

## The programs Brafitec and Science without Borders: perception of program managers in Brazil and France<sup>1</sup>

### *Programas Brafitec e Ciência sem Fronteiras: percepção de gestores dos programas no Brasil e na França<sup>2 3</sup>*

Caroline Lievore <sup>(i)</sup>

Marizete Righi Cechin <sup>(ii)</sup>

Luiz Alberto Pilatti <sup>(iii)</sup>

<sup>(i)</sup> Universidade Tecnológica Federal do Paraná – UTFPR, Ponta Grossa, PR, Brasil.  
<https://orcid.org/0000-0003-2448-089X>, [carolievore1@gmail.com](mailto:carolievore1@gmail.com).

<sup>(ii)</sup> Universidade Tecnológica Federal do Paraná – UTFPR, Guarapuava, PR, Brasil.  
<https://orcid.org/0000-0001-7651-8082>, [mrcechin@gmail.com](mailto:mrcechin@gmail.com).

<sup>(iii)</sup> Universidade Tecnológica Federal do Paraná – UTFPR, Curitiba, PR, Brasil.  
<https://orcid.org/0000-0003-2679-9191>, [lapilatti@utfpr.edu.br](mailto:lapilatti@utfpr.edu.br).

#### **Abstract:**

The aim of the research is to compare the programs Brazil France Ingénieur Technologie (Brafitec) and Science without Frontiers (CsF), regarding the characteristics, the requirements of the calls and the perception of people working in the international relations of two universities that sent and received students, since the beginning of the Programs. The documentary corpus of the study was constructed by semi-structured interviews conducted in Brazil and France. The data were treated with Content Analysis. The results reveal the importance of resource planning and the regulatory bodies of the Programs. It is inferred that Brafitec Program has a more positive effect than CsF Program, because it presents a more rigorous selection, the monitoring of the student abroad, planning of its activities and the possibility of double diploma. It is concluded that future public mobility policies should make a selection in which the student institution participates in the process, in which the planning of the subjects of the exterior is traced before the trip, for validations, in which the student is accompanied abroad, for support and guidance, and that the multicultural experience serves to broaden the foreign language and language is not the only focus of the exchange.

**Keywords:** mobility programs, internationalization, management

<sup>1</sup> English version: Viviane Ramos- [vivianeramos@gmail.com](mailto:vivianeramos@gmail.com)

<sup>2</sup> Support: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes).

<sup>3</sup> Normalization, preparation, and Portuguese review: Douglas Mattos (Tikinet) – [revisao@tikinet.com.br](mailto:revisao@tikinet.com.br)

## **Resumo:**

*O objetivo da pesquisa é comparar os programas Brasil France Ingénieur Technologie (Brafítec) e Ciência sem Fronteiras (CsF) quanto às características, às exigências lançadas nos editais e à percepção de pessoas que atuam nas relações internacionais de duas universidades que enviaram e receberam estudantes, desde o início dos programas. O corpus documental do estudo foi construído por entrevistas semiestruturadas realizadas no Brasil e na França. Os dados foram tratados com análise de conteúdo. Os resultados revelam a importância de planejamento quanto aos recursos e por parte dos órgãos regulamentadores dos programas. Infere-se que o Programa Brafítec tem um efeito mais positivo que o Programa CsF, por apresentar uma seleção mais rigorosa, fazer acompanhamento do aluno no exterior, planejamento de suas atividades e oferecer a possibilidade de dupla diplomação. Conclui-se que futuras políticas públicas de mobilidade devem fazer uma seleção em que a instituição do aluno participe do processo, em que o planejamento das disciplinas do exterior seja traçado antes da viagem, para convalidações, em que o aluno seja acompanhado no exterior, para ter suporte e orientação, e em que a experiência multicultural sirva para ampliar o idioma estrangeiro, e não fazer dele o único foco do intercâmbio.*

**Palavras-chave:** *programas de mobilidade, internacionalização, gestão*

## **Introduction**

Brazilian government, through the Ministry of Education (MEC) and the Ministry of Science, Technology, Innovations and Communications (MCTIC), has been systematically broadening its policies to decrease the deficit of innovation and technology in the country, stimulating the interaction between universities and the internationalization of scientific production (Guzzo, Linhares, Teodoro, & Koller, 2015; Moritz, Moritz, & Melo, 2013; Pereira, 2013). Policies that promote the internationalization of public Brazilian universities were emphasized, with more intense guidelines, in the governments of Luiz Inácio Lula da Silva (2003-2010) and Dilma Rousseff (2011-2016).

