasis on undergraduate students, with the intent of having 64,000 participating in the experience and resulted in sending more than 14% of the expected goal. The program has also offered in 2013 a full master of science program for engineering students that was not included in the first calls for applications of the SWB. However, there is a significant asymmetry between students leaving the country and international researchers and young talents coming to study. Rivas and Mullet (2016, p. 18) conclude that "Brazil is not seen by the global STEM community as a meaningful locus of research activity".

Table 16 - SWB's intended goal and final number of of scholarships

| Program type | Intended goal | Final number |
|---|---|---|
| Undergraduate sandwich program | 64,000 | 73,341 |
| Doctoral sandwich program | 15,000 | 9,852 |
| Full doctoral program | 4,500 | 3,415 |
| Post-doctoral program | 6,440 | 4,801 |
| Technological development and innovation(1) | 7,060 | |
| Young talents (in Brazil) | 2,000 | 505 |
| Visiting scholar (in Brazil) | 2,000 | 775 |
| Full master of science program | -------- | 558 |
| Total | | 93,247 |

Source: Elaborated by the author based on SWB's institutional and *Bolsistas pelo Mundo* websites.
Note (1): There is no information on the number of scholarships given to students in the technological development and innovation group.

As previously mentioned, the program aimed to develop students from 17 priority knowledge areas to study overseas. Table 17 lists the areas of knowledge and the respective number of students who received the grant. It reveals the disparity in the numbers, with engineering students being the majority, with 53.04% and ten priority areas with less than 1,000 students each.

Table 17 - Number of SWB undergraduate students according to priority area

| Priority Area | Number of students | Priority Area | Number of students |
|---|---|---|---|
| Engineering | 38,492 | Marine Sciences | 565 |
| Clinical, Pre-clinical and Health Sciences | 10,595 | New Technologies Construction Engineering | 524 |
| Creative Industry | 7,213 | Bioprospecting and Biodiversity; | 463 |
| Computing and Information Technology; | 4,655 | Aerospace Technology | 345 |
| Physical Sciences: Mathematics, Physics, Chemistry, Biology and Geosciences | 3,809 | Nanotechnology and New Materials | 312 |
| Sustainable Agricultural Production | 1,545 | Technologies for Prevention and Mitigation of Natural Disasters | 185 |
| Pharmaceuticals | 1,408 | Practical Technologists | 182 |
| Biotechnology | 1,238 | Minerals Technology | 112 |

| | | | |
|---|---|---|---|
| Renewable Energy | 793 | Not informed | 322 |
| Oil, Gas and Coal | 595 | Total | 72560 |

Source: Elaborated by the author based on SWB's institutional website and *Painel de Controle*.

The following step included searching on the internet for information on where SWB students came from, i.e. their host institutions and locations. These can be found on the *Painel de Controle* website, which shows the numbers of students at all levels as part of the program. Table 18 lists the fifteen states which had the most undergraduate students participating in the program. The top five states - São Paulo, Minas Gerais, Rio de Janeiro, Paraná and Rio Grande do Sul - corresponded to 65.12% of the the total, while the remaining twelve states which were not listed were only responsible for 5.47% of the students. It is worth noting that the distribution of scholarships does not differ from the concentration of universities in the country, mainly located in the South and Southeast regions (LAUS; MOROSINI, 2009, p.114).

Table 18 - Number of SWB students according to state

| State | Number of students | State | Number of students |
|---|---|---|---|
| São Paulo | 15310 | Bahia | 2604 |
| Minas Gerais | 14437 | Rio Grande do Norte | 1750 |
| Rio de Janeiro | 6544 | Paraíba | 1502 |
| Paraná | 5661 | Espírito Santo | 1246 |
| Rio Grande do Sul | 5407 | Goiás | 1183 |
| Santa Catarina | 3161 | Pará | 1163 |
| Pernambuco | 3154 | Others | 3978 |
| Distrito Federal | 2845 | Total | 72722 |
| Ceará | 2777 | | |

Source: Adapted from Painel de Controle.

Table 19 shows the fifteen universities that sent the most undergraduate students to the program, reaching a total of 31,946 students (43.93% of the total). São Paulo is the state that sent the most students. The four universities - the University of São Paulo, the University of Campinas, State Paulista University and the Federal University of São Carlos - had 8,976 students, which correspond to 58.63% of the state and 12.34% of the total SwB students. Paraná is second, with the Federal Technological University of Paraná and the Federal University of Paraná sending 3,740 students abroad. All the institutions listed here are public ones (thirteen federal and two state institutions).

Table 19 - Universities that sent the highest amount of SWB undergraduate students

| University | Students | University | Students |
|---|---|---|---|
| Universidade de São Paulo | 4,031 | Universidade de Campinas | 1,723 |
| Universidade Federal de Minas Gerais | 3,696 | Universidade Federal do Paraná | 1,711 |
| Universidade de Brasilia | 2,519 | Universidade Estadual Paulista | 1,669 |
| Universidade Federal do Rio de Janeiro | 2,364 | Universidade Federal da Bahia | 1,624 |
| Universidade Federal de Santa Catarina | 2,213 | Universidade Federal do Rio Grande do Sul | 1,614 |
| Universidade Tecnológica Federal do Paraná | 2,029 | Universidade Federa; de São Carlos | 1,553 |
| Universidade Federal do Pernambuco | 1,900 | Universidade Federal do Rio Grande do Norte | 1,446 |
| Universidade Federal do Ceará | 1,854 | Total | 31,946 |

Source: Adapted from Painel de Controle.

The private universities that had the highest number of students studying overseas were Universidade Presbiteriana Mackenzie with 546, Pontificia Universidade Católica do Rio Grande do Sul with 525, Pontificia Universidade Católica do Paraná with 477 and Pontificia Universidade Católica do Rio de Janeiro with 406. All six universities which are in the ARWU top 500 (underlined) had students participating in the program, with a total of 15,097 (20,76%

of the total). One reason for this high concentration of scholarship recipients may be attributed to the fact that they have the most competitive admission process, and require higher ENEM scores. Most private institutions do not require the exam for regular admission, except for students applying to be admitted with PROUNI[8] scholarships.

The official documents of the program mention several times that the aim was to send to "institutions of excellence". One coordinator (E1) explained that the quality criteria was taken into consideration, based on the university rankings, which included the Shanghai - ARWU and Times Higher Education - Thomson Reuters. The initial goal was to send students to the top 10 institutions, but considering the amount of students, the program had to make the proper adjustments. He mentions: "*And the amount of students, that was a complex question. For example, MIT, great, MIT will participate. How many do you want to send? 1000, then the MIT said: impossible to host 1,000 Brazilian students, there is no way. I mean, there is a possibility of hosting a certain quantity of foreign students, but not from a single country. So we had to relativize a little this... Then how would we do it? The top 10? The top 50, the top 100? So that is what happened*" (E1).

Furthermore, both coordinators mentioned that both agencies - CAPES and CNPq - developed a series of partnerships with several agencies in other countries in which these acted as facilitators of the placement process with several institutions in their respective locations and also solve any related issues. However, not all institutions wanted to participate in these collective agreements, as mentioned by E1: "*England, for example, we had an institution which was Universities UK that represented several dozens of universities. But, Cambridge and Oxford never wanted to make a deal inside this collectivity. We had to make a separate agreement with Cambridge and Oxford*".

Therefore, I located the number of students who received the grant to study in these institutions (see methodology section), in three levels - top 20, top 100 and top 500. The first step referred to finding the number of undergraduate students in the top 20 institutions in both ARWU and THE-TR rankings (Table 20). The program had 489 students present in 16 of the ARWU institutions, with most of them (466 = 96.62%) studying in institutions in the United States, which comprise the majority of the list, five students in two British universities, five students at Swiss Federal Institute of Technology Zurich, the only HEI from Switzerland in the top 20, and six students (10.8%) at the University of Tokyo, also the only Japanese university

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[8] PROUNI - Programa Universidade para Todos - it provides scholarships for students from public high schools and cannot afford tuition. For more information visit http://prouniportal.mec.gov.br/o-programa.

on the list. The situation differs when considering the THE-TR rankings, whose amount of students is 24% lower (total of 369 students), mainly due to the absence of University of California - San Diego in the top 20.

Table 20 - Distribution of SWB in the Top 20 institutions

| Institution | ARWU Rank | THE-TR Rank | Number of SWB students |
|---|---|---|---|
| Harvard University (US) | 1 | 6 | 50* |
| Stanford University (US) | 2 | 3 | 0 |
| University of California, Berkeley (US) | 3 | 10 | 1 |
| University of Cambridge (UK) | 4 | 4 | 1 |
| Massachussets Institute of Technology (US) | 5 | 5 | 44 |
| Princeton University (US) | 6 | 7 | 0 |
| University of Oxford (UK) | 7 | 1 | 4 |
| California Institute of Technology (US) | 8 | 2 | 0 |
| Columbia University (US) | 9 | 16 | 96* |
| University of Chicago (US) | 10 | 11 | 1 |
| Yale University (US) | 11 | 12 | 12 |
| University of California, Los Angeles (US) | 12 | 14 | 63* |
| Cornell University (US) | 13 | 19 | 0 |
| University of California, San Diego (US) | 14 | 41 | 97* |
| University of Washington (US) | 15 | 25 | 39 |
| Johns Hopkins (US) | 16 | 17 | 40 |
| University College London (UK) | 17 | 15 | 0 |
| University of Pennsylvania (US) | 18 | 13 | 30 |
| Swiss Federal Institute of Technology Zurich (Switzerland) | 19 | 9 | 5 |
| University of Tokyo (Japan) | 20 | 39 | 6 |

| | | | |
|---|---|---|---|
| The Imperial College of Science, Technology and Medicine (UK) | 22 | 8 | 3 |
| Duke University (US) | 25 | 18 | 14 |
| Northwestern University (US) | 26 | 20 | 5 |
| Total | | | 511 |

Source: Elaborated by the author.

Note: Those numbers with an asterisk are inconsistent with what is presented in students' Lattes CVs.

However, these numbers are imprecise. The website lists some students as having received the undergraduate scholarship at a certain institution when they actually attended another. This was found when examining students' Lattes CVs. For instance, fourteen students appeared as having attended Columbia University, but in fact they are/were attending this institution with the master's degree program scholarship. Since students cannot be registered twice in the website, the placement generates this inconsistency. In addition, not all CVs have been updated after students finished their program, which contributes to this imprecision.

The second step consisted of locating the number of students in the top 100 institutions in the rankings. This is due to what was mentioned by coordinator 1 in his interview, in which the program did not manage to send all students to the top 10 institutions, therefore having to place students in the top 100 institutions. For this search I only considered the ARWU rankings. Figure 1 shows the distribution according to country. Although the United States had more universities in the top 100, Australia managed to host more students, with 2966 (35.7% of the total). The United Kingdom, which hosted the second highest number of students, only managed to send 317 students to universities that were part of the top 100 ARWU rankings. Canada has the third highest number in this chart due to University of Toronto's capacity to host 1088 students throughout the program. One possible explanation for the low numbers of SWB in US and UK institutions could be related to the level of competitiveness among their top institutions. Therefore, I examined the number of students admitted at the most competitive institutions in the US and UK.

Figure 5 - Distribution of students in the top 100 institutions
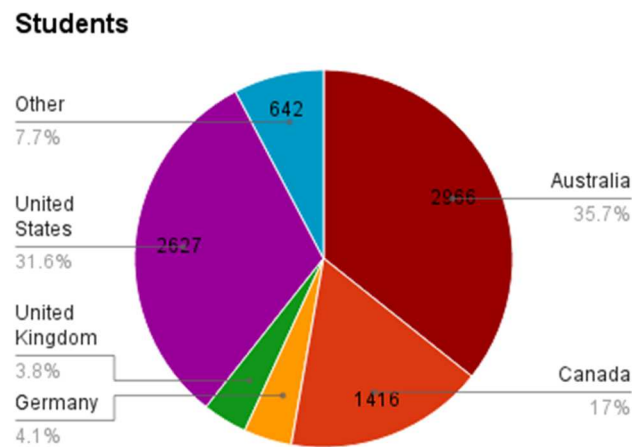


Source: Elaborated by the author.

Table 21 lists the most competitive universities[9] from the United States in terms of admissions. It shows the total cost of tuition and room and board and the percentage of students admitted in 2016. It is worth noting that admission is U.S. institutions is holistic, i.e. it is not based only on performance in standardized tests such as the SATs (Scholastic Assessment Test) or the ACT (American College Testing), but also on essays, GPA[10] in high school and students' financial information (except for need-blind schools which do not take into consideration). Despite their competitiveness, the program managed to include a total of 332 students in twelve of these universities.

Table 21 - Distribution of students in the the most competitive U.S. universities

| | University | Shanghai Rank | Admitted Students in 2015 (%) | Total Cost Per Year (without financial aid) | Number of SwB students |
|---|---|---|---|---|---|
| 1 | Stanford University (CA) | 2 | 5,05% | $62,541 | 0 |
| 2 | Harvard University (MA) | 1 | 5,37% | $62,025 | 50* |
| 3 | Columbia University (NY) | 9 | 6,14% | $68,405 | 96* |
| 4 | Yale University (CT) | 12 | 6,49% | $64,650 | 12 |
| 5 | Princeton University (NJ) | 6 | 6,99% | $60,090 | 0 |

[9] The list excludes liberal arts colleges.
[10] GPA = great point average. It refers to a standard procedure to measure academic achievement in US institutions.

| 6 | University of Chicago (IL) | 10 | 7,81% | $67,584 | 1 |
| 7 | Massachussets Institute of Technology (MA) | 5 | 8,01% | $62,662 | 44 |
| 8 | Brown University (RI) | 90 | 8,48% | $64,566 | 26 |
| 9 | California Institute of Technology (CA) | 8 | 9% | $61,677 | 0 |
| 10 | University of Pennsylvania (PA) | 18 | 9,92% | $66,100 | 30 |
| 11 | Dartmouth College (NH) | 211 | 10,33% | $66,579 | 5 |
| 12 | Vanderbilt University (TN) | 60 | 11,29% | $61,072 | 9 |
| 13 | Duke University (NC) | 25 | 11,35% | $65,703 | 14 |
| 14 | Johns Hopkins University (MD) | 16 | 12,4% | $65,886 | 40 |
| 15 | Northwestern University (IL) | 26 | 13,03% | $66,344 | 5 |
| | Total | | | | 332 |

Source: Elaborated by the author.

The three universities which did not host undergraduate students - Stanford University, Princeton University and the California Institute of Technology - were among the least expensive in this group. Seven of these universities (underlined) are also part of the Ivy League Schools, an athletic conference comprised of eight universities in northeastern universities, recognized for their academic excellence, selectivity in admissions and elitism. The program managed to send students to six of them, with the exception of Princeton University. One reason for not having more students in these fifteen institutions could be related to their low percentage of admitted students, even for regular, full-time students who study there for four years and have the financial resources to attend these colleges.

Table 22 shows the most competitive UK universities according to the Universities and Colleges Admissions Service - UCAS - scores (JOHNSTON, 2015). These scores do not guarantee that a student will be admitted, but they provide an idea of whether he/she is a good applicant. Furthermore, institutions do not reveal the exact number of applicants for each school and their admission process is also holistic. SWB students were not present in two of these - London School of Economics and University College London - and the total number in the other institutions is 258.

Table 22 - Distribution of SWB according to UK's most competitive schools

| Rank | Institution | Shanghai Rank | UCAS score | SwB students |
| --- | --- | --- | --- | --- |

| 1 | University of Oxford | 4 | 601 | 4 |
| 2 | University of Cambridge | 7 | 571 | 1 |
| 3 | Imperial College London | 22 | 566 | 3 |
| 4 | London School of Economics | 158 | 532 | 0 |
| 5 | Durham University | 214 | 521 | 46 |
| 6 | University of St. Andrews | 389 | 516 | 16 |
| 7 | University College London | 17 | 500 | 0 |
| 8 | University of Bristol | 57 | 486 | 151 |
| 9 | University of Edinburgh | 41 | 482 | 3 |
| 10 | University of Warwick | 198 | 480 | 34 |
| | Total | | ----- | 258 |

Source: Elaborated by the author.

Considering that the admission process for UK and US institutions is difficult and different from Brazil and not exact precise due to its holistic aspect, the program managed to place a considerable amount in these schools. On the other hand, University of Oxford and University of Cambridge, which required separate agreements, only hosted five undergraduate students total. Had the program placed students in a longer period, this number could have increased significantly.

After examining the number of students in the top 20 and top 100 schools, the third step consisted of locating the amount of students in the top 500 institutions in both rankings. Table 23 demonstrates the number of universities in the ARWU Top 500 from each of the 27 countries hosting SWB students. The respective countries were excluded because no calls for applications were open: Argentina, Czech Republic, Egypt, Estonia, Greece, India, Iran, Israel, Malaysia, Mexico, Russia, Saudi Arabia, Serbia. Slovenia, Turkey and Taiwan. These countries, in addition to Brazil, account for 41 universities. Some important aspects are worth noting:

a) South Africa, despite having four universities in the ranking, hosted only two students in two universities which were not part of the ranking;

b) 42.78% of the students were sent to the Top 500 universities. Chile and Hungary, hosting a total of 2155 students, did not have any university represented in the ranking;

c) although there were students in 83.9% of the U.S. universities in the ranking, only 37% of the students had the opportunity to study in their best research institutions;

d) Denmark, Singapore and Switzerland had all SWB students studying in their best universities. One reason for that could be the low number of students sent to these countries which allowed for such distribution;

e) the program managed to have students studying in all of the universities in the ARWU ranking in the following countries: Australia, Finland, Netherlands, New Zealand, Portugal and Spain;

f) not all students studied in the top 500 universities, with Australia having the highest percentage (87,57%) while Spain had the lowest (34,88%). France and Ireland are examples of countries with high participation of students, 5506 and 3252 respectively, but less than ten percent of them were in the highest ranked universities.

Table 23 - Distribution of students in all SWB destinations

| | Total of Scholarships | Number of universities in the ranking | Universities with scholarships | ARWU universities with scholarships | Students at ARWU universities | Percentage of universities in the country | Percentage of students at ARWU universities of that country |
|---|---|---|---|---|---|---|---|
| Australia | 6583 | 23 | 25 | 20 | 5765 | 87.0 | 87.57 |
| Austria | 45 | 5 | 2 | 2 | 9 | 40.0 | 20.00 |
| Belgium | 340 | 7 | 17 | 6 | 256 | 85.7 | 75.29 |
| Canada | 6154 | 19 | 98 | 19 | 3156 | 100.0 | 51.28 |
| Chile | 26 | 0 | 3 | 0 | 0 | - | 0.00 |
| China/Hong Kong | 280 | 48 | 36 | 27 | 199 | 56.3 | 71.07 |
| Denmark | 8 | 5 | 4 | 4 | 8 | 80.0 | 100.00 |
| Finland | 161 | 5 | 25 | 5 | 59 | 100.0 | 36.65 |
| France | 5506 | 22 | 226 | 17 | 543 | 77.3 | 9.86 |
| Germany | 5293 | 38 | 154 | 32 | 2079 | 84.2 | 39.28 |
| Hungary | 2129 | 0 | 17 | 0 | 0 | - | 0.00 |
| Ireland | 3252 | 3 | 23 | 2 | 267 | 66.7 | 8.21 |
| Italy | 3309 | 19 | 25 | 12 | 2442 | 63.2 | 73.80 |
| Japan | 449 | 16 | 20 | 12 | 246 | 75.0 | 54.79 |
| Netherlands | 1763 | 12 | 40 | 12 | 933 | 100.0 | 52.92 |
| New Zealand | 264 | 4 | 11 | 4 | 151 | 100.0 | 57.20 |
| Norway | 316 | 3 | 11 | 3 | 256 | 100.0 | 81.01 |
| Poland | 26 | 2 | 2 | 1 | 9 | 50.0 | 34.62 |
| Portugal | 2109 | 5 | 23 | 5 | 1498 | 100.0 | 71.03 |
| Singapore | 1 | 2 | 1 | 1 | 1 | 50.0 | 100.00 |
| South Africa | 2 | 4 | 2 | 0 | 0 | 0.0 | 0.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| South Korea | 519 | 11 | 14 | 8 | 427 | 72.7 | 82.27 |
| Spain | 3518 | 12 | 63 | 12 | 1227 | 100.0 | 34.88 |
| Sweden | 317 | 10 | 17 | 8 | 280 | 80.0 | 88.33 |
| Switzerland | 9 | 8 | 2 | 2 | 9 | 25.0 | 100.00 |
| United Kingdom | 8864 | 37 | 99 | 33 | 3460 | 89.2 | 39.03 |
| United States | 22108 | 137 | 499 | 115 | 8192 | 83.9 | 37.05 |
| **Total** | 73341 | 457 | 1459 | 362 | 31376 | | |

Source: Elaborated by the author.

Rivas and Mullet (2016) criticize the disparity in the numbers of students for each country, claiming that it is a sign of "low efficacy" of the program (p. 18). According to them, 62% of the grantees were sent to universities of a high degree of development and cultural distance, therefore harming internationalization strategies.

If we consider the number of students in the top 500 THE-TR institutions (see Appendix D), this amount is 10.68% higher (34,729) in comparison to ARWU ones, representing 47.40% of the total. Therefore, if we consider the ranking criteria for decision-making (HAZELKORN, 2014), the program has not been successful at sending students to the institutions of excellence as initially expected. E1 attributes this to time constraints in implementation: "*the negative aspect of the program was that these goals in a short amount of time made us, let's put this way, make these concessions and leave these top 500 to a top bigger than 500* (with more institutions)".

4.1.1 The language issue

Since its conception, the program has faced several problems regarding language proficiency requirements. Table 24 lists the minimum proficiency scores in proficiency exams required for five countries which offered the academic part of the program in English and were present in the first and last calls for applications. It is possible to notice a decrease in four of these countries since the creation of the program with the exception of the United States.

E1 describes: "*our biggest difficulty in terms of placing students was not their academic qualifications, but language proficiency*". He attributes this to Brazil being a *"monolingual country"*. He also mentions that the initiative to offer A language course contemplates students from the North and Northeast regions, whose majority students do not have the same

proficiency levels as those from the South and Southeast. However, the program does not have the exact amount of students taking language courses prior to the academic section. E2 mentioned that it is possible to discover it by looking at the duration of their program. This is an illustration of improper management of the program, as they are unaware of such important numbers.

Table 24 - English language proficiency requirements to apply for SWB

| Country | Minimum Language Requirement in 2011/2012 | | Minimum Language Requirement in 2014 | |
|---|---|---|---|---|
| | Without English course | With English course | Without English course | With English course |
| Australia | IELTS: 6.5<br>TOEFL iBT: 90<br>TOEFL PBT: 575 | English course could be offered. | IELTS: 6.0<br>TOEFL iBT: 79<br>TOEFL PBT: 550 | IELTS: 6.0<br>TOEFL iBT: 35-78<br>TOEFL PBT: 510-549 |
| Canada | a) Through ACCC (1):<br>TOEFL iBT: 70<br>IELTS: 5.5<br><br>b) Through CALDO:<br>TOEFL iBT: 86<br>TOEFL PBT: 580<br>IELTS: 6.5<br><br>c) Through CBIE (2)<br>TOEFL iBT: 61<br>TOEFL PBT: 550<br>IELTS: 4.5 | No English course be offered in this option.<br><br><br>TOEFL iBT: 70-85<br>TOEFL PBT: 525-579<br>IELTS: 5.5-6.0<br><br>Students with lower requirements may be benefitted with an English course of up to 6 months. | TOEFL iBT: 79 | TOEFL iBT: 75-78 |
| United Kingdom | IELTS: 6.0 | It did not mention the possibility of an English course. | Pearsons PTE: 204 (with a minimum of 51 in each section)<br>IELTS: 5.5 (minimum of 5.5 in each section) | Pearsons PTE: 194 (with a minimum of 41 in each section)<br>IELTS: 4.5 (minimum of 4.5 in each section) |
| United States | TOEFL iBT: 79<br>TOEFL PBT: 550 | Students with lower proficiency may be provided with an English course if accepted. | TOEFL iBT: 79<br>TOEFL iTP: 550 | TOEFL iBT: 69-78<br>TOEFL iTP: 525-549 |
| South Korea | IELTS: 5.5<br>TOEFL iBT: 80<br>TOEFL CBT: 210<br>TOEFL PBT: 550 | Not available. | IELTS: 5.0<br>TOEFL iBT: 70<br>TOEIC: 650<br>TOEFL CBT: 193<br>TOEFL PBT: 523 | IELTS: 4.5<br>TOEFL iBT: 60-69<br>TOEIC: 575-649<br>TOEFL CBT: 163-192<br>TOEFL PBT: 463-522 |

Source: Calls for applications on SWB's institutional website.

Note: (1) Students may be benefitted with an English course during the academic section.
(2) For students studying technological courses in Brazil.

In 2012, the program offered 4,000 scholarships for students to study in the UK, but the lack of proficiency forced the Brazilian government, alongside the British Council and

Universities UK - the British partner which intermediates the relationship between students and universities in the host institutions - to lower the requirement, from 72 points on the TOEFL to 42 and from 5.5 on the IELTS to 4.5 (LIRA, 2013). These students with lower proficiency would be able to attend language courses in the host country to improve their skills prior to beginning the academic part of the program. Sá (2016) asserts that "no serious analysis of the candidate pool was undertaken prior to the implementation of the program".

Another issue occurred in 2013 when MEC excluded Portugal from the list of host countries (MEC…, 2013). This was motivated by one of the SWB's goals, which refers to developing foreign language proficiency (PARAGUASSU, 2013). This decision caused polemic among students, considering that some did not have enough proficiency to attend English-speaking institutions. Despite receiving a scholarship to study at language centers in Canada and Australia, 110 of them did not manage to achieve the minimum score required for attendance and would be forced to return to Brazil (DE OLIVEIRA, 2014).

Foreign language proficiency is still a concern among policymakers and solutions must be found to eradicate this problem for future editions of the program (DEBATEDORES, 2015). According to the Senate's report, only 58% of the students reported a gain in language proficiency (DEBATEDORES, 2015). This issue could also be one of the reasons for terminating the program at the undergraduate level. (GOVERNO…, 2016).

Archanjo (2016) surveyed SWB students regarding the foreign language proficiency requirements for the program. The results revealed that students do not agree among themselves on the requirements, with 29.7% mentioning that it is a higher level while 12.10% agree that such level is low and therefore should be more rigorous. The author concludes that two actions must take place: 1) means to learn and develop these linguistic skills should be offered to students in Brazil prior to study abroad experiences; and 2) higher language proficiency requirements.

In summary, the SWB could have different durations according to the students' interest, starting date and foreign language proficiency level. Figure 6 demonstrates the program's structure. The academic sessions last most of the program, with the maximum duration of two semesters. After finishing this session, the student could start the internship, which could be research-oriented at a university or at an organization, with the goal of developing professional skills. For students with lower proficiency, a language course was offered prior to the beginning of the academic sessions. Once the student returns to Brazil, the Lattes CV had to be updated, mentioning CAPES as a sponsoring agency. The student also had to send to the sponsoring agency an activity report, listing all the activities performed throughout the program.

(COMISSÃO DE APERFEIÇOAMENTO DE PESSOAL DE NÍVEL SUPERIOR, 2015, p. 34).

Figure 6 - Program experience



Elaborated by the student.
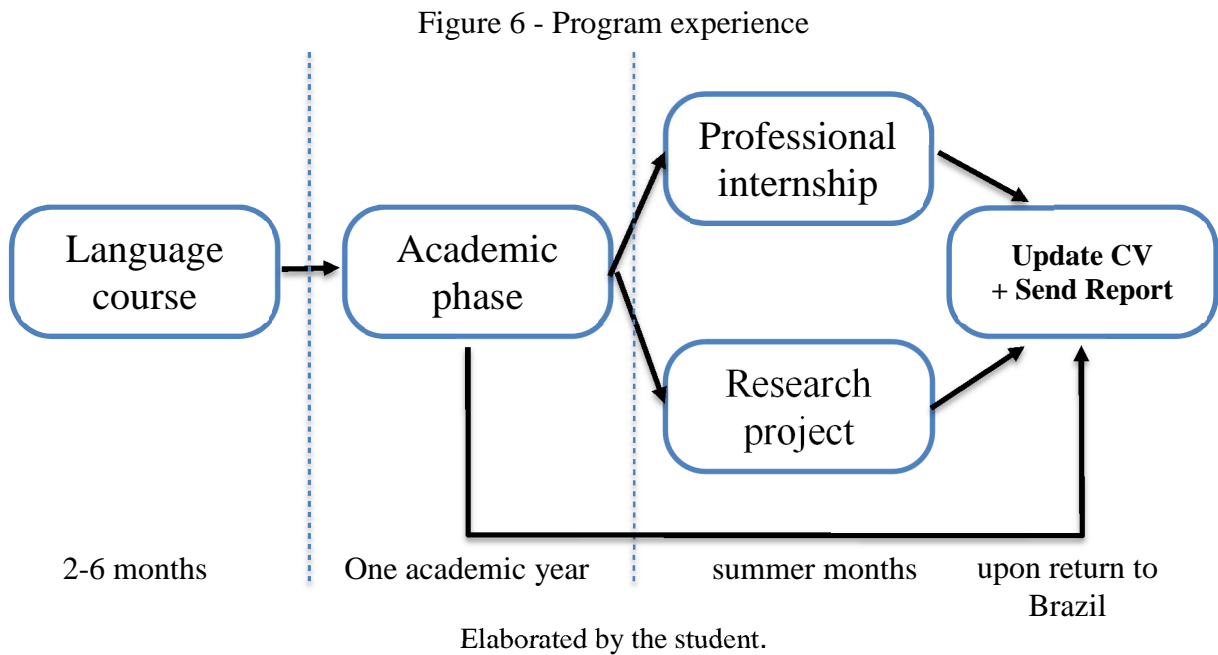
4.1.2 Who is at the top?

To further understand the student profiles of the undergraduate students who participated in the program (specific objective a), I firstly performed an analysis of the Lattes CVs of the those who studied in the top 20 institutions (ARWU and THE-TR ones). I searched for the following items in the order below.

1. host institution;
2. home institution;
3. undergraduate major;
4. program duration;
5. priority area;
6. other important information.

I have also encountered two issues when performing the analysis at this level. First, of the 511 students, 52 of them had already deleted their Lattes CVs, which would not allow any researcher to identify their major or any other important information. Second, 212 students have not updated their Lattes CV or have updated it without including the program and/or the agency which sponsored their experience abroad. Considering that it was a requirement for them to upload once they finished the program (CAPES, 2015 p. 34), it contributes to the imprecision in the results. This may be perceived as an important barrier: the lack of students' commitment to internationalization.

The total of 511 (180 female and 331 male) students represent all the 17 priority areas (Appendix E1) as proposed by the program, but they are not equally divided. Engineering and biology/biomedical science students represent the majority, with 214 (41.9%) and 140 (27.4%) respectively. These coincide with the top two areas which sent the most students overseas. Computing and information technology is third with 51 students (10%) and biotechnology forth with 24 students (4.7%). Eleven priority areas had less than ten students.

These students are from institutions located in 21 states plus the Federal District (Appendix E2), with 170 of them (33.3%) from São Paulo, 10.2% from Minas Gerais and 45 from Rio de Janeiro. These institutions are also from the states that sent the most students. Thirteen states had less than 10 students represented, which shows a disparity between studying in institutions in the south/southeast and the other regions (with the exception of the Federal District).

The following step consisted of finding students' majors in the highest-ranked institutions. Only the institutions with a considerable amount of students from the same major (above 5) are shown in Table 25. As previously mentioned, Harvard University and University of California, Los Angeles (UCLA) hosted a more than 20 medicine students. In Brazil, medicine is an undergraduate major, but in other countries, such as the United States, students must major in another field and then apply for medical schools. This could be a sign of students not being able to transfer credits to their home institution, or also attend courses that match what they would be studying in their home institution. The University of California, San Diego (UCSD) hosted a considerable amount of biology/biomedicine/biotechnology and computer science/engineering students (18 and 11 respectively) as well as the majority of marine science/oceanography ones (10). The University of Washington could be considered as a reference for architecture students (6).

Another aspect deserves attention. Two students participated in the program who were not attending majors that would be classified as being part of the priority areas, with one being

a business student and another in international relations. Also, one student changed majors once he finished the program, from physics to business, and did not graduate in his intended major. Another student graduated in the intended major but is currently pursuing a second major in a completely different field, which would not require him to have participated in the SWB. Therefore, these demonstrate that the program did not consider the fact that students could not graduate or work in different fields once they finish the program.

Table 25 - Distribution of students according to major

| Institution | Program | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Medicine | Engineering (1) | Biology/Biomedicine/Biotechnology | Architecture | Computer science/engineering | Marine Sciences/Oceanography | Other | Not informed | Total |
| Columbia University | 3 | 37 | 9 | - | 19 | - | 19 | 19 | 96 |
| Duke University | 4 | 6 | 1 | - | 1 | - | 1 | 1 | 14 |
| Harvard University | 42 | 3 | 3 | - | - | - | 2 | - | 50 |
| Johns Hopkins University | 7 | 13 | 12 | - | 2 | - | 4 | 2 | 40 |
| MIT | - | 27 | 1 | 1 | 10 | - | 2 | 3 | 44 |
| UCLA | 21 | 15 | 3 | - | 4 | 1 | 14 | 6 | 63 |
| UCSD | 8 | 37 | 18 | - | 11 | 10 | 5 | 8 | 97 |
| University of Pennsylvania | 1 | 2 | 7 | - | 2 | - | 15 | 3 | 30 |
| University of Washington | - | 9 | 2 | 6 | 9 | - | 11 | 8 | 39 |
| Other | 3 | 16 | 7 | 3 | 3 | - | 4 | 2 | 38 |
| Total | 89 | 162 | 63 | 10 | 61 | 11 | 63 | 52 | 511 |

Source: Elaborated by the author.
Note: (1) Computer engineering students were not considered. They accounted for the computer science group.

When crossing the numbers of students from home and host institutions in addition to their major, the search revealed some patterns among institutions that hosted more than 10 students from the same home institution. First, Harvard University hosted 51 students, with 41 of them being from University of São Paulo, with 40 of them majoring in medicine[11]. The Massachusetts Institute of Technology (MIT) hosted 16 students from *Instituto Tecnológico de Aeronáutica* - and 12 from *Instituto Militar de Engenharia*. The coordinator revealed in the

[11] In Brazil, medicine is considered an undergraduate major (six-year long).

interview that these are exceptions, in which the program used previous partnerships established by these institutions. However, they account for 13.30% of the students in the top 20 institutions.

Table 26 presents a list of the top 20 universities that hosted more than ten SWB students and the average program duration. It is worth noting that in institutions such as Harvard and MIT students spent an average lower than 12 months, which could mean that they may have only engaged in the academic sessions and the internship. On the other hand, institutions such as Columbia, University of Pennsylvania and University of California San Diego, the average is above thirteen months, which could indicate that students had the opportunity of taking English lessons prior to attending their classes. Therefore, the program would not exclude students with lower English language proficiency from attending some of the highest-ranked institutions.

Table 26 - Average program duration in the top 20 universities

| Institution | Number of SWB Students | Average Program Duration (in months) | Standard Deviation |
|---|---|---|---|
| Columbia University | 96 | 13.01 | 1.93 |
| Duke University | 14 | 10.85 | 3.57 |
| Harvard University | 50 | 11.68 | 1.25 |
| Johns Hopkins University | 40 | 12.65 | 0.48 |
| Massachussets Institute of Technology | 44 | 11.25 | 3.67 |
| University of California, Los Angeles | 63 | 12.84 | 2.88 |
| University of California, San Diego | 96 | 13.89 | 3.39 |
| University of Pennsylvania | 30 | 15.20 | 2.28 |
| University of Washington | 39 | 12.48 | 4.34 |
| Yale University | 12 | 12.75 | 0.62 |

Source: Elaborated by the author.

After analyzing these results, it became important to identify possible explanations for students not to attend these institutions. Thus, I performed a survey to understand the motivations and how it is linked to their placement. I present the results in the following section.

## 5 THE STUDENTS

From a total of 4,054 emails sent, 679 students responded to the online survey (16.74% response rate). For the purposes of the study, however, students needed to complete all the sections 1 through 4, indicate the HEI they attended as part of the academic phase of the program in addition to foreign language proficiency exam scores, since language proficiency was considered to be a barrier in the qualitative section of this study. These were important as they could be linked to the foreign institution's rank as well as motivations, perceived benefits and challenges faced throughout the program. After removing those cases which did not present all the answers, 532 responses remained (13.12% response rate).

The sample is comprised of 55.55% of male students and 44.45% of female ones, average age of 24 years old, with most of them studying at public Brazilian universities (81.4%). Table 27 presents students' home institution's region in Brazil, with the majority studying at HEIs located in the Southeast (45.7%) and South (27.8%). The presence of students studying at institutions in the North is little, which can be linked to the presence of students from the region who participated in the program.

Table 27 - Distribution of students per region

| Region | Students | Percent |
|---|---|---|
| Central-West | 37 | 7.0 |
| Northeast | 100 | 18.8 |
| North | 4 | 0.8 |
| Southeast | 243 | 45.7 |
| South | 148 | 27.8 |
| Total | 532 | 100.0 |

Source: Elaborated by the author.

Students' family income prior to participating in the program varies greatly, with only 25.4% making between R$60,000.00 and R$120,000.00 (US$17,857.14 and US$35,714.28) a

year. Only 20.5% of students' family income are above this level (see Appendix F1). Regarding international experiences outside the country, it is possible to say that the program has allowed almost 90% of the students to have their first exchange program opportunity (see Appendix F2), and 42.7% had already traveled to another country prior to the program (see Appendix F3).

Table 28 reports the distribution of students according to priority area. It is also worth noticing the presence of students whose majors fit in five of the priority areas (92.46% of the total), which also reflects the inequality of the distribution of grants. Engineering students are still the majority (53.10%), followed by biological and health sciences (19.77%) and Physical Sciences: Mathematics, Physics, Chemistry, Biology and Geosciences (7.77%).

Table 28 - Distribution of students per priority area

| Priority Area | Number of SWB students | Percent |
|---|---|---|
| Engineering | 282 | 53.10 |
| Physical Sciences | 41 | 7.77 |
| Biology and Health Sciences | 105 | 19.77 |
| Computing and Information Technology | 37 | 6.97 |
| Creative industry | 26 | 4.90 |
| Biotechnology | 14 | 2.63 |
| Other | 26 | 4.91 |
| Total | 531(1) | 100.0 |

Source: Elaborated by the author.

(1) 1 missing case

Two questions refer to academic performance. First, I asked students the percentage of credits they finished prior to participating in the program (Appendix F4). More than 60% of the participants had already concluded more than 60% of their credits, with only 1% having more than 90% of the credits, the maximum allowed permitted to apply. Students also had to indicate their average scores in their undergraduate major in Brazil (Appendix F5). More than 70% indicated they had average scores above 7.5, which would be equivalent to a B. It is worth

highlighting that 27.5% of them had a C or lower as their average scores, which demonstrates that students' prior performance was not an important criterion in the application process. Students' ENEM scores (Appendix F6) indicate that they are more concentrated (87.1%) in the 600,01 and 800,00 groups.

Students' proficiency level is also an important aspect of this study, as it is mentioned in the previous section. Table 29 crosses students' proficiency level according to the CEFR[12] with students' type of program. It is worth noting that 12 students who achieved at the C level in the CEFR did not need to attend language classes prior to their participation, but were still offered the opportunity to do so. This represents more costs to the program.