In their researches, Fiorin (2007), Castro & Cabral Neto (2012), and Mari & Thieng (2014) highlight the effects of internationalization and mobility on national science in the global scenario and the use of the knowledge produced. Healey (2008) brings a review of Higher Education internationalization examining the offer and demand factors in the university sector. Moral & Pombo (2011) and the Canadian International Development Agency (2005) researched

on social and economic development of countries and regions as a consequence of funded research and mobility. Lima & Maranhão (2009) profoundly deal with the theme of internationalization and state that student mobility can influence four aspects: political, economic, sociocultural, and the university. Through mobility, one can forge strategic alliances, sociocultural development, teachers' and students' development, and international distinction of involved institutions.

Mobility programs such as *Brasil France Ingénieur Technologie* (Brafitec) and *Ciência sem Fronteiras* (CsF- Science without Borders) help the process of professional development, as well as incentivize a greater interaction between Brazilian scientists and their foreign peers. To Mari & Thieng (2014), these programs are seen as alternatives to solve problems related to science and technology in the country.

With the implementation of Brafitec, in 2002, it was possible to establish partnerships between Brazilian and French universities. The aim was to incentivize the exchange between France and Brazil, approximating the curricular structures and the equivalence of Engineering programs.

The CsF, created in 2011, aimed to boost the expansion and internationalization of science and technology in the country, using the mobility of undergraduate and grad students to national development. The program is considered the biggest of this type in Brazil.

Since its release, CsF is an object of discussion in the academy, among them: Pereira (2013) analyzes the program through the problems in its implementation; Mari & Thieng (2014) discuss the Gramscian thought having CsF as an analytical focus; Borges (2013) aims to understand if the proposed objectives of CsF were reached; and Ribeiro (2015) examines CsF with an approach towards the process of internationalization of education. The studies related to Brafitec are still incipient; Gelas (2009, 2015, 2016), followed the program since its creation, and Grochocki (2016a, 2016b) studied the contribution and impact of the program in Engineering courses.

We did not find studies comparing CsF and Brafitec, thus the aim of this article is to compare its characteristics, demands in the calls, and the perception of people who work in international relations of two universities who sent and received students of Brafitec and CsF, since the beginning of the programs.

## The program Brasil France Ingénieur Technologie – Brafitec

The basis of Brafitec were established between 1997 and 2001, with the release of *Programa de Formação Integrada nas Escolas Francesas de Engenharia de Alunos-Engenheiros Brasileiros* (Program of Integrated Formation in Engineering French School of Brazilian Students-Engineers). The program was demanded by the Brazilian government, through the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (Capes- Coordination of Improvement of Higher Education Personnel ) and organized in France by *Conférence des Directeurs des Écoles Française d'Ingénieurs* (CDEFI- Conference of Directors of French Engineering Schools). In its 1<sup>st</sup> phase it envisioned to receive in France , for three consecutive (1999, 2000, 2001)years, groups of 100 engineering students and create new bonds between Brazilian universities and French engineering schools (Gelas, 2009).

In 2002, the bilateral cooperation entered in its 2<sup>nd</sup> phase, more structured, with a new format, based in projects established in partnerships between French and Brazilian institutions. Together with the release, they presented a booklet of obligations and a two-year call for all establishments in Brazil and France. The projects started to be evaluated by specialists of both countries, a responsibility taken by a committee of mixed coordination and a scientific coordination in France and Brazil (Gelas, 2009).

The objective of Brafitec, in the 2017, call was

to foment the exchange between Brazilian and French Higher Education institutions and stimulate the approximation of curricular structure, including the equivalence and mutual recognition of credits taken in participant institutions, in the terms of the agreement signed between Capes and CDEFI in April 25th, 2002 (Capes, 2017).