Table 29 - Cross-tabulation of students SWB program type and proficiency level

| Program type | CEFR A2 | CEFR B1 | CEFR B2 | CEFR C | Total |
|---|---|---|---|---|---|
| Language + academic + internship | 42 (87.5%) | 97 (89.0%) | 99 (45.8%) | 12 (7.7%) | 250 (47.3%) |
| Academic + internship | 1 (2.8%) | 4 (3.7%) | 89 (41.2%) | 107 (68.6%) | 201 (38.0%) |
| Language + academic | 4 (8.3%) | 7 (6.4%) | 4 (1.9%) | 0 | 15 (2.8%) |
| Academic only | 1 (1.4%) | 1 (0.9%) | 23(10.6%) | 31 (19.9%) | 56 (10.6%) |
| Internship only | 0 | 0 | 1 (0.5%) | 3 (1.9%) | 4 (0.8%) |
| Other | 0 | 0 | 0 | 3 (1.9%) | 3 (0.6%) |
| Total | 48 (100%) | 109 (100%) | 216 (100%) | 156 (100%) | 529 (100%) |

Source: Elaborated by the author.

Note: 3 missing cases

As for program destination, 240 students studied at institutions in the United States (45.1%), 151 in the United Kingdom (28.4%), 102 in Canada (19.2%) and 39 in other countries (7.3%). This is because I concentrated the email distribution on these countries  since they

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[12] The survey included two questions: a) Which proficiency test did you take?; and b) What was your score?. The scores were then classified according to the CEFR level, as mentioned in the methodology section.

hosted the highest amounts of students and had a large amount of students in highest-ranked institutions. As presented in Table 30, only 82 of these students (15.4%) were allocated to the top 20 institutions in both ARWU and THE-TR rankings, 58 to the top 21-100 institutions in the ARWU rankings (10.9%) and 34% in the top 101-500, leaving 211 students in HEIs not present in the ARWU rankings. Only 40 students had the opportunity to study at an institution that had a mobility agreement with their home institution, 386 students were not sent to institutions that had mobility agreements and 106 students did not know whether mobility agreements exist, which could indicate a possible lack of commitment to discovering whether they would be allowed to transfer credits to their home institution.

Furthermore, the program placed 57.5% of these students at the institution of their choice. As for the reasons for not being placed at their institution of choice (see Appendix F7), the most frequently mentioned are: the level of competitiveness in the admission process (25.2%); the student not having enough proficiency in the foreign language (19.0%); not having the expected profile (9.2%); the call for applications being canceled for that country (4.3%) and other (32.5%). Some students were dissatisfied with the fact that they did not receive feedback on why they were not placed at an institution of their choice. On the other hand, six students manifested that they were placed at an institution that was "better" than the one they indicated on their application.

Table 30 - Number of students according to university rankings

| Ranking | Students | Percentage |
| --- | --- | --- |
| Top 20 ARWU and THE-TR | 82 | 15.4 |
| Top 21-100 ARWU | 58 | 10.9 |
| Top 101-200 | 47 | 8.8 |
| Top 201-300 | 43 | 8.1 |
| Top 301-400 | 69 | 13.0 |
| Top 401-500 | 22 | 4.1 |
| Not in the ranking | 211 | 39.7 |
| Total | 532 | 100 |

Source: Elaborated by the author.

Table 31 presents students' motivations to participate in the program. Their main motivations are personal development (19%), to study in one of the best institutions worldwide (15.6%) and to learn/improve fluency in a foreign language (15,4%). The second most important reason is also represented mainly by improving their language skills (22%) and personal development (10%), but also visiting new places and having new experiences (11.8%). Students' third most important reasons do not differ from the second, though with different percentages. Some key aspects of the program are not perceived as being the most important by the participants, and they include attending classes with different methods and learning practices (3.8%), developing professional skills (9.8%), performing research and engaging in an internship (5.3%) and having more work opportunities in Brazil (7.7%). The fact that the program is cost-free is also important to 6.4% of the students. The program could be seen as a provider of an opportunity to those who would not have the financial resources to participate in an international study experience, similar to the Erasmus Program (BEERKENS et al., 2015).

Table 31 - Students' motivations to participate in the program

| Reason | Most important | Second most important | Third most important |
|---|---|---|---|
| For personal development | 19.0% | 10% | 12.8% |
| To have more work opportunities in Brazil | 7.7% | 5.3% | 6.8% |
| To learn/improve foreign language skills | 15.4% | 22% | 15.6% |
| To visit new places and have new experiences | 7.7% | 11.8% | 15.8% |
| To be in contact with other cultures | 3.6% | 8.5% | 7.7% |
| Because it is a cost-free program | 6.4% | 4.5% | 8.5% |
| To study in one of the best institutions in the world | 15.6% | 8.3% | 7.0% |
| To escape from my routine in Brazil | 1.7% | 0.9% | 2.4% |

| Reason | | | |
|---|---|---|---|
| To meet new people | | 0.2% | 0.6% |
| To have more work opportunities abroad | 3.8% | 3.4% | 5.8% |
| To perform research/be an intern in well-known organizations | 5.3% | 6.2% | 5.3% |
| To attend classes with different methodologies and learning practices | 3.8% | 8.5% | 3.9% |
| To develop professional skills | 9.8% | 9.0% | 7.0% |
| Other | 0.4% | - | 0.2% |

Source: Elaborated by the author.

Students' choice of country (Table 32) is represented mainly by the possibility of practicing a foreign language (25%), university reputation (21.1%) and having the institution they wished to study (10.9%). Cultural elements are perceived as important, but as a secondary reason to choose the destination (13.3%). Although cost of living may be determinant to choose a location (MAZZAROL; SOUTAR, 2002), this study revealed that it was not a factor in the SWB program. This may be attributed to the fact that students have all the expenses covered in addition to receiving a stipend. The present study also points that 4.7% of the respondents chose the possibility of immigrating in the future as the most important, and this factor is even higher when students had to select the second and third most important reasons (9.4% and 11.1% respectively). This corroborates to the study of Li, Olson and Frieze (2013), and it raises a concern on whether investments on these students should be made by the government as it can cause brain drain (VAN DAMME, 2001).

Table 32 - Students' motivations to choose the host country

| Reason | Most important | Second most important | Third most important |
|---|---|---|---|
| To learn a new language | 4.3% | 3.0% | 3.0% |
| Cultural elements | 10.3% | 13.3% | 19.7% |
| The universities I wanted to study are located there | 10.9% | 12.4% | 4.1% |
| Cost of living | - | 0.8% | 1.5% |
| University reputation | 21.1% | 17.5% | 12.6% |

| | | | |
|---|---|---|---|
| Climate | 0.6% | 0.9% | 4.1% |
| Possibility of internship and/or research in the field | 8.5% | 9.4% | 12.2% |
| Possibility of immigrating in the future | 4.7% | 9.4% | 11.1 |
| Location | 5.6% | 10% | 8.3% |
| Practice a foreign language | 25% | 23.5% | 15.4% |
| For having friends and/or family living there | 2.1% | 1.1% | 2.3% |
| Other | 6.8% | 1.5% | 2.8% |

Source: Elaborated by the author.

Students' motivations to choose the host institution are presented in Table 33, with 21.1% choosing the country because of their major, 18.4% made their choice on the fact that the institution is recognized/has prestige internationally, and 17.5% mainly motivated by university rankings. If we consider the total amount of students who mention university rankings as important (46.9%), it is possible to conclude that some international students are driven by league tables, as predicted by Choi and Nieminen (2013) and Gong and Huybers (2015), in addition to the prestige they own, also found in the studies of Mazzarol and Soutar (2002) and Massey and Burrow (2016).

Table 33 - Students' motivations to choose the host institution

| Reason | Most important | Second most important | Third most important |
|---|---|---|---|
| International prestige | 18.4% | 14.8% | 12.6% |
| University rank | 17.5% | 16.2% | 13.2% |
| Because it has my major | 21.1% | 9.2% | 8.6% |
| Courses/disciplines offered | 13.9% | 19.9% | 13.2% |
| Previous mobility agreement with my institution | 1.1% | 1.1% | 1.3% |
| Possibility of research/professional internship in the field | 9.2% | 7.0% | 9.6% |
| Location | 10% | 17.7% | 18.6% |
| The probability of being accepted there was higher | 3.2% | 7.7% | 10.5% |

| Other | 5.3% | 0.9% | 4.5% |

Source: Elaborated by the author.

Location is also an important factor for the participants, with 5.6% of the respondents choosing the country and 10% choosing the institution based on it. This could be linked to articles criticizing some students' end goal of participating in the program, in which Lira and Balmant (2014) refer as "Tourism Without Borders". In this article, the journalists discovered that some students spent more time traveling than engaging in academic activities. Among the reasons that allowed them to travel include the receiving a high stipend from the government, financial assistance from their families and the lack of control over activities in the host institution.

## 5.1 Student Profiles

Specific objective (a) consisted of identifying students' profiles according to their motivations. Thus, I performed a hierarchical cluster analysis to identify whether students' motivations in the SWB is linked to the ranking of the host institution and establish profiles according to their preferences. In addition, because language proficiency became an issue in the development of the program, this variable was also considered in the cluster analysis. Thus, as previously mentioned in the methodology section, the five variables are:

a) students' main motivation to participate in the SWB;
b) students' main reason to choose the host destination (country);
c) students' main reason to choose the institution;
d) students' foreign language proficiency according to the CEFR;
e) the host institution's rank.

I determined the number of clusters (three) based on the proportion of participants in each cluster and their unique characteristics that revealed the predominance of certain motivations. In case I increased the number of clusters, the characteristics among some groups would be similar. For instance, the motivation to participate in the SWB showed unique traits

in each group, as presented in Table 34. Cluster 1 is formed mainly by individuals motivated by personal growth and with the aim of developing professional skills in addition to participating in the research/internship phase of the program and having more work opportunities in their home institution. Given that the program's goals involved developing the workforce to develop activities in Brazil, this cluster would represent the SWB experience. Therefore, I will refer to this group as Experience-oriented. Cluster 2 presents individuals motivated to learn/improve their proficiency in the foreign language and personal growth. Thus, in this study, this cluster is called Language-oriented. The last cluster has individuals mainly motivated by studying at one of the best institutions worldwide. In comparison to the other clusters, this motivation solely represents 57.8% of the participants, therefore I will refer to them as Ranking-oriented individuals.

Table 34 - Students' main motivations to participate in the SWB according to cluster

| Motivation | Cluster 1 | Cluster 2 | Cluster 3 | Total |
|---|---|---|---|---|
| Being able to attend classes with diverse methodologies and learning practices | 14 7.1% | 6 2.6% | - | 20 3.8% |
| Having contact with other cultures | 15 7.6% | 4 1.7% | - | 19 3.6% |
| Personal development | 58 29.3% | 43 18.5% | - | 101 19.1% |
| Having more work opportunities overseas | 14 7.1% | 6 2.6% | - | 20 3.8% |
| Engaging in research in specialized labs or internship in renowned companies | 24 12.1% | 4 1.7% | - | 28 5.3% |
| Developing professional skills | 34 17.2% | 18 7.8% | - | 52 9.8% |
| Having more work opportunities in Brazil | 24 12.1% | 15 6.5% | 2 2.0% | 41 7.7% |
| Learning/improving proficiency in the foreign language | 12 6.1% | 62 26.7% | 8 7.8% | 82 15.4% |
| Visiting new places and having new experiences | 3 1.5% | 23 9.9% | 15 14.7% | 41 7.7% |
| SWB as a zero-cost program | - | 20 8.6% | 14 13.7% | 34 6.4% |
| Studying at one of the best universities worldwide | - | 24 10.3% | 59 57.8% | 83 15.6% |
| Escaping from my routine in Brazil | - | 6 2.6% | 3 2.9% | 9 1.7% |

| | | | | |
|---|---|---|---|---|
| Total | 198 100% | 232 100% | 102 100% | 532 100% |

Source: Elaborated by the author.

Language-oriented participants chose the destination based mainly on the possibility of practicing their language skills (57.3%), location (12.9%) and other (15.5%). None of the participants in this group based their decision the universities they could attend or their reputation, nor the possibility of developing research or participating in an internship.

The motivations to choose the host institution vary greatly among clusters. Ranking-oriented students chose the institution based on international recognition/prestige (39.2%) and university ranking (20.6%). Experience-oriented participants also considered these two factors as important, but with lower percentages, as their motivations are well-divided into five motivations. Language-oriented respondents indicated that the institution should have their major/program (28.9%) and university rank (15.1%) in addition to the courses offered (12.9%) and location (12.5%). Part of the students in this cluster considers the latter to be an important factor in the choice of host destination and institution, which might be related to choosing to participate in the program with the goal of traveling. Students' preference of institution was respected in 68.6% of the cases for ranking-oriented students, 57.6% for experience-oriented students and 52.6% of language-oriented students (see Appendix G7).

Table 36 - Motivations to choose the host institution according to cluster

| Motivation | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| University rank | 37 18.7% | 35 15.1% | 21 20.6% | 93 17.5% |
| Courses (disciplines) offered | 31 15.7% | 30 12.9% | 13 12.7% | 74 13.9% |
| The probability of being accepted was higher | 5 2.5% | 11 4.7% | 1 1% | 23 4.3% |
| Recognition/international prestige | 34 17.2% | 24 10.3% | 40 39.2% | 98 18.4% |
| Because it had my major | 32 16.2% | 67 28.9% | 13 12.7% | 112 21.1% |
| Previous mobility agreement | 2 1% | 2 0.9% | 2 2% | 6 1.1% |
| Possibility of internship/research in the field | 31 15.7% | 14 6% | 4 3.9% | 49 9.2% |

| Location | 20 | 29 | 4 | 53 |
|---|---|---|---|---|
| | 10.1% | 12.5% | 3.9% | 10% |
| Did not choose one | 1 | 1 | - | 2 |
| | 0.5% | 0.4% | | 0.4% |
| Other | 5 | 19 | 4 | 28 |
| | 2.5% | 8.2% | 3.9% | 5.3% |
| Total | 198 | 232 | 102 | 532 |
| | 100% | 100% | 100% | 100% |

Source: Elaborated by the student

In addition to motivations, I must highlight the importance of students' proficiency in the formation of clusters. Table 37 shows that ranking-oriented students were highly present in the B2-C levels (84.4%), while 66.6% language-oriented ones were concentrated in the B1-B2 levels. Most experience-oriented students were also present in the B2-C levels, but in a lower percentage in comparison to ranking-oriented ones.

Table 37 - Students' proficiency level according to cluster

| CEFR Level | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| A2 | 23 | 23 | 3 | 49 |
| | 11.6% | 9.9% | 2.9% | 9.2% |
| B1 | 40 | 58 | 13 | 111 |
| | 20.2% | 25% | 12.7% | 20.9% |
| B2 | 71 | 97 | 48 | 216 |
| | 35.9% | 41.8% | 47.1% | 40.6% |
| C | 64 | 54 | 38 | 156 |
| | 32.3% | 23.3% | 37.3% | 29.3% |
| Total | 198 | 232 | 102 | 532 |
| | 100% | 100% | 100% | 100% |

Source: Elaborated by the student

The last variable used to determine the clusters refers to the rank of the host institution (Table 38). Two aspects are important here: first, only 10% of ranking-oriented participants were not placed in institutions that are part of the Top-500, while this percentage increases greatly in the other two clusters - 41.9% of experience-oriented students and 50.4% of language-oriented ones; second, there is a higher concentration of ranking-oriented students in the top 200 institutions (62.8%), whereas this percentage is significantly lower in the other two clusters.

Table 38 - Students' host university rank according to cluster

| Rank | Experience | Language | Ranking | Total |
|------|------------|----------|---------|-------|
| Top 20 | 31 | 18 | 33 | 82 |
| | 15.7% | 7.8% | 32.4% | 15.4% |
| Top 100 | 26 | 15 | 17 | 58 |
| | 13.1% | 6.5% | 16.7% | 10.9% |
| Top 200 | 14 | 19 | 14 | 47 |
| | 7.1% | 8,2% | 13.7% | 8.8% |
| Top 300 | 9 | 23 | 11 | 43 |
| | 4.5% | 9.9% | 10.8% | 8.1% |
| Top 400 | 24 | 31 | 14 | 69 |
| | 12.1% | 13.4% | 13.7% | 13% |
| Top 500 | 11 | 9 | 2 | 22 |
| | 5.6% | 3.9% | 2% | 4.1% |
| Not present | 83 | 117 | 11 | 211 |
| | 41.9% | 50.4% | 10.8% | 39.7% |
| Total | 198 | 232 | 102 | 532 |
| | 100% | 100% | 100% | 100% |

Source: Elaborated by the author.

Table 39 clearly demonstrates that students with higher ENEM scores (700,01 to 800,00 and 800,01 to 900,00) were also the majority in the ranking-oriented cluster, representing 70% of the total in comparison to the others that contain 57% or less. The same is valid for students' grades in their courses prior to the program, in which 79.4% of the ranking-oriented students have grades A-B in comparison to 74.1% of the experience-oriented and 68.1% of the language-oriented, as seen in Table 40. This could indicate that there is a relation between students' prior academic performance and their placement. Furthermore, students with low academic performance (D) are present in both language-oriented and experience-oriented clusters, that points to the fact the agencies could have overlooked their performance when placing them.

Table 39 - Students' ENEM scores according to cluster

| Rank | Experience | Language | Ranking | Total |
|------|------------|----------|---------|-------|
| Below 600,00 | 2 | 4 | 2 | 8 |
| | 1.0% | 1.8% | 2.0% | 1.5% |
| Between 600,01 and 700,00 | 80 | 105 | 26 | 211 |
| | 41.0% | 46.3% | 26.0% | 40.4% |
| Between 700,01 and 800,00 | 95 | 93 | 56 | 244 |
| | 48.7% | 41.0% | 56.0% | 46.7% |

| | | | |
|---|---|---|---|
| Between 800,01 and 900,00 | 16<br>8.2% | 24<br>10.6% | 14<br>14.0% | 54<br>10.3% |
| Above 900,00 | 2<br>1.0% | 1<br>0.4% | 2<br>2.0% | 5<br>1.0% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the author.

Table 40 - Students' grades in their courses prior to the program according to cluster

| Rank | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| Below 6 (D) | 1<br>0.5% | 3<br>1.3% | 0<br>0.0% | 4<br>0.8% |
| Between 6.0 and 7.5 (C) | 50<br>25.4% | 71<br>30.6% | 21<br>20.6% | 142<br>26.7% |
| Between 7.6 and 8.9 (B) | 123<br>62.4% | 135<br>58.2% | 66<br>64.7% | 324<br>61.0% |
| Between 9.0 and 10.0 (A) | 23<br>11.7% | 23<br>9.9% | 15<br>14.7% | 61<br>11.5% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the author.

Table 41 presents the program's priority areas and the corresponding amount of students according to cluster. Both experience and language clusters have similar percentages of engineering and biology and health sciences students. This changes in the ranking-oriented cluster, in which biology and health science students represent 27.5% of the total. This could be attributed to the fact that the major in medicine is one of the most competitive programs in Brazil regardless of the university, and therefore the ENEM scores for admission are higher in comparison to all other majors.

Table 41 - Students' field of study (priority area) according to cluster

| Priority Area | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| Engineering | 104<br>52.8% | 130<br>56.0% | 48<br>47.1% | 282<br>53.1% |
| Physical Sciences | 14<br>7.1% | 22<br>9.5% | 5<br>4.9% | 41<br>7.7% |
| Biology and Health Sciences | 36<br>18.3% | 41<br>17.7% | 28<br>27.5% | 105<br>19.8% |
| Computing and Information<br>Technology | 13<br>6.6% | 13<br>5.6% | 11<br>10.8% | 37<br>7.0% |

| | | | | |
|---|---|---|---|---|
| Creative industry | 9 | 13 | 4 | 26 |
| | 4.6% | 5.6% | 3.9% | 4.9% |
| Biotechnology | 8 | 5 | 1 | 14 |
| | 4.1% | 2.2% | 1.0% | 2.6% |
| Other | 14 | 8 | 5 | 27 |
| | 6.5% | 3.4% | 4.8% | 4.9% |
| Total | 198 | 232 | 102 | 532 |
| | 100% | 100% | 100% | 100% |

Source: Elaborated by the author.

After presenting the results of the cluster analysis and crossing important data, I will summarize the characteristics of each cluster, as a response to specific objective (a). Because the clusters in this study are not completely homogeneous, the results cannot be generalized to the whole population within each of them.

The first cluster, referred here as *Ranking-oriented*, consists of students whose majority wanted to participate in the program with the goal of studying in one of the best institutions worldwide and chose the country based mainly on the reputation of the universities and the institutions they sought to attend. International recognition/prestige and ranking were key factors to choose the host institution for most of them and in comparison to the other two clusters they have the highest proficiency, with 84% of them being in the B2-C levels. Almost half of them were placed in the top 100 institutions and 9 out of 10 were studying at a Top 500 institution. The proportion of students with the highest ENEM scores in addition to the highest grades in their courses is larger than the other two clusters.

The *Experience-oriented* cluster is comprised of students whose main motivations to participate in the program include personal growth and the possibility of developing professional skills; they chose the country based on reputation of the host institutions, the possibility of engaging in research/internship in the field of study and the host destination's cultural elements; the choice of host institution mainly involves their rank and recognition/prestige towards others. Most students 68.2% have B2-C proficiency in the foreign language and have high scores in the admission exams, but these scores in addition to academic performance in their host institution are generally lower in comparison to Ranking-oriented ones. Thus, fewer students were able to study in higher-ranked institutions as part of the program.

The *Language-oriented* cluster has most students seeking to participate in the program to develop their language skills. The choice of destination is based on practicing their linguistic

skills and they look for institutions which offer their major, which are also ranked and offer courses/disciplines of their interest. Most of them were placed in lower-ranked institutions or others that are not in the top 500 group, and one possible explanation for this is the fact that most of them have lower proficiency in the foreign language, lower ENEM scores and lower academic performance in their home institution.

## 5.2 Benefits and challenges

Another section of the survey referred to students' perceived benefits and challenges faced throughout the program, which corresponds to specific objectives (b) and (c). I performed three factorial analysis with the goal of defining the underlying structure among the variables, as suggested by Hair et al. (2010). However, it is also important to comprehend how students perceived they perceived the experience to be beneficial during the academic and internship phases in addition to the challenges which could constitute barriers to their development.

I must highlight that the objectives of this study did not include assessing students' skills before and after the program, but whether the experience contributed to their development. Table 42 lists the averages for each of the benefits in both phases of the SWB experience.

Table 42 - Means of the perceived benefits of the academic and internship phases

| Benefits | Academic phase | | Internship phase | |
|---|---|---|---|---|
| | Mean | Standard deviation | Mean | Standard deviation |
| Proficiency in the foreign language | 4.58 | 0.708 | 4.36 | 0.936 |
| communication abilities | 4.27 | 0.819 | 4.25 | 0.997 |
| Intercultural competence | 4.40 | 0.837 | 4.06 | 1.109 |
| Awareness of other cultures | 4.43 | 0.871 | 3.70 | 1.262 |
| Understanding of global issues | 3.95 | 1.043 | 3.50 | 1.259 |

| Improvement in academic performance | 3.84 | 1.069 | 3.65 | 1.271 |
|---|---|---|---|---|
| Decision-making skills | 3.393 | 1.042 | 3.95 | 1.112 |
| Problem-solving skills | 4.09 | 0.952 | 4.08 | 1.044 |
| Analytical skills | 3.87 | 1.035 | 3.92 | 1.101 |
| Entrepreneurial capacity | 3.03 | 1.291 | 2.92 | 1.362 |
| Personal growth | 4.68 | 0.684 | 4.31 | 1.002 |
| Daily activities (cooking, using public transport, etc.) | 3.84 | 1.345 | 3.05 | 1.501 |
| Self-esteem | 4.04 | 1.056 | 3.76 | 1.242 |
| Networking | 3.66 | 1.106 | 3.94 | 1.171 |

Source: Elaborated by the author.

Note: students had to indicate on a likert scale (from 1 to 5) their perceptions regarding the benefits.

Several aspects deserve attention here:

a) the highest means in both phases show that the program may have been successful at developing linguistic and intercultural skills as well as personal growth;

b) there is a general trend that the means decrease in the internship phase, which indicates that students perceive more benefits in the academic part of the program. Networking, the development of analytical and decision-making skills constitute the perceived benefits with higher averages, demonstrating that the internship phase contributes more to improving certain skills;

c) entrepreneurial capacity and networking had the lowest means in the academic phase and entrepreneurial capacity continued to have the lowest mean in the internship phase. These were two of the key objectives of the SWB, and the results could indicate that the program has not achieved the desired goal of developing the workforce. This also suggests that the program should be redesigned with the goal of developing specific skills.

Students' perceived challenges also point to important facts, as demonstrated in Table 43. First, the variables with the highest means - credit transfer, the agencies' support regarding the internship and host institution, and the host institution's support regarding the internship and coursework - indicate possible flaws in the program design which deserve attention when implementing future editions.

Second, students' personal aspects, which comprise family and work responsibilities in Brazil, coming from a minority background and lack of self-interest had the lowest means, showing that these did not hinder their experience in the same level as other possible barriers. These were also among the variables that had the lowest numbers of responses, which could explain the reason for not having high averages.

Table 43 - Means of possible barriers/challenges faced by SWB students

| Variable | Number of answers (1) | Mean | Std. Deviation |
|---|---|---|---|
| Lack of self-interest | 436 | 1.42 | .817 |
| Proficiency (or lack of) in a foreign language | 522 | 2.06 | 1.093 |
| Financial reasons | 516 | 1.81 | 1.085 |
| Possibility of credit transfer | 509 | 2.83 | 1.577 |
| Support from the university regarding coursework | 523 | 2.28 | 1.387 |
| Family responsibilities | 481 | 1.43 | .892 |
| Work responsibilities in Brazil | 425 | 1.26 | .745 |
| Support of the university regarding the internship | 496 | 2.42 | 1.521 |
| Not having my program/major | 464 | 1.92 | 1.313 |
| Climate | 528 | 1.77 | 1.167 |
| Support from the agencies regarding the internship | 491 | 2.56 | 1.521 |
| Local food | 529 | 1.92 | 1.177 |
| Insecurity | 523 | 1.58 | .982 |
| My family in Brazil does not have a college degree | 453 | 1.46 | .951 |
| Being a minority student | 375 | 1.47 | .944 |

| Support from CAPES regarding the university | 511 | 2.12 | 1.340 |
|---|---|---|---|

Source: Elaborated by the author.

Note:  students could opt to click on a non-applicable for each variable

With the goal of reducing the number of variables to compare benefits and challenges among the three clusters, I performed three factor analyses. The first consisted of all the benefits of the academic phase of the program. It revealed the existence of two components, responsible for 48.90% of the variance (see Appendix H1). Due to the low percentage, I forced the extraction of more components. The best solution that corresponded to a percentage of variance above 60%, contained two eigenvalues above 1.0 and two eigenvalues above 0.8. Because of the common aspects among variables, as evidenced in Table 44, I denominate them professional skills (39.87% of variance and alpha of 0.815), intercultural abilities (9.03 of variance and alpha of 0.721), personal growth/daily skills  (7.06% of variance and alpha of 0.488) and communication skills (5.82% of variance and alpha of 0.612). Although the last two components contained two variables each, I opted to eliminate the third (personal growth/daily skills) because it had an alpha below 0.6.

Table 44 - Factor analysis of the benefits of the academic phase of the SWB

|  | Factor 1 Professional Skills (39.87% of variance) | Factor 2 Intercultural abilities (9.03% of variance) | Factor 3 Personal growth/ daily skills (7.07% of variance) | Factor 4 Communication skills (5.82% of variance) |
|---|---|---|---|---|
| Proficiency in the foreign language |  |  |  | 0.849 |
| communication abilities |  |  |  | 0.686 |
| Intercultural competence |  | 0.575 |  |  |
| Awareness of other cultures |  | 0.761 |  |  |
| Understanding of global issues |  | 0.740 |  |  |
| Improvement in academic performance | 0.640 |  |  |  |
| Decision-making skills | 0.699 |  |  |  |
| Problem-solving skills | 0.717 |  |  |  |

| Analytical skills | 0.753 | |
|---|---|---|
| Entrepreneurial skills | 0.639 | |
| Personal growth | | 0.633 |
| Daily activities (cooking, using public transport, etc.) | | 0.794 |
| Self-esteem | | |
| Networking | 0.524 | |

Source: Elaborated by the author.
Note: only those with absolute value above 0.5 were considered.

The second cluster analysis consisted of all the benefits of internship phase of the program. Because it only revealed the existence of one component (see appendix H2), I also forced the extraction of more components with eigenvalues above 0.8, with the most appropriate solution being comprised of three components responsible for 65.54% of the variance, as indicated in Table 45: professional skills (52.22% of variance and alpha of 0.88), intercultural knowledge/daily skills (7.31% of variance and alpha of 0.81), and communication skills (6.18% of variance and alpha of 0.74). Because personal growth (in bold) appeared in two components with a load above 0.5, it was eliminated from the analysis.

Table 45 - Factor analysis of the benefits of the internship phase of the SWB

| | Factor 1 Professional Skills (52.22% of variance) | Factor 2 Intercultural abilities/daily skills (7.13% of variance) | Factor 3 communication skills (6.18% of variance) |
|---|---|---|---|
| Proficiency in the foreign language | | | 0.806 |
| communication abilities | | | 0.740 |
| Intercultural competence | | 0.559 | |
| Awareness of other cultures | | 0.759 | |
| Understanding of global issues | | 0.730 | |
| Improvement in academic performance | 0.707 | | |
| Decision-making skills | 0.671 | | |

| | | | |
|---|---|---|---|
| Problem-solving skills | 0.725 | | |
| Analytical skills | 0.732 | | |
| Entrepreneurial skills | 0.624 | | |
| **Personal growth** | **0.555** | | **0.535** |
| Daily activities (cooking, using public transport, etc.) | | 0.726 | |
| Self-esteem | 0.634 | | |
| Networking | 0.583 | | |

Source: Elaborated by the author.
Note: only those with absolute value above 0.5 were considered.

The third factor analysis, which consisted of sixteen challenges students could face, revealed the existence of 7 factors, which explain 66.28% of the variance (see Appendix H3). However, four components had fewer than three variables and were removed. In addition, the only factor that had an alpha above 0.6 is referred here as institutional support (0.678 alpha). This factor, which responds for 18.46% of the variance, comprises the following variables: support from the host university regarding the internship, support from CAPES regarding the internship, and support from CAPES regarding the host institution.

5.2.1 Differences among clusters

With the results of the factorial and cluster analyses, I performed an analysis of variance (ANOVA) to discover whether there were significant differences in perception levels in the three clusters previously presented (Appendix I). This addresses part of the main research question and identifies the relationship between students' motivations and their perceived benefits and challenges.

It revealed that all three clusters were significantly different ($p = 0.00$) in their perceptions of the professional skills obtained during the academic phase of the program (Table 46), with Experience-oriented students having the highest mean ($M_{experience} = 0.179$ above the average) and language-oriented the lowest ($M_{language} = 0.221$ below the average). There

was no significant difference (p > 0.5) in the students' perceptions of intercultural abilities (p = 0.786), personal growth/daily skills (p = 0.221) and communication skills (p = 0.335).

Table 46 - Academic phase - professional skills benefits means results according to cluster

|  | N | Mean | Std. Deviation | Std. Error |
| --- | --- | --- | --- | --- |
| Experience-Oriented | 197 | 0.1789583 | .98613909 | .07025950 |
| Language-oriented | 232 | -.2212440 | 1.00666901 | .06609106 |
| Ranking-oriented | 98 | .1623617 | .91489605 | .09195051 |
| Total | 528 | .0000000 | 1.00000000 | .04351941 |

Note: the means values for the three clusters are in comparison to the overall mean.

There is a significant difference (p < 0.05) in the clusters' perceptions of the benefits obtained during the internship phase - professional skills, of the program, with ranking-oriented students having the highest (Mexperience = 0.123 above the average) and language-oriented ones the lowest (Mlanguage = 0.147 below the average), as indicated in Table 47. It is possible to infer that ranking-oriented students see the program as the most beneficial in terms of professional skills, and language oriented ones did not reap them in the same manner. However, there is no significant difference (p > 0.05) when considering the other two components of the internship phase - intercultural abilities/daily skills (Sig = 0.920) and communication skills (Sig = 0.379).

Table 47 - Internship phase - professional skills means results according to cluster

|  | N | Mean | Std. Deviation | Std. Error |
| --- | --- | --- | --- | --- |
| Experience-Oriented | 168 | 0.114963 | .79724570 | .79724570 |
| Language-oriented | 203 | -.1475000 | 0.67945100 | .67945100 |
| Ranking-oriented | 86 | .1235897 | .10488719 | .10488719 |
| Total | 457 | .0000000 | 1.00000000 | .46778030 |

Note: the means values for the three clusters are in comparison to the overall mean.

The ANOVA did not reveal any significant statistical difference among the clusters (p = 0.820) in regards to institutional support, the only challenge found in the factorial analysis. Thus, I performed another ANOVA for each of the sixteen variables (Appendix J - Tables J1-J4). It revealed that language-oriented students had more difficulty (p<0.05) regarding the proficiency/lack of proficiency in the foreign language (Mlanguage = 2.19) in comparison to

experience-oriented (Mexperience = 1.91) and ranking-oriented (Mranking = 1.89). The analysis also showed that ranking-oriented students had significantly less difficulty ($p<0.05$) when receiving support from the host institution with their coursework (Mranking = 1.84) in comparison to experience-oriented (Mexperience = 2.36) and language-oriented students (Mlanguage = 2.32).

In summary, in addition to answering specific objectives (b) and (c), this study presents empirical evidence that the clusters' perceptions differ when considering the professional skills obtained during the academic and internship phases of the program, with language-oriented students having the lowest means, below the overall mean. Given that the development of the workforce is one key aspect of the SWB, preparing students properly for the challenges in an evolving market is key. On the other hand, this same cluster also had the highest mean when they indicated that proficiency/lack of proficiency in the language of instruction as a challenge. Hence, the program should provide tools to improve their language skills, the and also review its practices to consider whether this student type should be considered a priority given their motivations and the results obtained post-participation in the program presented here.

5.2.2 Differences among rankings

This study also aimed to identify whether the ranking of the host institution has a relationship with students' perceived benefits and challenges. Thus, when only considering these three levels according to the ARWU rankings - Top 100, Top 500 and not present - as the independent variable, significant changes could be found, as demonstrated in Table 48.

Table 48 - Academic phase - perceived benefits means results according to ranking

|  |  | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|---|
| | No ranking | 211 | -.0815673 | 1.00591929 | .06925034 |
| Professional skills | Top 100 | 136 | .2563336 | .98466851 | .08443463 |
| $p = 0.002$ | Top 500 | 181 | -.0975175 | .97625444 | .07256442 |
| | Total | 528 | .0000000 | 1.00000000 | .04351941 |
| | No ranking | 211 | .0648291 | .91676941 | .06311301 |
| Intercultural abilities | Top 100 | 136 | -.2229542 | 1.06985529 | .09173933 |
| $p = 0.01$ | Top 500 | 181 | .0919493 | 1.01872731 | .07572140 |
| | Total | 528 | .0000000 | 1.00000000 | .04351941 |

| | | | | | |
|---|---|---|---|---|---|
| | No ranking | 211 | -.0000137 | .98233484 | .06762672 |
| Communication skills | Top 100 | 136 | -.0663538 | 1.00530225 | .08620396 |
| p = 0.593 | Top 500 | 181 | .0498730 | 1.01890311 | .07573447 |
| | Total | 528 | .0000000 | 1.00000000 | .04351941 |

The ANOVA for the academic phase revealed that students in Top 100 institutions had significantly ($p < 0.05$) higher means of professional skills (Mtop100 = 0.26 above the overall mean) while students in Top 500 and institutions not present had lower means (Mtop500 = 0.08 and Mnoranking = 0.1 below the overall mean). However, students in Top 100 institutions had lower means of intercultural abilities in comparison to the other groups (Mtop100 = 0.22 below the overall mean; Mtop500 = 0.09 above the overall mean; Mnoranking = 0.06 above the overall mean). One possible explanation is the fact that a great amount of students in lower-ranked institutions had the opportunity of studying the language in the host destination prior to beginning the academic phase, as reported by Grieco (2015). No significant difference was found in students' perception levels of their communication skills.

As for the internship phase (Table 49), a similar phenomenon occurs. Students in Top 100 institutions had higher mean in their perceptions of professional skills (Mtop100 = 0.20 above the overall mean; Mtop 500 = 0.05 below the overall mean; Mnoranking = 0.08 below the overall mean). Students in non-ranked institutions had a higher mean of intercultural abilities/daily skills (Mtop100 = 0.07 above the overall mean; Mtop 500 = 0.18 below the overall mean; Mnoranking = 0.11 above the overall mean). There was no significant difference found in students communication skills.

Table 49 - Internship phase - perceived benefits means results according to ranking

| | | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|---|
| | No ranking | 179 | -.0769165 | 1.04787663 | .07832198 |
| Professional skills | Top 100 | 114 | .1978984 | .86609278 | .08111702 |
| p = 0.002 | Top 500 | 164 | -.0536119 | 1.02061478 | .07969663 |
| | Total | 457 | .0000000 | 1.00000000 | .04677803 |
| | No ranking | 179 | .1118656 | 1.01858289 | .07613246 |
| Intercultural abilities | Top 100 | 114 | .0794207 | .85485478 | .08006449 |
| p = 0.01 | Top 500 | 164 | -.1773043 | 1.05269318 | .08220153 |

| | | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|---|
| | Total | 457 | -.0000000 | 1.00000000 | .04677803 |
| Communication skills p = 0.085 | No ranking | 179 | -.0773987 | .97183546 | .07263839 |
| | Top 100 | 114 | .1777010 | .88072575 | .08248752 |
| | Top 500 | 164 | -.0390460 | 1.09463721 | .08547681 |
| | Total | 457 | .0000000 | 1.00000000 | .04677803 |

Table 50 - Perceived challenges means results according to ranking

| | | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|---|
| Institutional support p = 0.003 | No ranking | 211 | .1452760 | 1.08202510 | .07448968 |
| | Top 100 | 140 | -.2230647 | .82355003 | .06960268 |
| | Top 500 | 181 | .0031813 | .99844553 | .07421387 |
| | Total | 532 | .0000000 | 1.00000000 | .04335550 |

Table 50 demonstrates students' perceived challenges according to the host institution's ranking. Students in Top 100 institutions had significantly lower means of institutional support (Mtop100 = 0.22 below the overall mean; Mtop 500 = 0.03 above the overall mean; Mnoranking = 0.14 above the overall mean). Hence, it is possible to conclude that the students in higher-ranked have more support regarding coursework and internship in comparison to studying at a non-ranked institution.

Because all the other components did not have an alpha above 0.6, the variables could only be tested individually, as indicated in Appendix J (Tables J5-J8). Consequently, students in non-ranked institutions reported higher means in four variables: proficiency (or lack of) in the foreign language (Mtop100 = 1.85, Mtop500 = 2.04 and Moutside= 2,22); host institutions' support regarding courses/disciplines (Mtop100 = 1.88, Mtop500 = 2.37 and Moutside= 2.48); not having the desired program (Mtop100 = 1.60, Mtop500 = 1.79 and Moutside= 2.22); and climate (Mtop100 = 1.59, Mtop500 = 1.72 and Moutside= 1.94). Students in top 100 institutions had the lowest means in all of them. These means may be higher due to the support offered by higher-ranked institutions in all aspects, from academics to psychological ones.

The results of this analysis reveal important aspects and also contributes to addressing the main research question. First, students in higher-ranked institutions (top 100) had higher means of professional skills, which could indicate that the institutions have prepared them better

for the challenges. Thus, students in these students may feel more prepared for the market as it contributes to their employability chances (BEERKENS et al, 2012; POTTS, 2015). Students in lower-ranked or non-ranked institutions had higher means in their intercultural abilities, and this could be an indication of attending language courses prior to the beginning of the academic phase. On the other hand, instead of obtaining higher means in the internship phase for the same perceived benefits, these students had lower means, and the causes for that cannot be easily explained. One possible explanation is the fact that not all students were able to engage in a professional internship and had to participate in research projects (GRIECO, 2015).