The program was intended exclusively to the modality ‘interuniversity exchange undergrad’ (known in Brazil as *sanduíche*) in all engineering specialties and also envisions the bilateral mobility of faculty of Brazilian and French institutions. There are annual calls, released by Capes/Brafitec. To participate the *Instituição de Ensino Superior* (IES- Higher Education Institutions) has to present a project. The most recent call (nº 13/2017) accepts projects to be developed in 2018 and 2019, and envisions the approval of 15 projects.

The proposal can involve up to three IES; it demands a joint work plan between Brazilian and French universities; a two-year activity plan, that can be prorogated for two more

years; each IES involved in the project has to have a coordinator with a PhD title, with more than four years of completion, and a work team of at least two PhDs; the IEA where the coordinator works must be connect to a graduate program recognized and recommend by MEC.

The first project Capes/Brafitec, in Brazil, nº 001/2003, was sent by three IES – *Centro Federal de Educação Tecnológica do Paraná*, *Pontifícia Universidade Católica do Paraná* and *Universidade Federal do Paraná*, in a partnership with *Université Technologique de Compiègne* (UTC), *Université Technologique de Troyes*, and *Université Technologique de Belfort-Montbéliard*. From 2003 until 2014, 204 projects were approved in Brazil; 2011 received the highest number of approved projects (40 projects), 2006 was the only year in which no project was approved (Capes, 2016).

There are 53 Brazilian IES and 54 French ones involved, with the participation of more than 300 Brazilian professors and more than 250 French ones (Grochocki, 2016b). In January 2016, there were 73 on-going projects (Gelas, 2016). The validity of each project is guided by the Capes/Brafitec call, and there are some alterations to the program in each call. The requirements for students to participate in Brafitec is defined by the program nationally and by the IES of each student (Capes, 2017).

From the Brazilian side, the most recent call demands that the exchange candidate have reached a minimum of 600 points in the *Exame Nacional de Ensino Médio* (Enem- National High School Assessment), done since 2009, and had finished at least 40% or a maximum of 80% of the course curriculum. Through the rules of the program, the student also has to be regularly enrolled in an Engineering course and present the level B1 of French fluency, certified by internationally recognized tests (Capes, 2017).

Brazil offers three financial supports: Work mission, Study mission, and Material cost. The first refers to the support of project members, the second refers to students, and the last deals with resources granted yearly and by project to expenses related to the acquisition of material.

In the sense Brazil/France, the last call of Capes/Brafitec foresees two work missions yearly and by project, not inferior to 7 days and not over 20 days, to members of the project. Only the project coordinator can make work mission in consecutive years; a member of the team that is not the coordinator has to have a two-year interval to participate in a mission such as this.

In the same sense, the study mission refers to expenses such as foreign scholarship, a relocation allowance, health insurance, extra income depending on the city, didactic material support, and transportation support.

Besides the study mission, Capes can also support the learning of *Français Langue Étrangère* (FLE- French as a Foreign Language) to students in the levels A1, A2 e B1, if the French IES demands and organizes students' inscription. Students with A1 and A2 levels can have a two-month fund in a FLE course, students with B1 level up to one month. Students with a B2 or up level cannot have a FLE course funded by Capes.

In the sense France/Brazil, the study mission refers to a monthly study scholarship of R\$ 830.00 for a period of at least 4 months and a maximum of 10.

In the *XII Fórum Brafittec*, held in July 2016, Jacques Gelas, creator of Pré-Brafittec, French coordinator of Brafittec, and representant of CDEFI, presented the total number of students, until 2015, who participated of the program: 6,821 in the sense Brazil/France and 2,279 in the sense France/Brazil.

According to Gelas (2015), the increasing number of Brazilian students mobility to France is due to, at least in the Brazilian side, the strong support of Capes and the granting of scholarships; on the French side, the granting of scholarships come from companies, internships, local scholarships, the Eiffel scholarship, among others. There was a significant increase of mobility in 2012, justified by the integration of Brafittec to the CsF program (Gelas, 2015), as CsF has broadened the availability of resources to Brafittec (Grochocki, 2016a). The numbers show a smaller mobility of French students to Brazil. However, since 2011, the percentage has increased because, besides the financial support of the French government, Brazil, through Capes, started to offer financial support. Grochocki (2016a) comments that "Brazilian IES have not presented the same level of success to offer internships to French students" (p. 66). This obstacle may be a factor considered by the foreign student when analyzing Brazil as a destination, as internships are a part of the engineering curriculum in France, made possible by French IES, offered to foreign and French students, without distinction, what does not happen in Brazil.

The bilaterality of Brafittec gives a motivation to student to learn a language. Grochocki (2016b) presented in the *Fórum Brafittec* in 2016 the information that 91.4% of Brazilian students were fully motivated to learn French, while 56.8% of French students felt the same regarding

Portuguese. The fact that Brafitec mobilizes students to learn a language is an aspect of the program that possibly has middle to long term effects, promoting a network, and academic and textual partnerships.

The Engineering courses with higher participation in Brafitec are Mechanical, Electric, Civil, and Production. Though Brafitec is well structured (Briot, 2015) and presents significant numbers of exchange and student mobility, in Grochocki's evaluation (2016a, 2016b), there can be improvements in the release of public data of the program for a better balance on the emission of the double diploma, the extent of internships opportunities in Brazil, the expansion of the program to Brazilian North and Center-West regions, and also the mobility in graduate level and the standardization of the databanks of funding agencies (Capes and CDEFI), as each counts the scholarships and projects in their own format, leading to data conflict.

## **Programa Ciência sem Fronteiras/ Science without Borders**

### **Program – CsF**

The degree n° 7.642, December 13th, 2011, established the program CsF, aiming to

allow the formation and development of people with high qualification in excellence foreign universities, professional and technological institutions, and research centers, besides attracting to Brazil young talents and foreign researches with high level of qualification, in knowledge areas defined as priorities.

The program was the result of a joint effort of MCTIC and MEC, through their respective funding institutions, Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq- National Council of Scientific and Technological Development) and Capes, and the secretaries of Higher Education and Technological Education.

The goal of CsF was to offer 76 thousand scholarships in the four-year period of the program (“Requerimento n° 4”, 2015). In 2013, the federal government increased the proposal to 101,000 scholarships to be granted until 2014, to undergraduate and graduate students, besides attracting researchers abroad to live and develop researches in Brazil or establish partnerships with Brazilian researchers in the priority areas defined by the program (“Decreto n° 7.642”, 2011).

CsF program defined as specific objectives:

I – promote the formation of Brazilian students, giving them the opportunity of new experiences towards quality, entrepreneurship, and innovations in priority and strategic areas for Brazil; II – broaden the participation and international mobility of students; III – to create opportunities of cooperation between Brazilian and foreign research groups; IV – promote technic-scientific cooperation between Brazilian researchers and researcher of well-known scientific leadership living abroad; V – promote the international cooperation on areas of science, technology, and innovation; VI – contribute to the process of internationalization of Brazilian higher education institutions and research centers; VII – give more international visibility to academic and scientific research done in Brazil; VIII – contribute to the increase of competitiveness of Brazilian companies; and IX – stimulate and improve applied researches in the country, aiming the scientific and technological development and innovation (“Decreto n° 7.642”, 2011).

The program envisioned financial support of transport, relocation allowance, didactic material acquisition, and health insurance. The minimum period abroad was 12 months, that could be extended to 18, if the student did a foreign language intensive course. For the technological courses it was demanded three months of internships in companies or research centers in the destination country (“Decreto n° 7.642”, 2011).

In average, the values granted by CsF varied on the destination country (considering the fees charged by foreign academic institutions), on the modality scholarship, on the period, on the priority of the course, on attending (or not) a foreign language course abroad, on the academic period the student was on, on the location of the city, on where the foreign IES was, among other factors (“Requerimento n° 4”, 2015). According to the former minister of Education, Mendonça Filho, adding all the aids, each CsF scholarship grantee costed, approximately, R\$ 106 thousand a year to the public funds (Saldaña, 2016).