As for the perceived challenges, it is clear that students in higher-ranked institutions perceived having less difficulty regarding the barriers mentioned in previous studies such as lack of proficiency (FOSTER, 2014; SAWIR et al., 2012), not having the desired program (BRUX; FRY, 2010; STROUD, 2010) and institutional support (BRUX; FRY, 2010; SIMON; AINSWORTH, 2012). With proper planning, these challenges can be avoided.

# 6 DISCUSSION

This study aimed to identify the relationship between students' motivations and university rankings in the SWB's students' experience, based on their perceptions of benefits and challenges. However, due to the inexpressive amount of studies regarding internationalization in Brazil and student characteristics in large-scale study abroad programs in Latin America, understanding the context in which the program took place became essential for the development of the quantitative phase of this study.

It is clear that the SWB was a unique program in the history of internationalization of higher education in the country and it has had implications for all stakeholders: governments, educational agencies, HEIs, students, and organizations. The program provided more than 93,000 students with an educational experience that allowed them to study and perform research and/or engage in internship programs. Even though some results may be noticeable, some of the outcomes are still unclear, which include  some mentioned by Knight (2004), such as developing and strengthening partnerships between Brazilian and foreign HEIs, economic growth and international competitiveness. This is also one concern expressed by Spears (2014), in which the government must be able to observe the return of the investment made in this initiative.

Thus, it is important to understand the causes for these issues to arise. The document analysis and interviews revealed that the major issue in the process concerns program design and implementation, which consequently generated a series of barriers in different levels. The government did not properly evaluate the priority areas which deserved the most attention and analyzed available resources: the low number of professionals working in the two agencies (CAPES and CNPq); partnerships with private organizations; home and foreign institution' previous partnerships; and most importantly, time for planning and implementation. Sending an impressive amount of undergraduate students in four years caused problems in the placement process, as most of them did not have the opportunity to study in higher-ranked HEIs during the program.

This strong emphasis on undergraduate students is also criticized (KNOBEL, 2011; SÁ, 2016), as they do not tend to have the experience to establish important partnerships between institutions. Moreover, as demonstrated previously, the lack of foreign language proficiency contributed to a significant rise in costs, and because of the absence of the exact amount of numbers who received scholarships to attend language courses, these costs cannot be estimated.

In addition to overlooking students' language skills, the program overlooked the possibility of transferring credits to the home institution. The incompatibility among curricula (STROUD, 2010) is perceived as a major barrier by all stakeholders and critics of the program, and also could be seen as a major cost. Among the causes for this issue is the lack of engagement of the home universities and the lack of support from the two agencies and host institutions. On the other hand, students had the opportunity to take courses which go beyond their program in the host institution, as proposed by the liberal arts education (SPEARS, 2014).

Due to the short amount of time between planning and implementation, policymakers overlooked another important aspect: establishing indicators and metrics. The absence of these makes the process more difficult, as it can be evidenced in the numbers of students sent per priority area, with a substantial amount of engineering students (41,594) and less than one thousand scholarships for students from other areas such as mineral technology, marine sciences, aerospace technology, among others. With oil and gas being among the country's most important resources, having only 678 students in foreign institutions could be seen as a failure. Also, because the program prioritized students with higher ENEM scores, the North and Central-West regions had an insignificant amount of students taking part of the experience, and focusing on the workforce in the richest regions of the country may not contribute to an overall development of the entire nation.

All of these factors mentioned above may be linked to what Gacel-Avila and Marmolejo (2016) characterized Latin American countries: a) challenges in the implementation of crucial reforms that tackle issues regarding equity and access in higher education; and b) focusing on mobility programs instead of systematic strategies that include curriculum and research. Although the SWB explored a few bilateral agreements among institutions (University of São Paulo - Harvard University, and the Military institutes with the Massachusetts Institute of Technology), in most cases this did not happen, which could define the program as unilateral, only promoting study-abroad opportunities instead of a strong emphasis on exchange programs, as defined by Massey and Burrow (2012).

In addition to demographic and academic aspects,  this study identified that students' motivations influences their goals as to why participate in the program, given that there is a direct link between motivation and satisfaction, contributing to the achievement of one's goals (SANCHEZ et al., 2006). The existence of three clusters, which present distinct characteristics and must be taken into consideration when designing large-scale study abroad programs. For instance, language-oriented students did not seem to reap the benefits in the same way as the other two groups, as their main motivation involves language learning. Consequently, one may

argue that language-oriented students do not need to occur overseas, and internationalization-at-home (BEELEN; JONES, 2015; DE WIT; HUNTER, 2014) initiatives like the Language Without Borders would be one effective alternative to solve this issue with a significantly less cost to MEC and student. Integrating these initiatives will still contribute to developing a series of skills and competences, as mentioned by Soria and Troisi (2013), and not offering them is a sign that an institution has failed (JONES, 2016).

Previously explored in the literature, the use of rankings is essential for different stakeholders (HAZELKORN, 2014), including students. Ranking-oriented students, on the other hand, expect to study in higher-ranked institutions as part of the program and their performance, measured here by their average grades throughout the program. There is evidence that students in the top 20 institutions had significantly higher academic average scores than students in the other ranking levels, which could sign that they are more likely to be more academically successful during their experience. However, placing students in these institutions becomes a challenge when the time for its implementation is short. Had the program been implemented in a longer period, there could have been more students in top 20 or top 100 institutions, as more students would also have had opportunities to develop their language skills at home.

Experience-oriented students aim to achieve all goals expected by the program administrators. They chose to participate in the SWB mainly based on personal growth and professional development, and are also interested in obtaining more job opportunities in the country and engaging in internship programs/research, as offered by the program. As a consequence, when analyzing how much the program contributed to the development of professional skills as well as communication skills, this cluster presented a higher mean in comparison to language-oriented students.

Nevertheless, an important goal that contributes to the country's development may not have been achieved. Students did not perceive the program to be beneficial regarding the entrepreneurial capacity. Hence, the program ought to include a mandatory component that fosters the development of entrepreneurial skills.

Furthermore, as suggested by Knight (2001), internationalization needs engagement from all stakeholders. It is known that the national agencies - CAPES and CNPq - must play a key role in this process, and require Brazil's HEIs' administrators to participate actively. However, not being able to effectively demonstrate the results also falls on students' shoulders, as a significant portion has already done one or more of the following actions: not updating their Lattes CVs after returning to Brazil; deleting their Latter CVs; not sending a report of their

activities on the program; and participating in the program as a means to international travel. These are aspects which constitute another barrier not previously mentioned in other empirical studies: the lack of active engagement after the program. Table 51 summarizes all the barriers found in this study, which can be divided in two types: caused by the lack of awareness and caused by operationalization at all levels. I must reinforce that these barriers are not generalized to all students or institutions, but they can still compromise the program and students' experience as a whole, as identified in specific objective (d).

Consequently, the lessons learned in this first edition of the SWB point to the fact that there must be significant adaptations for future editions. Hence, I propose a few suggestions, as presented in specific objective (e), considering it becomes a public policy. At the Ministry of Education level, there must be significant changes and they must start by devoting more time for the design and implementation of the program. With this, leaders will be able to establish a series of short-term and long-term indicators to evaluate the effectiveness of the program at all levels. Also, partnerships with private organizations need to be redesigned, and these companies should also be able to participate in the conception process, as they may become the grantees' potential employers.

Furthermore, the program's high costs must be reduced considerably, and one solution is to develop important partnerships between home and host institutions. Another possibility is to consider a need-based approach, in which students will contribute financially according to income, as it occurs in the Erasmus program. For instance, the Erasmus+ program offers loans at lower interest rates for graduate students. (MASTER…, n.d.). MEC should also review and properly distribute an even number of scholarships per priority area, in addition to considering new ones, such as education and foreign language teaching. Lastly, the government ought to consider the role of sending undergraduate students and their motivations to participate in the program, as presented in the three clusters of this study.

Table 51 - Barriers in the development of the program

| Stakeholder | Barriers caused by unawareness | Operational barriers |
|---|---|---|
| MEC | - Understanding the country's needs (priority areas, regional aspects)<br>- Unawareness of the resources available (human, financial, partnerships with private corporations)<br>- Unawareness of students' motivations<br>- Incompatibility among curricula | - Time constraints<br>- Emphasis on undergraduate study<br>- Absence of long-term indicators<br>- Absence of short-term metrics to control students and institutions´performance<br>- High costs<br>- Presidential initiative<br>- Weak partnerships with private |

organizations

| | | | |
|---|---|---|---|
| Agencies (CAPES and CNPq) | - Not having expertise on undergraduate study | - Lack of personnel<br>- Issues in placing students<br>- Lack of support regarding host institutions and internships<br>- Inaccuracy regarding the data posted on their websites | |
| Home institutions | - Lack of engagement<br>- Incompatibility among curricula | - Not having expertise on internationalization of higher education<br>- Incompatibility among curricula | |
| Foreign institutions | - Incompatibility among curricula | - Lack of support for students regarding coursework and the internship<br>- Lack of psychological support | |
| Students | - Low proficiency in the foreign language<br>- Lack of commitment to the country: brain drain | - Not following rules during the program - "Tourism Without Borders"<br>- Lack of commitment to internationalization after the program | |

Source: Elaborated by the author.

With the national agencies having already developed expertise at the undergraduate level, the new version must contain specific guidelines for each country and goals for each student to achieve. These may include achieving a minimum average score in courses taken and participating in research that involves the possibility of publication in renowned journals. CAPES and CNPq should also consider having more employees dedicated to the program instead of allocating important activities to partner agencies. Regarding student placement, if the program's priority is to send students to higher-ranked institutions, the amount of students needs to be significantly reduced in the long term. They must redesign the guidelines for host and especially home institutions, as they need to take a more proactive role in their students' study abroad experience and contribute to the internationalization of the institution and the country. Given that one of the goals refers to developing their entrepreneurial skills to improve the economic scenario, the agencies must assure the inclusion of initiatives to foster their

development during and after the program. They should also include indicators to evaluate students' progress and satisfaction with the activities offered.

Home institutions ought to consider the particularities of Brazil's higher education programs curricula and find solutions for any incompatibilities and still be able to allow students to transfer credits and not delay their graduation. Consequently, they could also be responsible for designing unique programs for their students. Previous partnerships are important assets in this process, as it is the case of the University of São Paulo's and Harvard University's medical schools.

Host institutions, on the other hand, must offer effective assistance to students regarding coursework and the internship. They must contact the home institution and guarantee that they will offer internships and have room in their courses for students. This should occur prior to admitting the student in the program.

At the student level, there needs to be significant changes. First, the program should reconsider whether a language course should be offered abroad or prior to departure, as the Languages Without Borders has already contributed to the development of students' proficiency in a foreign language. Second, even though there are different types of students in regards to their motivations and goals to participate in the program, the rules should be emphasized, as the SWB should not be perceived as an opportunity to practice tourism overseas and attend classes only if/when required. Third, students have to take a more active role after their participation in the program, by engaging in research activity or interning in companies, in addition to reporting their accomplishments on their Lattes CVs, which must not be deleted. This will contribute to an evaluation of the program's impact.

## 6.1 Theoretical contributions

This study presents important contributions, starting from the advancement of knowledge regarding students' motivations and how university rankings may influence their decisions. As suggested by Beerkens et al. (2016), it is important to understand the specificities of the region and develop an instrument which is adapted to its reality.

Another important aspect refers to performing empirical studies in the Brazilian and Latin-American context of internationalization as if differs greatly from the reality faced by the North-American and European contexts. Due to an insufficient amount of studies regarding large-scale policies in the region, this study provides an understanding of the program from the students' perceptions, since it investigates important aspects regarding their experience during the program.

At the student level, this study has also revealed the important role scholarship recipients have in the internationalization process, and how the lack of commitment may hinder its development.

## 6.2 Practical contributions

This study allows policymakers to have a better understanding of students' motivations to engage in international study experiences and how to establish effective internationalization policies. It also presents important insights on how to adapt some of the practices to contribute to a better development of future versions of the program and engage all stakeholders in this process, including students. The present study lists a series of alternatives to reduce costs significantly.

Furthermore, this paper highlights the importance of language learning prior to the study-abroad experience itself. Thus, initiatives such as the Language Without Borders must become a permanent national policy and also provide pre-departure training. Lastly, as initially expected by the national agencies, the program demonstrated that the rank of the foreign institution is a crucial aspect of the allocation process, and the survey results point to the fact the benefits and challenges differ greatly. Consequently, they must perform significant actions to allow a greater percentage of students to study in these institutions.

## 6.3 Methodological contributions

From a methodological standpoint, this paper revealed to be the first of its kind that involved the development of a survey based on previous studies and interviews on the SWB program. It is also the first study on mobility programs that performs a multivariate analysis comprised of a cluster analysis followed by an ANOVA to identify differences in perceptions of benefits and challenges.

## 6.4 Limitations and suggestions for future studies

This study is limited due to two important aspects. First, the survey could have been created based only on the students' point of view and have questions more adapted to their reality. Second, the study does not present an analysis with significant participation of students from all host countries. Future studies may include a comparative analysis of students' motivations and perceived benefits and challenges per country.

Other types of comparative analyses should also take place, which include comparing undergraduate and graduate students answers and SWB students versus students who participated in other programs. Another study should also focus on students who are interested in participating in a mobility program similar to the SWB and investigate their motivations, such as testing new destinations and institutions.

Finally, for future versions of the program, researchers may perform an analysis pre- and post-program participation, testing a series of variables, which include language proficiency, entrepreneurial skills and intercultural competence.

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# APPENDIX A - INTERVIEW QUESTIONS

| | | Pergunta |
|---|---|---|
| Abertura da entrevista | Identificar a relação do entrevistado com o CsF | Qual o seu cargo? <br><br> Quais as suas responsabilidades? <br><br> Por quanto tempo trabalhou no CsF? |
| Design | Entender o processo da concepção e design do programa | Como foram feitos os cálculos dos números de alunos, por exemplo, 75.000 e 100.000? <br><br> Quais eram os objetivos esperados após o envio dos alunos de graduação? <br><br> A CAPES/CNPq estabeleceu algum tipo de métrica a ser atingida após o térm do programa para avaliar o impacto? <br><br> Qual o número de candidatos a fazer o programa de doutorado sanduíche, ple mestrado? Por que o programa não atingiu estas metas? |
| | Entender o processo de escolha das universidades | Quais os critérios de escolha das universidades que receberiam os alunos? <br><br> O que era considerado como instituição de excelência para a CAPES/CNPq? |
| | Identificar o papel dos rankings no processo | Qual a sua opinião sobre rankings de universidades? <br><br> Quais rankings utilizados? Por que estes foram os rankings utilizados? <br><br> Você acredita que existam benefícios maiores de estar em universidades melh rankeadas? <br><br> Percebe-se que houve uma concentração de alunos da USP, UNICAMP, ITA MEX nas universidades melhores rankeadas. Você saberia explicar os motiv Houve alguma influência do nome da universidade neste processo? <br><br> Por acaso houve instituição bem rankeada que não recebeu/recebeu poucos applications e que ofereceram vagas? <br><br> Qual o número de alunos que realizou curso de línguas fora? <br><br> Havia alguma diferença na alocação de alunos caso eles tivessem que fazer o curso de idiomas? Havia alguma restrição por parte das instituições que pode receber? |
| Implementação | Pagamento das universidades | O pagamento das universidades era feito através de agências, como a *Fulbrig* IIE, *CALDO*, etc., certo? Havia alguma política de valores aceitáveis? Houve alguma negociação? |

| | Entender o processo de alocação dos alunos | Como foi feita a alocação dos alunos para cada universidade?<br><br>Quais os critérios utilizados para envio de alunos a universidades específicas?<br><br>Um dos objetivos do programa era promover mais acordos de cooperação ent universidades. Existe algum dado a respeito de acordos estabelecidos pós-CsI<br><br>Qual a sua opinião sobre a divisão desigual dos alunos em áreas prioritárias? programa em algum momento pensou em como evitar esta diferença nos números?<br><br>Tem uma ideia de números de quantos alunos foram para as universidades qu gostariam?<br><br>Por acaso teríamos acesso ao número de applications de alunos por instituiçã estrangeira, para ter uma ideia de quantos aplicaram para as melhores rankeac |
| | Identificar os aspectos positivos e negativos como as barreiras | Você poderia falar dos pontos positivos e negativos do CsF?<br><br>Quais foram algumas das dificuldades enfrentadas na implementação do programa?<br><br>Porque o programa não fez uma pausa ou procurou desenvolver a competênc linguística dos alunos no Brasil antes de enviá-los? |
| Efeitos | Identificar os resultados obtidos desde o início | Quais foram alguns dos resultados positivos obtidos pelo programa?<br><br>Quais foram algumas das lições aprendidas?<br><br>Com base na tua experiência, se o programa fosse relançado, que ajustes voc faria? |
| Potenciais de pesquisa | Identificar os interesses de pesquisa do CsF | Quais são alguns dos aspectos que o programa teria interesse que fossem pesquisados? |
| Fechamento | | Você teria algo mais a falar sobre respeito do processo de alocação dos aluno motivações do programa e resultados? |

# APPENDIX B - SURVEY

# CIÊNCIA SEM FRONTEIRAS

**This study aims to identify students' motivations to participate in the Science without Borders and well as the perceived benefits and difficulties throughout the program (academic phase and professional/research internship). The estimated time to complete this survey is approximately 10 minutes. Your participation is extremely important and will contribute to a better comprehension of student profiles and also propose suggestions for improvement for future academic mobility programs.**

| Section 1 - Movitations |
|---|

**1. What motivated you to participate in the Science Without Borders program? Choose up to three options from 1 to 3, with 1 being the most important for you.**

(  ) Personal growth.

(  ) To learn a new language/ improve my proficiency in the foreign language.

(  ) To have more job opportunities in Brazil.

(  ) To meet other people.

(  ) To visit new places and have new experiences.

(  ) To have more job opportunities abroad.

(  ) To be in contact with other cultures.

(  ) To perform research in specialized labs or internship in well-known companies.

(  ) Because of the scholarship given.

(  ) To attend classes with varied methodologies and learning practices.

(  ) To study in one of the best universities in the world.

(  ) To develop professional skills.

(  ) To escape from my routine in Brazil.

(  ) Other(s). Which one(s)?

| Section 2 - Choice of country and institution. |
|---|

**2. What were the reasons that made you choose the country where you studied during the program? Choose up to three options from 1 to 3, with 1 being the most important for you.**

(  ) To learn a new language.

(  ) Immigration possibilities.

(  ) Cultural elements.

(  ) Research/internship in the field possibilities.

(  ) Climate.

(  ) Universities' reputation.

(  ) The universities I wanted to study are there.

(  ) Location.

(  ) Cost of living.

(  ) To practice the language I already speak.

(  ) Because I have friends and/or family there.

(  ) Other(s). Which one(s)?

**3. What were the names of the institutions (colleges/universities) you indicated on your application?**

_____        _____        I don't remember.     I didn't indicate.

**4. What were the factors that were the most important for you in your design to choose a university/college for the Science Without Borders? Choose up to three options from 1 to 3, with 1 being the most important for you.**

( ) International recognition/prestige.

( ) University rankings.

( ) Because it had my major.

( ) The courses offered.

( ) My university already had a partnership with this one.

( ) Research/internship in the field possibilities.

( ) Location.

( ) The probability of being accepted was higher.

( ) Other(s). Which one(s)?

**5. What is the name of the institution you attended during the academic part of the program?**

**6. The university you indicated in the application is the same that you studied?**

**Yes     No     I did not indicate one.**

**7. In your opinion, why do you think you were not selected to study at the university you applied for? Choose the alternative which you most believe that applied to your situation.**

( ) ENEM score.

( ) The university was very competitive.

( ) My proficiency exam score was low.

( ) Higher cost than others.

( ) Other reason. Which one?

( ) My academic performance.