In the first four years of the program, the federal government estimated an investment of R\$ 4,679,296,546,56<sup>4</sup> with the distribution of scholarships, attraction of researchers to the country, and expanses with the management and administration of the program. Only with scholarship the investment estimated was of R\$ 2,010,790,189.62<sup>5</sup> (MEC, 2017a).

Between 2011 and 2014, 101,446 scholarships were granted. In 2011 there were 3,621 scholarships, in 2012 there were 16,420, in 2013 there were 39,196 and in 2014 there were 42,209 (“Requerimento n° 4”, 2015). Until the last update, January 2016, from the 101,000 envisioned scholarship, 92,880 were implemented, 91.96% of what was planned (MEC, 2016), in the

<sup>4</sup> Amount correct according to the *Índice Nacional de Preços ao Consumidor* in January/2017.

<sup>5</sup> Valor corrigido conforme Índice Nacional de Preços ao Consumidor em janeiro/2017.

modalities interuniversity undergraduate exchange (73,353), interuniversity doctorate exchange (9,685), postdoc (4,652), full doctorate abroad (3,353), special visiting researcher (775), master (558), attraction of young talents (504) (MEC, 2017a).

The interuniversity undergraduate exchange scholarships exceeded their target in 14.61%. This because, since 2011, Brafitex started to be part of CsF, and was responsible for granting 2,702 scholarships (49.9% of interuniversity undergraduate exchanges to France) in the scope of CsF. This is equivalent to 2.66% of the total of scholarships granted (101,446) and makes Brafitex the adherent program that has most contributed to the granting of CsF scholarships in the modality interuniversity undergraduate exchange (Grochocki, 2016a). However, the other modalities did not reach the number of scholarships initially proposed by the program. They implemented 63.04% of interuniversity doctoral scholarships, 74.51% of full doctorate scholarships, and 72.23% of postdoc scholarships.

In the modality young talents, 25.20% of scholarships were implemented. In the modality visiting researchers, 38.75%. These were the modalities that have contributed the most to the process of internationalization of scientific production, thus it is advisable, for more effective results, to be prioritized (Lira & Balmant, 2014).

The Senate report (“Requerimento n° 4”, 2015), created by the *Comissão de Ciência, Tecnologia, Inovação, Comunicação e Informática*, presented the *Projeto de Lei do Senado* (PLS- Project of Senate Law) 798/2015, in which it recommends the continuation of CsF despite financial difficulties. The commission defended that the program should become a State Policy.

Representants of CNPq and Capes established partnerships with excellence universities and institutes in more than 30 countries. The highlight is the USA with 29.98% of grantees, United Kingdom with 11.57%, and Canada with 7.88% (MEC, 2017a). The university which received the highest number of Brazilian grantees (1,080) was the University of Toronto, in Canada (MEC, 2017a).

Although it recognizes the importance of these three countries in the global scientific production, the CsF Senate report suggested, for the next phases of the program, the promotion of a “decentralization particularly towards the European and Asian countries, ... As it could also mean the decrease of the values spent by each grantee, as the fees charged by North American universities are relatively high” (“Requerimento n° 4”, 2015, p. 51).

CsF considered 20 priority areas for the development of the country, all connect to sciences, engineering, and teacher training. The different types of engineering and the other technological areas represent 44.78% of all scholarships (MEC, 2017a).

The lack of places of Human and Social Sciences was questioned. However, the priority was considered necessary due to the lack of trained work force in Engineering and areas of Health Science, and the need for direct production of technology and innovation (Barreto, Silva, Bezerra, & Jesus, 2013; Mari & Thieng, 2014). Despite the priorities, considering the value invested and the results reached by CsF, it is not likely that internationalization in itself will broaden the insertion of the country in the international scenario (Mari & Thieng, 2014).

Even with investments of over 3 billion reais, CsF still does not have a concrete and effective assessment of the objectives proposed and the results reached. The lack of precise indicators is due to the lack of an administrative structure adequate to the immense size of the program (Lira & Balmant, 2014). Many students perceived the lack of supervision from the agencies and from the university: they enrolled in only two or three subjects per semester and used the rest of the time and money for “Tourism without Borders”, an expression used by the own grantees of the program (Lira & Balmant, 2014).

Even if the program CsF were in a process considered initial, the exchange policy proposed stumbled in historic barriers, such as structural problems of public bodies, the deficit of public education, the difficulties with foreign language, the mismanagement of results, and, especially, financial difficulties (Barreto et al., 2013). CsF was interrupted in 2015 and its proposal was reformulated in 2016.

In an official letter, MEC informed that CsF would return focusing more in the undergraduate exchange (MEC, 2016). The focus would be the teaching/learning of foreign languages, in the country and abroad, including low-income youngsters and public high school students. The new version of the program would emphasize graduate scholarships for the mobility of students, professors, and researchers, with a more active involvement of Higher Education institutions. In the same document, MEC states that the granting of scholarships was finalized in 2014, when the last selection calls were published, with the participating students finishing their activities until the beginning of 2017, as it what was established in the launching of the program in 2011. According to the Press Office of MEC, the then minister Mendonça Filho has considered the 1<sup>st</sup> phase of the program finalized and with no resources for

continuation. To honor the commitment assumed with the students already abroad, it was necessary an increase of 20.9% on the budget of the program, going from R\$1.4 billion to R\$1.8 billion (MEC, 2016). The minister reaffirmed the importance of the program and the need to reformulate it aiming to contribute to the process of internationalization of Higher Education, science, and technology in the country (MEC, 2016, 2017b).

MEC concluded that the program demanded a high investment and need to be better used, thus, CsF would have a new focus, aiming to attract young scientists and graduate students (masters, doctorate, and postdoc). In 2017, 5,000 scholarships had already been offered. In the letter, MEC states that Capes would discuss “new strategies of internationalization and support towards the excellence in universities” (MEC, 2017a).

In the *Encontro de Pró-Reitores de Pós-Graduação, Pró-Reitores de Pesquisa e Secretários de Relações Internacionais de Instituições de Ensino Superior da Região Sul*, held in March 2017, Capes announced the program *Mais Ciência, Mais Desenvolvimento* (MCMD- More Science, more development), that was supposed to substitute CsF. MCMD would have a more structured policy, assembling all activities that fomented internationalization, such as calls for interuniversity exchanges, postdoc scholarships abroad, answering especially graduate students, with the participation of undergraduates connect to junior researches.

## Methodology

This applied study, considering the approach of the problem, is qualitative and exploratory, due to the established objectives. We used a comparative method that, in the perspective of Marc Bloch, when applied to human sciences, means to examine the similarities and differences between the compared elements that constitute two series of analogous nature, in different social environments (Cardoso & Brignoli, 2002). In this case, Bloch’s social environments, can be interpreted as societies distant in space and time, but that have similarities, allowing the research of specific social process. In the comparative method, Bloch (2002) identified two intrinsic moments: one referring to the identification of similarities among the phenomena and another contrastive, in which we can observe the differences among the cases. In this research both moments are considered.

To apply the comparative method, we used Schneider & Schmitt (1998), which suggest the adoption of the following steps: (i) *the selection of two or more series of phenomena that are effectively comparable*, represented by the exchange programs CsF and Brafitec; (ii) *the definition of elements to be compared*- the characteristics, the demands of the calls, and the perception of people who worked in the international relations of two universities that have sent and received students; and (iii) *generalization*, identification of common elements on the two analyzed cases, respecting their specificities.

The research conducted semi structured interviews to collect data. The interviews took place between April and September 2017, done personally and through Skype, recorded and transcribed. The interviewees were staff members of two universities who have actively participated in the two projects analyzed in this study. Five professionals were interviewed, with no saturation due to the limited number of actors with a deep knowledge of the compared objects. Fontanella, Ricas & Turato (2008) point out that, in qualitative studies, the most significant issue in intentional samples is not the number of interviewees, but the representativeness of these elements and the quality of information.

In the presentation of the results, to guarantee their anonymity, the interviewees were identified as Interviewee (I) and numbered from 1 to 5. The three Brazilian interviewees, I1, I4, and I5, work in *Universidade Tecnológica Federal do Paraná (UTFPR)*, the French interviewees, I2 and I3, work in the International relations of UTC, located in Compiègne, France. It is important to highlight that, in all the sample, I3 has refused to answer questions related to CsF, because, though knowing it, he did not work in the sector during the program. A sixth person was contacted but refused to participate in the research.