( ) My application was weak.

( ) Not having the student profile they look for.

( ) Because of my nationality.

**8. Did the university you attended during the SwB have a partnership with your home institution in Brazil?**

**Yes     No     I do not know.**

| Section 3 - Perceived benefits |
|:---:|

**9. Indicate in the scale below how much you think the activities performed as part of the SwB - academic courses and internship - contributed for you to achieve the following results, being 1 - did not contribute at all and 5 - fully contributed.**

| Proficiency in the foreign language | | | | | |
|---|---|---|---|---|---|
| Initiatives | Didn't contribute at all | | | | Completely contributed |
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Communication habilities**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Intercultural competence - set of knowledge, skills and attitudes that when put into praticae by the individual, in an integrated form, in an intercultural context (in which he/she is in contact with another/other culture (s) different from his/her), allow him/her to interact and collaborate effectively and adequately with the member(s) from the other culture(s).**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Awareness of different cultures.**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Awareness of global issues.**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Improvement in academic performance.**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Decision-making skills.**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Problem-solving skills.**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Analytical skills**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Personal growth.**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Daily routine skills (cook, use public transport, etc.)**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Self esteem.**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Networking.**

| Initiatives | Didn't contribute at all | | | | Completely contributed |
|---|---|---|---|---|---|
| Academic courses | 1 | 2 | 3 | 4 | 5 |
| Internship | 1 | 2 | 3 | 4 | 5 |

**Seção 4 – Difficulties**

**10. Indicate how much the following items made it difficult for you to have a better experience in the SwB, with 1 being did not make it difficult at all and 5, made it completely difficult. If the sentence does not apply to your situation, please choose NA (not applicable).**

| | Did not make it difficult at all | | | Made it extremely difficult | | N.A. |
|---|---|---|---|---|---|---|
| Lack of interest/motivation. | 1 | 2 | 3 | 4 | 5 | NA |
| Proficiency (or lack of it) in the foreign language. | 1 | 2 | 3 | 4 | 5 | NA |
| Financial reasons. | 1 | 2 | 3 | 4 | 5 | NA |
| Credit transfer to the home institution. | 1 | 2 | 3 | 4 | 5 | NA |
| Academic support from the university regarding courses. | 1 | 2 | 3 | 4 | 5 | NA |
| Family reasons. | 1 | 2 | 3 | 4 | 5 | NA |
| Work responsibilities in Brazil | 1 | 2 | 3 | 4 | 5 | NA |
| Academic support from the university regarding the internship. | 1 | 2 | 3 | 4 | 5 | NA |
| Not having my major. | 1 | 2 | 3 | 4 | 5 | NA |
| Climate of the region. | 1 | 2 | 3 | 4 | 5 | NA |
| Local cousine. | 1 | 2 | 3 | 4 | 5 | NA |
| Lack of safety. | 1 | 2 | 3 | 4 | 5 | NA |
| Your family in Brazil not having an academic degree. | 1 | 2 | 3 | 4 | 5 | NA |
| Being a minority student. | 1 | 2 | 3 | 4 | 5 | NA |
| Level of the courses. | 1 | 2 | 3 | 4 | 5 | NA |
| Course content. | 1 | 2 | 3 | 4 | 5 | NA |

## Section 5 - Academic performance and credit transfer

11.The SwB Program would like to know important information regarding the courses you attended in the hosting institution and how the credit transfer process worked. please answer the following questions:

Indicate from 0 - 10 your average score for the courses you attended (if it was a different system, convert it from 0 to 10.

How many credits you took?

How many credits were transferred as mandatory ones?

How many credits were transferred as elective ones?

How many credits were transferred as complementary ones?

## Section 6 - Demographics

How old are you?

What is your gender?

( ) Male.
( ) Female.

What is the name of the university in Brazil you did/do your undergraduate studies?

What was your major in Brazil?

What is the approximate percentage of credits you finished prior to starting the program?

What were your average scores before the SwB program?

( ) Up to 6,0.
( ) Between 6,1 and 7,5
( ) Between 7,6 and 8,9
( ) Between 9,0 and 10.

In what year did you start the SwB program?

2011/2012/2013/2014/20
15.

What was your ENEM score?

( ) Up to 500,00.
( ) Between 500,01 and 600,00.
( ) Between 600,01 and 700,00.
( ) Between 700,01 and 800,00
( ) Between 800,00 and 900,00
( ) Between 900,00.

Which proficiency certificate did you use to apply for the program?

( ) TOEFL iTP.
( ) TOEFL iBT.
( ) IELTS.
( ) Other. Which one?

What was your score in the proficiency exam?

Did the program provide you with an English course before the academic part?

( ) Yes.
( ) No.

Where did you take the foreign language course.

( ) At the university I
attended the academic part of
the program.
( ) In another institution.

How many exchange programs had you participated prior to the SwB?

( ) None.
( ) 1.
( ) 2 or 3.
( ) Above 3.

How many times had you traveled overseas for tourism prior to the SwB?

( ) None.
( ) 1.
( ) 2 or 3.
( ) Above 3.

What was your total family income prior to participating in the program?

Please write your email address.

Do you think you faced a challenge during the program which deserves to be told? Would you like to participate in an interview about it?

Yes/No.

Thank you for your participation in this survey.

## APPENDIX C - CLASSIFICATION OF STUDENTS' PROFICIENCY IN THIS STUDY

| CEFR Level | Level in this study | TOEFL iBT (internet based) | TOEFL iTP Assessment series | IELTS |
|---|---|---|---|---|
| A1 | A2 | 0 - 42 | 310-459 | 0 - 4.0 |
| A2 | | | | |
| B1 | B1 | 43-71 | 460-542 | 4.5 - 5.0 |
| B2 | B2 | 72-94 | 543-626 | 5.5 - 6.5 |
| C1 | C | 95-120 | 627-677 | 7.0 - 9.0 |
| C2 | | | | |

7.

Adapted from ETS® (2017), ETS®(2012) and IELTS (2016)

## APPENDIX D - DISTRIBUTION OF STUDENTS ACCORDING TO THE TOP 500 INSTITUTIONS IN THE TIMES HIGHER EDUCATION RANKINGS

| | Total of Scholarships | Students at THE-TR universities | Percentage of students at THE-TR of that country |
|---|---|---|---|
| Australia | 6583 | 6172 | 93.76 |
| Austria | 45 | 10 | 22.22 |
| Belgium | 340 | 274 | 80.59 |
| Canada | 6154 | 3328 | 54.08 |
| Chile | 26 | 0 | 0.00 |
| China/Hong Kong | 280 | 63 | 22.50 |
| Denmark | 8 | | 0.00 |
| Finland | 161 | 77 | 47.83 |
| France | 5506 | 485 | 8.81 |
| Germany | 5293 | 2506 | 47.35 |
| Hungary | 2129 | 0 | 0.00 |
| Ireland | 3252 | 897 | 27.58 |
| Italy | 3309 | 3233 | 97.70 |

| | | | |
|---|---|---|---|
| Japan | 449 | 205 | 45.66 |
| Netherlands | 1763 | 944 | 53.55 |
| New Zealand | 264 | 224 | 84.85 |
| Norway | 316 | 209 | 66.14 |
| Poland | 26 | 0 | 0.00 |
| Portugal | 2109 | 1367 | 64.82 |
| Singapore | 1 | 1 | 100.00 |
| South Africa | 2 | 0 | 0.00 |
| South Korea | 519 | 443 | 85.36 |
| Spain | 3518 | 509 | 14.47 |
| Sweden | 317 | 280 | 88.33 |
| Switzerland | 9 | 9 | 100.00 |
| United Kingdom | 8864 | 5190 | 58.55 |
| United States | 22108 | 8303 | 37.56 |
| Total | 73351 | 34729 | |

# APPENDIX E - RESULTS OF THE TOP 20 ANALYSIS

Figure E1 - Distribution of students' home universities' region
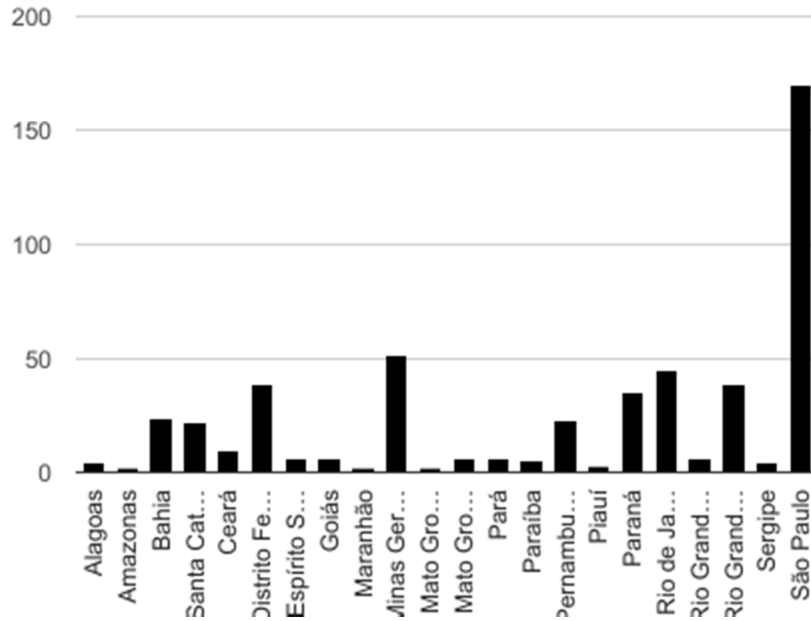


Figure E2 - Distribution of students' field of study (Priority Area)
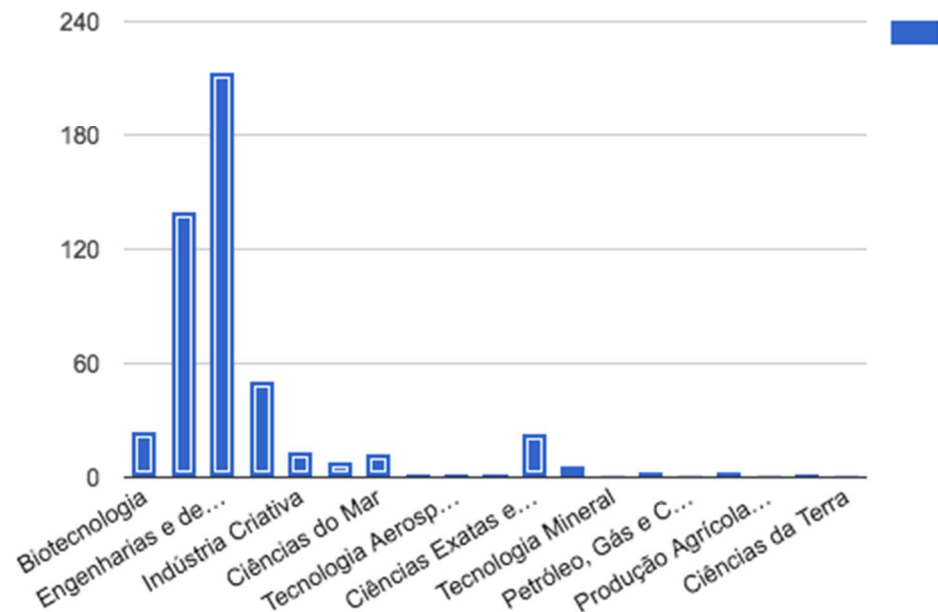
# APPENDIX F - RESULTS OF THE DESCRIPTIVE ANALYSIS

Table F1 - Respondents' income

| Family Income | Number of SWB students | Percent |
|---|---|---|
| Up to R$2,000.00 | 77 | 14.8% |
| Between R$2,000.01 and R$ 3,500.00 | 91 | 17.4% |
| Between R$3,500.01 and R$ 5,000.00 | 110 | 21.1% |
| Between R$5,000.01 and R$ 10,000.00 | 135 | 25.9% |
| Between R$10,000.01 and R$ 20,000.00 | 72 | 13.8% |
| Above R$20,000.00 | 37 | 7.1% |
| Total | 522 | 100.0% |

Source: Elaborated by the student

Note: not all students answered this question

Table F2 - Students' number of exchange programs prior to the SWB

| Number of times | Number of students | Percentage |
|---|---|---|
| None | 474 | 89.1% |
| 1 | 49 | 9.2% |
| 2 or 3 | 6 | 1.1% |
| Above 3 | 1 | 0.2% |
| Total | 531 | 100% |

Note: not all students answered this question

Table F3 - Students' number of international travels prior to the SWB

| Number of times | Number of students | Percentage |
|---|---|---|
| None | 305 | 57.3% |
| 1 | 96 | 18.0% |
| 2 or 3 | 67 | 12.6% |
| Above 3 | 64 | 12.0% |
| Total | 532 | 100% |

Source: Elaborated by the student

Note: not all students answered this question

Table F4 - Students' number of completed credits prior to the SWB

| Average score | Number of students | Percentage |
|---|---|---|
| Below 20% | 1 | 0.2% |
| Between 20 and 40% | 55 | 10.4% |
| Between 40 and 50% | 76 | 14.3% |
| Between 50 and 60% | 79 | 14.9% |
| Between 60 and 70% | 140 | 26.4% |
| Between 70 and 90% | 173 | 32.6% |
| Above 90% | 6 | 1.1% |
| Total | 530 | 100% |

Source: Elaborated by the student
Note: not all students answered this question

Table F5 - Students' average scores prior to the SWB

| Average score | Number of students | Percentage |
|---|---|---|
| Below 6 (D) | 4 | 0.8% |
| Between 6.0 and 7.5 (C) | 142 | 26.7% |
| Between 7.6 and 8.9 (B) | 324 | 61.0% |
| Between 9.0 and 10.0 (A) | 61 | 11.5% |
| Total | 531 | 100% |

Source: Elaborated by the student
Note: not all students answered this question

Table F6 - Students' ENEM scores

| Average score | Number of students | Percentage |
|---|---|---|
| Below 600.00 | 8 | 1.5% |
| Between 600.01 and 700.00 | 211 | 40.4% |
| Between 700.01 and 800.00 | 244 | 46.7% |
| Between 800.01 and 900.00 | 54 | 10.3% |
| Above 900.00 | 5 | 1.0% |
| Total | 522 | 100% |

Source: Elaborated by the student
Note: not all students answered this question

Table F7 - Reasons for not being placed at the institution of choice according to respondents

| Family Income | Number of SWB students | Percent |
|---|---|---|
| ENEM score | 1 | 0.6% |
| Host institution's competitiveness level | 41 | 25.2% |
| Not having enough proficiency in the foreign language | 31 | 19.0% |
| High living costs | 2 | 1.2% |
| Prior academic performance in the home institution | 8 | 4.9% |
| The essay I wrote was not good | 3 | 1.8% |
| I did not have the profile the university was looking for | 15 | 9.2% |
| Being a Brazilian student | 1 | 0.6% |
| The country I indicated was one and I had to be transferred to another | 7 | 4.3% |
| Other | 53 | 32.5% |
| Total | 162 | 100.0% |

Source: Elaborated by the student

Table F8 - Students' year they began the SWB experience

| Year | Number of students | Percentage |
|---|---|---|
| 2011 | 8 | 1.5% |
| 2012 | 211 | 39.7% |
| 2013 | 244 | 45.9% |
| 2014 | 54 | 10.2% |
| 2015 | 5 | 0.9 |
| Total | 522 | 100% |

Source: Elaborated by the student
Note: not all students answered this question

## APPENDIX G - RESULTS OF THE CLUSTER ANALYSIS

Table G1 - Students' motivations (second in preference) to participate in the SWB according to cluster

| Motivation | Cluster 1 | Cluster 2 | Cluster 3 | Total |
|---|---|---|---|---|
| Being able to attend classes with diverse methodologies and learning practices | 19<br>9.6% | 17<br>7.3% | 9<br>8.8% | 45<br>8.5% |
| Having contact with other cultures | 20<br>10.1% | 18<br>7.8% | 7<br>6.9% | 45<br>8.5% |
| Personal development | 16<br>8.1% | 24<br>10.3% | 13<br>12.7% | 53<br>19.0% |
| Having more work opportunities overseas | 7<br>3.5% | 4<br>1.7% | 7<br>6.9% | 18<br>3.4% |
| Engaging in research in specialized labs or internship in renowned companies | 12<br>6.1% | 13<br>5.6% | 8<br>7.8% | 33<br>6.2% |
| Developing professional skills | 22<br>11.1% | 18<br>7.8% | 8<br>7.8% | 48<br>9.0% |
| Having more work opportunities in Brazil | 12<br>6.1% | 12<br>5.2% | 4<br>3.9% | 28<br>5.3% |
| Learning/improving proficiency in the foreign language | 29<br>14.6% | 65<br>28.0% | 23<br>22.5% | 117<br>22.0% |
| Visiting new places and having new experiences | 16<br>8.1% | 35<br>15.1% | 12<br>11.8% | 63<br>11.8% |
| SWB as a zero-cost program | 9<br>4.5% | 11<br>4.7% | 4<br>3.9% | 24<br>4.5% |
| Studying at one of the best universities worldwide | 29<br>14.6% | 9<br>3.9% | 6<br>5.9% | 44<br>8.3% |
| Escaping from my routine in Brazil | 2<br>1.0% | 3<br>1.3% | - | 5<br>0.9% |

| | | | | |
|---|---|---|---|---|
| Meeting other people | 1<br>0.5% | - | - | 1<br>0.2% |
| Other | - | - | - | |
| Did not choose one | 4<br>2.0% | 3<br>1.3% | 1<br>1.0% | 8<br>1.5% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G2 - Students' motivations (third in preference) to participate in the SWB according to cluster

| Motivation | Cluster 1 | Cluster 2 | Cluster 3 | Total |
|---|---|---|---|---|
| Being able to attend classes with diverse methodologies and learning practices | 8<br>4.0% | 9<br>3.9% | 4<br>3.9% | 21<br>3.9% |
| Having contact with other cultures | 14<br>7.1% | 23<br>9.9% | 4<br>3.9% | 41<br>7.7% |
| Personal development | 21<br>10.6% | 27<br>11.6% | 20<br>19.6% | 68<br>12.8% |
| Having more work opportunities overseas | 13<br>6.6% | 7<br>3.0% | 11<br>10.8% | 31<br>5.8% |
| Engaging in research in specialized labs or internship in renowned companies | 6<br>3.0% | 10<br>4.3% | 12<br>11.8% | 28<br>5.3% |
| Developing professional skills | 11<br>5.6% | 18<br>7.8% | 8<br>7.8% | 37<br>7.0% |
| Having more work opportunities in Brazil | 13<br>6.6% | 20<br>8.6% | 3<br>2.9% | 36<br>6.8% |
| Learning/improving proficiency in the foreign language | 41<br>20.7% | 30<br>12.9% | 12<br>11.8% | 83<br>15.6% |
| Visiting new places and having new experiences | 34<br>17.2% | 41<br>17.7% | 9<br>8.8% | 84<br>15.8% |
| SWB as a zero-cost program | 14<br>7.1% | 24<br>10.3% | 7<br>6.9% | 45<br>8.5% |
| Studying at one of the best universities worldwide | 17<br>8.6% | 10<br>4.3% | 10<br>9.8% | 37<br>7.0% |
| Escaping from my routine in Brazil | 3<br>1.5% | 9<br>3.9% | 1<br>1.0% | 13<br>2.4% |

| | | | | |
|---|---|---|---|---|
| Meeting other people | 2<br>1.0% | 1<br>0.4% | - | 3<br>0.6% |
| Other | - | 1<br>0.4% | - | 3<br>0.6% |
| Did not choose one | 1<br>0.5% | 2<br>0.9% | 1<br>1.0% | 4<br>0.8% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G3 - Motivations to choose the host destination (second in preference) according to cluster

| | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| To practice the foreign language | 57<br>2.8% | 36<br>15.5% | 32<br>31.4% | 125<br>23.5% |
| Location | 21<br>10.6% | 23<br>9.9% | 9<br>8.8% | 53<br>10.0% |
| To learn a new language | 8<br>4.0% | 5<br>2.2% | 3<br>2.9% | 16<br>3.0% |
| Because I have friends or relatives living there | 1<br>0.5% | 4<br>1.7% | 1<br>1.0% | 6<br>1.1% |
| Cultural elements | 22<br>11.1% | 38<br>16.4% | 11<br>10.8% | 71<br>13.3% |
| The universities I wanted to attend | 25<br>12.6% | 29<br>12.5% | 12<br>11.8% | 66<br>12.4% |
| University reputation | 24<br>12.1% | 53<br>22.8% | 16<br>15.7% | 93<br>17.5% |
| Climate | 2<br>1.0% | 2<br>0.9% | 1<br>1.0% | 5<br>0.9% |
| Possibility of research/internship in the field of study | 18<br>9.1% | 22<br>9.5% | 10<br>9.8% | 50<br>9.4% |
| Possibility of immigration | 15<br>7.6% | 7<br>3.0% | 3<br>2.9% | 25<br>4.7% |
| Did not choose one | 3<br>1.5% | 5<br>2.2% | 2<br>2.0% | 10<br>1.9% |

| | | | | |
|---|---|---|---|---|
| Other | 2 1.0% | 5 2.2% | 1 1.0% | 8 1.5% |
| Total | 198 100% | 232 100% | 102 100% | 532 100% |