We created a script for the semi structured interview that allowed us to have the perception of those involved in the programs Brafitec and CsF, drawing a comparison. Thus, questions were made on the advantages and disadvantages of each one, on problems related to them, and comparing the selection of candidates, their performance abroad, and the impact to the academic life of the exchange students.

To treat the data, we used the technique of content analysis (Bardin, 1977). The phases that justify the content analysis are: (i) pre analysis, (ii) exploration of material, and (iii) treatment of results, inference and interpretation (Bardin, 1977). Each transcribed interview was analyzed following a *structural translation* to understand what was said but also the interviewees' emotions

and perceptions. Then, we did a *theme analysis* aiming to understand the specific logic of each speech. To group similar themes spread in the same interview and among different interviews, we used fragments, assembling them thematically in initial, intermediate, and final categories.

From the 41 initial categories we built 7 intermediate categories and, from those, established the 2 final categories: (i) advantages of the programs and (ii) disadvantages of the programs, which were used in the phase of result treatment, inference, and interpretation of significant and valid data to the objective proposed.

## Results and discussions

### Advantages of the programs

As advantages of Brafitec, interviewees I1, I2, I4 and I5 (comunicação pessoal, 2017) point: a more rigorous selection of the exchange student, demanding from them a certain level of fluency in French following criteria established by partner universities and not by governmental agencies, allowing “more space to metric than to politics” (I4), and the involvement of IES in all phases of the program, since the selection until the follow-up of students during the exchange.

In the words of I2, “the process is well-done, and the students are well chosen”. To I1, these factors are the great distinctions of Brafitec,

it is a relation institution/institution...are two institutions that talk, that know each other and decided to have a common protocol, a common agreement. They write a process together. They agree between them the process to select the student...the institutions, the people know each other and there is a mutual trust...the student that you send has passed through very high level of demand. You have to know the language there. He doesn't go to learn a language. It is the institution that validates the departure of these students, it authorizes it and trusts these students, it knows that those students are capable and follows them (comunicação pessoal, 2017).

Another advantage of Brafitec is to allow the mobility only after the 7<sup>th</sup> or 8<sup>th</sup> semester of study (I4). This means more maturity and technical knowledge from the student. The selection of Brafitec has the following criteria: minimum coefficient of 0.8; minimum proficiency in French B1 (70/100); participation on *Programa Institucional de Bolsas de Iniciação Científica* (a junior research program) and/or an internship in companies and/or tutoring; no

repetition in the course until that moment. That is, Brafitec students have “good knowledge and skills, but also attitude and autonomy, to face an international mobility”(I4).

With this system, Brafitec fomented more institutional and strategic cooperation in a specific domain, Engineering, allowing the creation of double diplomas and a relation of interinstitutional trust build through the years ( I1, I4, and I5). As it involves the coordination of engineering courses, there is more possibility of innovation in the area, as experiences are exchanged in visits and annual forums (I4). Stallivieri (2004) highlights that, in the process of interinstitutional cooperation, it is important the effective planning and precision of activities and execution deadlines, besides the process of assessment of the proposed and implemented actions.

Brafitec also allows the exchange students to have a double diploma, when there is a specific agreement. There is an action plan that allows the co-validation of credits previously chosen, completing the curriculum of the home country course. There is the commitment to execute the plan, as there is a strong control on student’s actions ( I1 and I2).

This interinstitutional cooperation effectively takes place in Brafitec, as there is an exchange of knowledge and experience among students, professors, and coordinators of course, strengthening partnerships in researches and programs. To I4, “ a long-term relation regarding engineering teaching can grow to common projects in research and professorial exchange between the countries.”. About this relation, Brafitec meets the objective proposed of “fomenting the exchange between Brazilian and French IES and stimulating the approximation of curricular structures” (Capes, 2017).