Source: Elaborated by the student

Table G4 - Motivations to choose the host destination (third in preference) according to cluster

| Motivation | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| To practice the foreign language | 47 23.7% | 14 6.0% | 21 20.6% | 82 15.4% |
| Location | 10 5.1% | 29 12.5% | 5 4.9% | 44 8.3% |
| To learn a new language | 7 3.5% | 5 2.2% | 4 3.9% | 16 3.0% |
| Because I have friends or relatives living there | 4 2.0% | 4 1.7% | 4 3.9% | 12 2.3% |
| Cultural elements | 39 19.7% | 49 21.1% | 17 16.7% | 105 19.7% |
| The universities I wanted to attend | 6 3.0% | 10 4.3% | 6 5.9% | 22 4.1% |
| University reputation | 16 8.1% | 41 17.7% | 10 9.8% | 67 12.6% |
| Climate | 10 5.1% | 8 3.4% | 4 3.9% | 22 4.1% |
| Cost of living | 6 3.0% | 2 0.9% | - | 8 1.5% |

| | | | | |
|---|---|---|---|---|
| Possibility of research/internship in the field of study | 22<br>11.1% | 28<br>12.1% | 15<br>14.7% | 65<br>12.2% |
| Possibility of immigration | 23<br>11.6% | 24<br>10.3% | 12<br>11.8% | 59<br>11.1% |
| Did not choose one | 5<br>2.5% | 9<br>3.9% | 1<br>1.0% | 15<br>2.8% |
| Other | 3<br>1.5% | 9<br>3.9% | 3<br>2.9% | 15<br>2.8% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G5 - Motivations to choose the host institution (second in preference) according to cluster

| Motivation | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| University rank | 25<br>12.6% | 28<br>12.1% | 33<br>32.4% | 86<br>16.2% |
| Courses (disciplines) offered | 41<br>20.7% | 50<br>21.6% | 15<br>14.7% | 106<br>19.9% |
| The probability of being accepted was higher | 13<br>6.6% | 23<br>9.9% | 5<br>4.9% | 41<br>7.7% |
| Recognition/international prestige | 35<br>17.7% | 31<br>13.4% | 13<br>12.7% | 79<br>14.8% |
| Because it had my major | 21<br>10.6% | 23<br>9.9% | 5<br>4.9% | 49<br>9.2% |
| Previous mobility agreement | 1<br>0.5% | 2<br>0.9% | 3<br>2.9% | 6<br>1.1% |
| Possibility of internship/research in the field | 15<br>7.6% | 18<br>7.8% | 4<br>3.9% | 37<br>7.0% |
| Location | 35<br>17.7% | 40<br>17.2% | 19<br>18.6% | 94<br>17.7% |

| | | | | |
|---|---|---|---|---|
| Did not choose one | 9<br>4.5% | 16<br>6.9% | 4<br>3.9% | 29<br>5.5% |
| Other | 3<br>1.5% | 1<br>0.4% | 1<br>1.0% | 5<br>0.9% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G6 - Respondents' gender according to cluster

| Gender | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| Male | 122<br>61.6% | 109<br>47.2% | 64<br>62.7% | 295<br>55.6% |
| Female | 76<br>38.4% | 122<br>52.8% | 38<br>37.3% | 236<br>44.4% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G7 - Respondents' placement result according to cluster

| Result | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| Studied where he/she indicated on the application | 114<br>57.6% | 122<br>52.6% | 70<br>68.6% | 306<br>57.5% |
| Did not study where he/she indicated on the application | 63<br>31.8% | 74<br>31.9% | 27<br>26.5% | 164<br>30.8% |
| Did not indicate/ could not indicate | 21<br>10.6% | 36<br>15.5% | 5<br>4.9% | 62<br>11.7% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G8 - Respondents' family income according to cluster

| Income | Experience | Language | Ranking | Total |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Up to R$2,000.00 | 36<br>18.7% | 31<br>13.6% | 10<br>9.9% | 306<br>57.5% |
| Between R$2,000.01 and R$ 3,500.00 | 35<br>18.1% | 42<br>18.4% | 13<br>13.9 | 91<br>17.4% |
| Between R$3,500.01 and R$ 5,000.00 | 39<br>20.2% | 48<br>21.1% | 23<br>22.8% | 110<br>21.1% |
| Between R$5,000.01 and R$ 10,000.00 | 43<br>22.3% | 57<br>25.0% | 35<br>34.7% | 135<br>25.9% |
| Between R$10,000.01 and R$ 20,000.00 | 27<br>14.0% | 36<br>15.8% | 9<br>8.9% | 72<br>13.8% |
| Above R$20,000.00 | 13<br>6.7% | 14<br>6.1% | 10<br>9.9% | 37<br>7.1% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G9 - Respondents' percentage of credits concluded prior to SWB experience according to cluster

| Percentage of credits | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| Below 20% | - | - | 1<br>1.0% | 1<br>0.2% |
| Between 20 and 40% | 24<br>12.2% | 21<br>9.1% | 10<br>9.8% | 55<br>10.4% |
| Between 40 and 50% | 30<br>15.2% | 38<br>16.5% | 8<br>7.8% | 76<br>14.3% |
| Between 50 and 60% | 33<br>16.8% | 32<br>13.9% | 14<br>13.7% | 79<br>14.9% |
| Between 60 and 70% | 55<br>27.9% | 56<br>24.2% | 29<br>28.4% | 140<br>26.4% |

| | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| Between 70 and 90% | 53<br>26.9% | 82<br>35.5% | 38<br>37.3% | 173<br>32.6% |
| Above 90% | 2<br>1.0% | 2<br>0.9% | 2<br>2.0% | 6<br>1.1% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G10 - Respondents' number of exchange programs prior to SWB experience according to cluster

| Percentage of credits | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| None | 176<br>88.9% | 209<br>90.9% | 89<br>87.3% | 474<br>89.4% |
| 1 | 18<br>9.1% | 20<br>8.7% | 11<br>10.8% | 49<br>9.2% |
| 2 or 3 | 3<br>1.5% | 1<br>0.4% | 2<br>2.0% | 6<br>1.1% |
| Above 3 | 1<br>0.5% | - | - | 1<br>0.2% |
| Total | 198<br>100% | 232<br>100% | 102<br>100% | 532<br>100% |

Source: Elaborated by the student

Table G11 - Respondents' number of travels to other countries prior to SWB experience according to cluster

| Percentage of credits | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| None | 109<br>55.1% | 145<br>62.5% | 51<br>50% | 305<br>57.3% |
| 1 | 37<br>18.7% | 41<br>17.7% | 18<br>17.6% | 96<br>18.0% |
| 2 or 3 | 31<br>15.7% | 23<br>9.9% | 13<br>12.7% | 67<br>12.6% |

| | | | | |
|---|---|---|---|---|
| Above 3 | 21 | 23 | 20 | 64 |
| | 10.6% | 9.9% | 19.6% | 12.0% |
| Total | 198 | 232 | 102 | 532 |
| | 100% | 100% | 100% | 100% |

Source: Elaborated by the student

Table G12 - Respondents' home institution's region according to cluster

| Percentage of credits | Experience | Language | Ranking | Total |
|---|---|---|---|---|
| Central-West | 20 | 13 | 4 | 37 |
| | 10.1% | 5.6% | 3.9% | 7.0% |
| | 55.1% | | | |
| Northeast | 35 | 44 | 21 | 100 |
| | 17.7% | 19.0% | 20.6% | 18.8% |
| North | 2 | 2 | - | 4 |
| | 1.0% | 0.9% | | 0.8% |
| Southeast | 85 | 106 | 52 | 243 |
| | 42.9% | 45.7% | 51.0% | 45.7% |
| South | 56 | 67 | 25 | 148 |
| | 28.3% | 28.9% | 24.5% | 27.8% |
| Total | 198 | 232 | 102 | 532 |
| | 100% | 100% | 100% | 100% |

Source: Elaborated by the student

# APPENDIX H - RESULTS OF THE FACTOR ANALYSIS

Table H1 - Factor analysis of the benefits of the academic phase of the SWB

| | Factor 1<br>**Professional Skills**<br><br>**(39.87% of variance)** | Factor 2<br>**Personal growth and<br>communication skills**<br>**(9.03% of variance)** |
|---|---|---|
| Proficiency in the foreign language | | 0.515 |
| **communication abilities** | **0.440** | **0.497** |
| Intercultural competence | | 0.689 |
| Awareness of other cultures | | 0.773 |
| Understanding of global issues | | 0.584 |
| Improvement in academic performance | 0.680 | |
| Decision-making skills | 0.730 | |
| Problem-solving skills | 0.752 | |
| Analytical skills | 0.751 | |
| Entrepreneurial skills | 0.619 | |
| Personal growth | | 0.591 |
| Daily activities (cooking, using public transport, etc.) | | 0.643 |
| **Self-esteem** | **0.423** | **0.482** |
| Networking | 0.558 | |

Source: Elaborated by the author.
Note: only those with absolute value above 0.4 were considered. Communication abilities and self-esteem were also present in factor 1, but with a lower absolute value in comparison to factor 2, and therefore were removed.

Table H2 - Factor analysis of the benefits of the internship phase of the SWB

| Perceived benefit | Factor 1 |
|---|---|
| Proficiency in the foreign language | 0.632 |
| communication abilities | 0.737 |
| Intercultural competence | 0.780 |
| Awareness of other cultures | 0.714 |
| Understanding of global issues | 0.680 |
| Improvement in academic performance | 0.684 |
| Decision-making skills | 0.812 |
| Problem-solving skills | 0.818 |
| Analytical skills | 0.711 |
| Entrepreneurial skills | 0.656 |
| Personal growth | 0.814 |
| **Daily activities (cooking, using public transport, etc.) (1)** | **0.587** |
| Self-esteem | 0.732 |
| Networking | 0.716 |

Source: Elaborated by the student
(1) Removed due to value lower than 0.600

Table H3 - Factor analysis of the challenges faced by students

| Variable | Component | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Lack of self interest | | | | | | | 0.819 |
| Proficiency (or lack of) in a foreign language | | | | | | 0.791 | |
| Financial reasons | | | | | | 0.609 | |
| Possibility of credit transfer | | | 0.860 | | | | |
| Support from the university regarding coursework | | | 0.723 | | | | |
| Family responsibilities | | | | | 0.752 | | |
| Work responsibilities in Brazil | | | | | 0.829 | | |
| Support of the university regarding the internship | 0.641 | | | | | | |
| Not having my program/major | | | | | | 0.425 | |
| Climate | | 0.734 | | | | | |

| | | | |
|---|---|---|---|
| Support from CAPES regarding the internship | 0.871 | | |
| Local food | | 0.772 | |
| Insecurity | | 0.528 | |
| My family in Brazil does not have a college degree | | | 0.733 |
| Being a minority student | | | 0.845 |
| Support from CAPES regarding the university | 0.747 | | |

Source: Elaborated by the author.

# APPENDIX I - ANOVA RESULTS USING THE CLUSTERS AND FACTORS

Table I1 - Test of Homogeneity of Variances (Academic phase) - Professional skills

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .249 | 2 | 525 | .779 |

Table I2 - ANOVA Results according to cluster (academic phase) - Professional skills

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 20.275 | 2 | 10.138 | 10.053 | .000 |
| Within Groups | 506.725 | 525 | .965 | | |
| Total | 527.000 | 527 | | | |

Table I3 - Test of Homogeneity of Variances (academic phase) - Factor 2

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .846 | 2 | 525 | .430 |

Table I4 - Academic phase benefits means results according to cluster - Factor 2

| | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|
| Experience-Oriented | 197 | .0391488 | .99104095 | .06963777 |
| Language-oriented | 232 | -.0223077 | 1.03862871 | .06749942 |
| Ranking-oriented | 99 | -.0256256 | .09303426 | .09718343 |
| Total | 528 | .0000000 | 1.00000000 | .04351941 |

Table I5 - ANOVA Results according to cluster (academic phase) - Factor 2

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Between Groups | 0.482 | 2 | 0.024 | 0.240 | .786 |
| Within Groups | 526.518 | 525 | 1.003 | | |
| Total | 527.000 | 527 | | | |

Table I6 - Test of Homogeneity of Variances (academic phase) - Factor 3

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| 3.153 | 2 | 525 | .044 |

Table I7 - Academic phase benefits means results according to cluster - Factor 3

| | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|
| Experience-Oriented | 197 | .0495383 | .89606423 | .06384193 |
| Language-oriented | 232 | .0254532 | 1.10964667 | .07285187 |
| Ranking-oriented | 99 | -.1582241 | .91517459 | .09197851 |
| Total | 528 | .0000000 | 1.00000000 | .04351941 |

Table I8 - Robust tests of equality of means according to cluster (academic phase) - Factor 3

| | Statistica | df1 | df2 | Sig. |
|---|---|---|---|---|
| Brown-Forsythe | 1.661 | 2 | 434.661 | .191 |

Table I9 - Test of Homogeneity of Variances (academic phase) - Factor 4

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .779 | 2 | 525 | .459 |

Table I10 - Academic phase benefits means results according to cluster - Factor 4

| | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|
| Experience-Oriented | 197 | .0561807 | .94135327 | .06706864 |

| | | | | |
|---|---|---|---|---|
| Language-oriented | 232 | .0058351 | 1.06410028 | .06986161 |
| Ranking-oriented | 99 | -.1254682 | .95598941 | .96080550 |
| Total | 528 | .0000000 | 1.00000000 | .04351941 |

Table I11 - ANOVA Results according to cluster (academic phase) - Factor 4

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 2.188 | 2 | 1.094 | 1.094 | .335 |
| Within Groups | 524.812 | 525 | 1.000 | | |
| Total | 527.000 | 527 | | | |

Table I12 - Test of Homogeneity of Variances (internship phase - professional skills)

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .547 | 2 | 454 | .579 |

Table I13 - ANOVA Results according to cluster (internship phase - professional skills)

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 7.950 | 2 | 3.975 | 4.028 | .018 |
| Within Groups | 448.050 | 454 | .987 | | |
| Total | 456.000 | 456 | | | |

Table I14 - Test of Homogeneity of Variances (internship phase - intercultural/daily skills)

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| 1.496 | 2 | 454 | .225 |

Table I15 - Internship phase benefits (intercultural/daily skills) means results according to cluster - Factor 2

| | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|
| Experience-Oriented | 168 | .1936380 | 1.00800630 | .77769370 |
| Language-oriented | 203 | -.2130040 | 1.03486598 | .07263335 |
| Ranking-oriented | 86 | .0124519 | .90628749 | .09772749 |
| Total | 457 | .0000000 | 1.00000000 | .04677803 |

Table I16 - ANOVA Results according to cluster (internship phase - intercultural/daily skills)

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 0.168 | 2 | 0.084 | 0.084 | .920 |
| Within Groups | 455.832 | 454 | 1.004 | | |
| Total | 456.000 | 456 | | | |

Table I17 - Test of Homogeneity of Variances (internship phase - communication skills)

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| 2.093 | 2 | 454 | .124 |

Table I18 - Internship phase benefits (communication skills) means results according to cluster

| | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|
| Experience-Oriented | 168 | .0727070 | .95832961 | .73936040 |
| Language-oriented | 203 | -.0793739 | 1.06644808 | .07484998 |
| Ranking-oriented | 86 | .0240827 | .91362595 | .09851882 |

| | | | | |
|---|---|---|---|---|
| Total | 457 | .0000000 | 1.00000000 | .04677803 |

Table I19 - ANOVA Results according to cluster (internship phase - communication skills)

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.943 | 2 | 0.972 | 0.972 | .379 |
| Within Groups | 454.057 | 454 | 1.000 | | |
| Total | 456.000 | 456 | | | |

# APPENDIX J - ANOVA RESULTS USING INDIVIDUAL VARIABLES

Table J1 - Test of Homogeneity of Variances (perceived challenges) for clusters

| | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|
| Lack of self interest | .711 | 2 | 433 | .492 |
| Proficiency (or lack of) in a foreign language | .694 | 2 | 519 | .500 |
| Financial reasons | .247 | 2 | 513 | .781 |
| Possibility of credit transfer | .697 | 2 | 506 | .499 |
| Support from the university regarding coursework | 12.081 | 2 | 520 | .000 |
| Family responsibilities | 1.584 | 2 | 478 | .206 |
| Work responsibilities in Brazil | 4.899 | 2 | 422 | .008 |

| | | | | |
|---|---|---|---|---|
| Support of the university regarding the internship | 2.056 | 2 | 493 | .129 |
| Not having my program/major | 3.037 | 2 | 461 | .049 |
| Climate | 1.721 | 2 | 525 | .180 |
| Support from CAPES regarding the internship | .933 | 2 | 488 | .394 |
| Local food | .681 | 2 | 526 | .507 |
| Insecurity | 2.254 | 2 | 520 | .106 |
| My family in Brazil does not have a college degree | .028 | 2 | 450 | .972 |
| Being a minority student | 1.042 | 2 | 372 | .354 |
| Support from CAPES regarding the university | 1.780 | 2 | 508 | .170 |

Table J2 - Perception of challenges means results according to cluster

| | | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|---|
| Lack of self interest | Experience-Oriented | 164 | 1.43 | .873 | .068 |
| | Language-oriented | 192 | 1.43 | .816 | .059 |
| | Ranking-oriented | 80 | 1.38 | .700 | .078 |
| | Total | 436 | 1.42 | .817 | .039 |
| Proficiency (or lack of) in a foreign language | Experience-Oriented | 193 | 1.94 | 1.083 | .078 |
| | Language-oriented | 231 | 2.19 | 1.096 | .072 |
| | Ranking-oriented | 98 | 1.99 | 1.079 | .109 |
| | Total | 522 | 2.06 | 1.093 | .048 |
| Financial reasons | Experience-Oriented | 191 | 1.82 | 1.100 | .080 |
| | Language-oriented | 228 | 1.79 | 1.073 | .071 |
| | Ranking-oriented | 97 | 1.84 | 1.096 | .111 |
| | Total | 516 | 1.81 | 1.085 | .048 |

| | | | | | |
|---|---|---|---|---|---|
| Possibility of credit transfer | Experience-Oriented | 189 | 2.86 | 1.563 | .114 |
| | Language-oriented | 223 | 2.87 | 1.605 | .107 |
| | Ranking-oriented | 97 | 2.71 | 1.548 | .157 |
| | Total | 509 | 2.83 | 1.577 | .070 |
| Support from the university regarding coursework | Experience-Oriented | 195 | 2.40 | 1.455 | .104 |
| | Language-oriented | 228 | 2.36 | 1.396 | .092 |
| | Ranking-oriented | 100 | 1.88 | 1.148 | .115 |
| | Total | 523 | 2.28 | 1.387 | .061 |
| Family responsibilities | Experience-Oriented | 184 | 1.46 | .916 | .068 |
| | Language-oriented | 210 | 1.38 | .851 | .059 |
| | Ranking-oriented | 87 | 1.51 | .938 | .101 |
| | Total | 481 | 1.43 | .892 | .041 |
| Work responsibilities in Brazil | Experience-Oriented | 169 | 1.29 | .855 | .066 |
| | Language-oriented | 183 | 1.20 | .579 | .043 |
| | Ranking-oriented | 73 | 1.34 | .837 | .098 |
| | Total | 425 | 1.26 | .745 | .036 |
| Support of the university regarding the internship | Experience-Oriented | 182 | 2.42 | 1.546 | .115 |
| | Language-oriented | 220 | 2.49 | 1.539 | .104 |
| | Ranking-oriented | 94 | 2.24 | 1.427 | .147 |
| | Total | 496 | 2.42 | 1.521 | .068 |
| Not having my program/major | Experience-Oriented | 173 | 1.87 | 1.371 | .104 |
| | Language-oriented | 208 | 2.02 | 1.333 | .092 |
| | Ranking-oriented | 83 | 1.75 | 1.114 | .122 |
| | Total | 464 | 1.92 | 1.313 | .061 |
| Climate | Experience-Oriented | 195 | 1.69 | 1.148 | .082 |
| | Language-oriented | 232 | 1.89 | 1.240 | .081 |
| | Ranking-oriented | 101 | 1.65 | 1.004 | .100 |
| | Total | 528 | 1.77 | 1.167 | .051 |

| | | | | | |
|---|---|---|---|---|---|
| Support from CAPES regarding the internship | Experience-Oriented | 185 | 2.58 | 1.573 | .116 |
| | Language-oriented | 211 | 2.56 | 1.496 | .103 |
| | Ranking-oriented | 95 | 2.54 | 1.486 | .152 |
| | Total | 491 | 2.56 | 1.521 | .069 |
| Local food | Experience-Oriented | 197 | 1.82 | 1.146 | .082 |
| | Language-oriented | 232 | 2.05 | 1.228 | .081 |
| | Ranking-oriented | 100 | 1.84 | 1.098 | .110 |
| | Total | 529 | 1.92 | 1.177 | .051 |
| Insecurity | Experience-Oriented | 195 | 1.53 | .938 | .067 |
| | Language-oriented | 229 | 1.57 | .969 | .064 |
| | Ranking-oriented | 99 | 1.70 | 1.092 | .110 |
| | Total | 523 | 1.58 | .982 | .043 |
| My family in Brazil does not have a college degree | Experience-Oriented | 178 | 1.44 | .939 | .070 |
| | Language-oriented | 196 | 1.47 | .974 | .070 |
| | Ranking-oriented | 79 | 1.49 | .932 | .105 |
| | Total | 453 | 1.46 | .951 | .045 |
| Being a minority student | Experience-Oriented | 151 | 1.50 | 1.032 | .084 |
| | Language-oriented | 161 | 1.46 | .901 | .071 |
| | Ranking-oriented | 63 | 1.44 | .838 | .106 |
| | Total | 375 | 1.47 | .944 | .049 |
| Support from CAPES regarding the university | Experience-Oriented | 189 | 2.17 | 1.400 | .102 |
| | Language-oriented | 223 | 2.11 | 1.316 | .088 |
| | Ranking-oriented | 99 | 2.04 | 1.285 | .129 |
| | Total | 511 | 2.12 | 1.340 | .059 |

Table J3 - Robust tests of equality of means according to ranking (Perceived challenges)

| | | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Lack of self interest | Brown-Forsythe | .159 | 2 | 376.106 | .853 |

| | | | | | |
|---|---|---|---|---|---|
| Proficiency (or lack of) in a foreign language | Brown-Forsythe | 3.210 | 2 | 395.459 | .041 |
| Financial reasons | Brown-Forsythe | .061 | 2 | 383.039 | .941 |
| Possibility of credit transfer | Brown-Forsythe | .362 | 2 | 396.269 | .697 |
| Support from the university regarding coursework | Brown-Forsythe | 5.795 | 2 | 471.246 | .003 |
| Family responsibilities | Brown-Forsythe | .686 | 2 | 326.596 | .504 |
| Work responsibilities in Brazil | Brown-Forsythe | 1.140 | 2 | 243.273 | .322 |
| Support of the university regarding the internship | Brown-Forsythe | .861 | 2 | 402.754 | .424 |
| Not having my program/major | Brown-Forsythe | 1.545 | 2 | 398.023 | .215 |
| Climate | Brown-Forsythe | 2.302 | 2 | 468.565 | .101 |
| Support from CAPES regarding the internship | Brown-Forsythe | .024 | 2 | 388.621 | .976 |
| Local food | Brown-Forsythe | 2.447 | 2 | 432.269 | .088 |
| Insecurity | Brown-Forsythe | .886 | 2 | 339.570 | .413 |
| My family in Brazil does not have a college degree | Brown-Forsythe | .082 | 2 | 330.479 | .921 |
| Being a minority student | Brown-Forsythe | .098 | 2 | 296.996 | .907 |
| Support from CAPES regarding the university | Brown-Forsythe | .311 | 2 | 411.482 | .733 |

Table J4 - ANOVA Results according to cluster(perceived challenges)

| | | Sum of Squares | df | Mean Square | F | Sig |
|---|---|---|---|---|---|---|
| Lack of self interest | Between Groups | .199 | 2 | .099 | .148 | .862 |
| | Within Groups | 289.992 | 433 | .670 | | |
| | Total | 290.190 | 435 | | | |
| Proficiency (or lack of) in a foreign language | Between Groups | 7.561 | 2 | 3.780 | 3.193 | .042 |
| | Within Groups | 614.477 | 519 | 1.184 | | |
| | Total | 622.038 | 521 | | | |
| Financial reasons | Between Groups | .146 | 2 | .073 | .062 | .940 |
| | Within Groups | 606.620 | 513 | 1.182 | | |
| | Total | 606.766 | 515 | | | |
| Possibility of credit transfer | Between Groups | 1.781 | 2 | .890 | .357 | .700 |
| | Within Groups | 1261.025 | 506 | 2.492 | | |
| | Total | 1262.806 | 508 | | | |
| Support from the university regarding coursework | Between Groups | 20.250 | 2 | 10.125 | 5.351 | .005 |
| | Within Groups | 983.869 | 520 | 1.892 | | |
| | Total | 1004.119 | 522 | | | |
| Family responsibilities | Between Groups | 1.131 | 2 | .565 | .710 | .492 |
| | Within Groups | 380.923 | 478 | .797 | | |
| | Total | 382.054 | 480 | | | |
| Work responsibilities in Brazil | Between Groups | 1.380 | 2 | .690 | 1.244 | .289 |
| | Within Groups | 234.149 | 422 | .555 | | |
| | Total | 235.529 | 424 | | | |
| Support of the university regarding the internship | Between Groups | 3.856 | 2 | 1.928 | .833 | .435 |
| | Within Groups | 1140.755 | 493 | 2.314 | | |
| | Total | 1144.611 | 495 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Not having my program/major | Between Groups | 4.910 | 2 | 2.455 | 1.427 | .241 |
| | Within Groups | 792.812 | 461 | 1.720 | | |
| | Total | 797.722 | 463 | | | |
| Climate | Between Groups | 5.775 | 2 | 2.887 | 2.131 | .120 |
| | Within Groups | 711.496 | 525 | 1.355 | | |
| | Total | 717.271 | 527 | | | |
| Support from CAPES regarding the internship | Between Groups | .111 | 2 | .056 | .024 | .976 |
| | Within Groups | 1132.744 | 488 | 2.321 | | |
| | Total | 1132.855 | 490 | | | |
| Local food | Between Groups | 6.483 | 2 | 3.241 | 2.350 | .096 |
| | Within Groups | 725.340 | 526 | 1.379 | | |
| | Total | 731.822 | 528 | | | |
| Insecurity | Between Groups | 1.814 | 2 | .907 | .940 | .391 |
| | Within Groups | 501.643 | 520 | .965 | | |
| | Total | 503.457 | 522 | | | |
| My family in Brazil does not have a college degree | Between Groups | .148 | 2 | .074 | .081 | .922 |
| | Within Groups | 408.501 | 450 | .908 | | |
| | Total | 408.649 | 452 | | | |
| Being a minority student | Between Groups | .165 | 2 | .082 | .092 | .912 |
| | Within Groups | 333.291 | 372 | .896 | | |
| | Total | 333.456 | 374 | | | |
| Support from CAPES regarding the university | Between Groups | 1.100 | 2 | .550 | .306 | .737 |
| | Within Groups | 914.618 | 508 | 1.800 | | |
| | Total | 915.718 | 510 | | | |

Table J5 - Test of Homogeneity of Variances (perceived challenges) - Three rankings

| | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|
| Lack of self interest | 4.423 | 2 | 433 | .013 |
| Proficiency (or lack of) in a foreign language | 2.852 | 2 | 519 | .059 |
| Financial reasons | 2.290 | 2 | 513 | .102 |
| Possibility of credit transfer | 1.374 | 2 | 506 | .254 |
| Support from the university regarding coursework | 11.936 | 2 | 520 | .000 |
| Family responsibilities | .094 | 2 | 478 | .911 |
| Work responsibilities in Brazil | 4.038 | 2 | 422 | .018 |
| Support of the university regarding the internship | 10.148 | 2 | 493 | .000 |
| Not having my program/major | 15.446 | 2 | 461 | .000 |
| Climate | 4.595 | 2 | 525 | .011 |
| Support from CAPES regarding the internship | 6.559 | 2 | 488 | .002 |
| Local food | 4.439 | 2 | 526 | .012 |
| Insecurity | 1.190 | 2 | 520 | .305 |
| My family in Brazil does not have a college degree | 5.833 | 2 | 450 | .003 |
| Being a minority student | .363 | 2 | 372 | .696 |

172

| | | | Std. Deviation | Std. Error |
|---|---|---|---|---|
| | | N | Mean | Std. Deviation | Std. Error |

Support from CAPES regarding the university — 14.257 — 2 — 508 — .000

## Table J6 - Perception of challenges means results according to ranking

| | | N | Mean | Std. Deviation | Std. Error |
|---|---|---|---|---|---|
| Lack of self interest | Fora | 168 | 1.51 | .935 | .072 |
| | Top 100 | 117 | 1.37 | .783 | .072 |
| | Top 500 | 151 | 1.36 | .688 | .056 |
| | Total | 436 | 1.42 | .817 | .039 |
| Proficiency (or lack of) in a foreign language | Fora | 208 | 2.22 | 1.136 | .079 |
| | Top 100 | 135 | 1.85 | .989 | .085 |
| | Top 500 | 179 | 2.04 | 1.093 | .082 |
| | Total | 522 | 2.06 | 1.093 | .048 |
| Financial reasons | Fora | 205 | 1.91 | 1.153 | .081 |
| | Top 100 | 135 | 1.71 | 1.014 | .087 |
| | Top 500 | 176 | 1.78 | 1.054 | .079 |
| | Total | 516 | 1.81 | 1.085 | .048 |
| Possibility of credit transfer | Fora | 200 | 2.94 | 1.569 | .111 |
| | Top 100 | 133 | 2.65 | 1.519 | .132 |
| | Top 500 | 176 | 2.86 | 1.624 | .122 |
| | Total | 509 | 2.83 | 1.577 | .070 |
| Support from the university regarding coursework | Fora | 205 | 2.48 | 1.430 | .100 |
| | Top 100 | 139 | 1.88 | 1.170 | .099 |
| | Top 500 | 179 | 2.37 | 1.434 | .107 |
| | Total | 523 | 2.28 | 1.387 | .061 |
| Family responsibilities | Fora | 192 | 1.43 | .853 | .062 |
| | Top 100 | 127 | 1.43 | .895 | .079 |

| | | | | | |
|---|---|---|---|---|---|
| | Top 500 | 162 | 1.44 | .939 | .074 |
| | Total | 481 | 1.43 | .892 | .041 |
| Work responsibilities in Brazil | Fora | 175 | 1.31 | .829 | .063 |
| | Top 100 | 107 | 1.26 | .793 | .077 |
| | Top 500 | 143 | 1.19 | .581 | .049 |
| | Total | 425 | 1.26 | .745 | .036 |
| Support of the university regarding the internship | Fora | 198 | 2.56 | 1.582 | .112 |
| | Top 100 | 129 | 2.08 | 1.309 | .115 |
| | Top 500 | 169 | 2.51 | 1.566 | .120 |
| | Total | 496 | 2.42 | 1.521 | .068 |
| Not having my program/major | Fora | 190 | 2.22 | 1.429 | .104 |
| | Top 100 | 121 | 1.60 | 1.020 | .093 |
| | Top 500 | 153 | 1.79 | 1.296 | .105 |
| | Total | 464 | 1.92 | 1.313 | .061 |
| Climate | Fora | 208 | 1.94 | 1.271 | .088 |
| | Top 100 | 139 | 1.59 | 1.055 | .089 |
| | Top 500 | 181 | 1.72 | 1.102 | .082 |
| | Total | 528 | 1.77 | 1.167 | .051 |
| Support from CAPES regarding the internship | Fora | 192 | 2.82 | 1.615 | .117 |
| | Top 100 | 129 | 2.24 | 1.362 | .120 |
| | Top 500 | 170 | 2.51 | 1.481 | .114 |
| | Total | 491 | 2.56 | 1.521 | .069 |
| Local food | Fora | 210 | 2.11 | 1.254 | .087 |
| | Top 100 | 139 | 1.67 | 1.038 | .088 |
| | Top 500 | 180 | 1.90 | 1.154 | .086 |
| | Total | 529 | 1.92 | 1.177 | .051 |
| Insecurity | Fora | 206 | 1.62 | 1.014 | .071 |
| | Top 100 | 138 | 1.62 | 1.006 | .086 |
| | Top 500 | 179 | 1.51 | .926 | .069 |
| | Total | 523 | 1.58 | .982 | .043 |

| My family in Brazil does not have a college degree | Fora | 179 | 1.57 | 1.075 | .080 |
|---|---|---|---|---|---|
| | Top 100 | 119 | 1.41 | .896 | .082 |
| | Top 500 | 155 | 1.38 | .824 | .066 |
| | Total | 453 | 1.46 | .951 | .045 |
| Being a minority student | Fora | 150 | 1.44 | .952 | .078 |
| | Top 100 | 98 | 1.50 | .922 | .093 |
| | Top 500 | 127 | 1.49 | .958 | .085 |
| | Total | 375 | 1.47 | .944 | .049 |
| Support from CAPES regarding the university | Fora | 203 | 2.35 | 1.490 | .105 |
| | Top 100 | 134 | 1.82 | 1.149 | .099 |
| | Top 500 | 174 | 2.08 | 1.247 | .095 |
| | Total | 511 | 2.12 | 1.340 | .059 |

Table J7 - Robust tests of equality of means according to ranking (Perceived challenges)

| | | Statistica | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Lack of self interest | Brown-Forsythe | 1.569 | 2 | 408.952 | .210 |
| Proficiency (or lack of) in a foreign language | Brown-Forsythe | 4.815 | 2 | 507.728 | .008 |
| Financial reasons | Brown-Forsythe | 1.499 | 2 | 500.043 | .224 |
| Possibility of credit transfer | Brown-Forsythe | 1.383 | 2 | 482.720 | .252 |
| Support from the university regarding coursework | Brown-Forsythe | 8.922 | 2 | 515.071 | .000 |
| Family responsibilities | Brown-Forsythe | .008 | 2 | 441.418 | .992 |
| Work responsibilities in Brazil | Brown-Forsythe | 1.128 | 2 | 357.059 | .325 |
| Support of the university regarding the internship | Brown-Forsythe | 4.644 | 2 | 486.327 | .010 |

| | | | | | |
|---|---|---|---|---|---|
| Not having my program/major | Brown-Forsythe | 10.091 | 2 | 458.711 | .000 |
| Climate | Brown-Forsythe | 4.170 | 2 | 517.179 | .016 |
| Support from CAPES regarding the internship | Brown-Forsythe | 6.117 | 2 | 481.881 | .002 |
| Local food | Brown-Forsythe | 6.245 | 2 | 520.960 | .002 |
| Insecurity | Brown-Forsythe | .709 | 2 | 482.815 | .492 |
| My family in Brazil does not have a college degree | Brown-Forsythe | 1.959 | 2 | 430.643 | .142 |
| Being a minority student | Brown-Forsythe | .148 | 2 | 352.504 | .862 |
| Support from CAPES regarding the university | Brown-Forsythe | 6.885 | 2 | 504.570 | .001 |

Table J8 - ANOVA Results according to ranking(perceived challenges)

| | | Sum of Squares | df | Mean Square | F | Sig |
|---|---|---|---|---|---|---|
| Lack of self interest | Between Groups | 2.033 | 2 | 1.016 | 1.527 | .218 |
| | Within Groups | 288.158 | 433 | .665 | | |
| | Total | 290.190 | 435 | | | |
| Proficiency (or lack of) in a foreign language | Between Groups | 11.011 | 2 | 5.505 | 4.676 | .010 |
| | Within Groups | 611.028 | 519 | 1.177 | | |
| | Total | 622.038 | 521 | | | |
| Financial reasons | Between Groups | 3.435 | 2 | 1.718 | 1.460 | .233 |
| | Within Groups | 603.330 | 513 | 1.176 | | |
| | Total | 606.766 | 515 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Possibility of credit transfer | Between Groups | 6.811 | 2 | 3.405 | 1.372 | .255 |
| | Within Groups | 1255.995 | 506 | 2.482 | | |
| | Total | 1262.806 | 508 | | | |
| Support from the university regarding coursework | Between Groups | 32.125 | 2 | 16.062 | 8.593 | .000 |
| | Within Groups | 971.994 | 520 | 1.869 | | |
| | Total | 1004.119 | 522 | | | |
| Family responsibilities | Between Groups | .012 | 2 | .006 | .008 | .992 |
| | Within Groups | 382.042 | 478 | .799 | | |
| | Total | 382.054 | 480 | | | |
| Work responsibilities in Brazil | Between Groups | 1.240 | 2 | .620 | 1.117 | .328 |
| | Within Groups | 234.289 | 422 | .555 | | |
| | Total | 235.529 | 424 | | | |
| Support of the university regarding the internship | Between Groups | 20.377 | 2 | 10.188 | 4.468 | .012 |
| | Within Groups | 1124.234 | 493 | 2.280 | | |
| | Total | 1144.611 | 495 | | | |
| Not having my program/major | Between Groups | 31.303 | 2 | 15.652 | 9.415 | .000 |
| | Within Groups | 766.418 | 461 | 1.663 | | |
| | Total | 797.722 | 463 | | | |
| Climate | Between Groups | 10.828 | 2 | 5.414 | 4.023 | .018 |
| | Within Groups | 706.443 | 525 | 1.346 | | |
| | Total | 717.271 | 527 | | | |
| Support from CAPES regarding the internship | Between Groups | 26.849 | 2 | 13.425 | 5.923 | .003 |
| | Within Groups | 1106.006 | 488 | 2.266 | | |
| | Total | 1132.855 | 490 | | | |
| Local food | Between Groups | 16.364 | 2 | 8.182 | 6.015 | .003 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Within Groups | 715.458 | 526 | 1.360 | | |
| | Total | 731.822 | 528 | | | |
| Insecurity | Between Groups | 1.371 | 2 | .685 | .710 | .492 |
| | Within Groups | 502.086 | 520 | .966 | | |
| | Total | 503.457 | 522 | | | |
| My family in Brazil does not have a college degree | Between Groups | 3.406 | 2 | 1.703 | 1.891 | .152 |
| | Within Groups | 405.243 | 450 | .901 | | |
| | Total | 408.649 | 452 | | | |
| Being a minority student | Between Groups | .264 | 2 | .132 | .147 | .863 |
| | Within Groups | 333.192 | 372 | .896 | | |
| | Total | 333.456 | 374 | | | |
| Support from CAPES regarding the university | Between Groups | 22.976 | 2 | 11.488 | 6.537 | .002 |
| | Within Groups | 892.743 | 508 | 1.757 | | |
| | Total | 915.718 | 510 | | | |