In this same line of thought, I3 points as a great advantage of Brafitec “the power of cooperation between French and Brazilian establishments, especially in engineering...it is a program created to exchange knowledge and experiences between engineering programs”.

Through Brafitec, students take a semester of studies and another of internship in a French company, allowing them to have a perspective of the job market, connecting theory and practice, consolidating the relation of the university with the professional world. As expressed by I3, the internships “are the bases of UTC and, then, the students should adapt themselves to the way French companies work, of how to work within the companies”, what is an extremely rich experience for Brafitec students, and, later, a distinction in Brazil (I1).

Brafitec is pointed by I2 and I3 as the program with the highest funding known for a foreign student in France, a factor that “causes emulation” of French students: “a funding that, for a student, is very high to live in France” (I3). According to Grochocki (2016a), the investment for Brafitec surpasses the average of 40 million reais, distributed between scholarships and work missions.

The fact that the student is financed with relatively high resources leads to a higher commitment by the student: “I think that the students are aware and that their activities are a bit more demanding than the foreign students from other countries” (I3). Summing up, Brafitec is seen by the interviewees as a mature and well-structured program.

As advantages of CsF they cited new partnerships and agreements signed with IES that were previously unknown in France:

An interesting thing that happened with CsF and that was positive for us, French, and for the universities in Brazil was that...we had students that we discovered here, from universities in Brazil we didn't know about. It was the case of *Universidade Federal de Uberlândia*, and from *São Carlos*. Thanks to those students, we could establish agreements with these universities...established thanks to these students that first came through CsF (I2, comunicação pessoal, 2017).

The coverage of knowledge areas and democratic universalization were posited by I1 and I5 as positive points of CsF. “There was a priority...that is the technologic area, that is very important for a country. An insertion and funding of students in countries where the undergraduate is paid and our student would hardly be able to do an interuniversity exchange, as is the case of North America and Australia”. (I1)

CsF also allowed graduate students and researchers to experience scientific mobility (I1 and I2) something that does not happen in Brafitec. In total, 5,506 undergraduate students have gone to France (75%) and 1,772 graduate ones (24%), according to the updated data provided by the program in January 2016 (MEC, 2017).

The fact that the Brazilian students go to France and have an academic opportunity is seen as an advantage for I1 and I2. “The positive point of CsF is the excellent opening of Brazilian students to go to France, because CsF, I would say, gives more possibilities to any student” (I2).

Another advantage of CsF was the fact that it was the biggest program of its type in Brazilian history. Despite its magnitude and important objectives for the development of science in the country, in the perspective of I4, CsF presented only one advantage: “inserting internationalization in the agendas of Brazilian universities, giving the area its deserved institutional space”. Corroborating with this perception, Castro & Cabral Neto (2012) affirm that, according to the World Conference on Higher Education held by Unesco in 2009, internationalization should always be present in study plans and be included as a priority theme in governmental agendas.

The advantages highlighted here strengthen the idea that both programs can/could give a distinction for the student in the job market. The exchange students’ world views are broadened and, in some way, the student inevitably brings, as a result of the experience, a second or even third language (I1, I2, and I3). However, we can infer that Brafitec presented more advantages than CsF as it has more consolidated basis in institutional relations, a more rigorous selection process, and a more effective follow-up of the students that develop activities and subjects previously defined, besides the internship and the possibility of a double diploma when there is an institutional agreement.

## **Disadvantages of the programs**

The interviews showed few negative factors in Brafitec. I3 noticed the little flexibility of the program to go beyond what was planned, causing a “forced” commitment to fulfill the schedule. Other two factors were seen as negative: the instability of scholarship offering and of the public policies that regulated the program, leading to uncertainties in Brazilian and French institutions (I3); and the reduced number of scholarships per call, reducing the number of approved projects and, consequently, of students, making it an elite program (I3 and I4). The elitization of the program was seen by I1 as a limitation and not as a disadvantage.

I1 commented that the mobility towards France is a limitation to Brafitec, offering places only for the Engineering area, and accepting only the modality interinstitutional exchange. However, these factors are not disadvantages, if other areas of knowledge develop similar programs.

The disadvantages of CsF is the non-participation of universities in the process of selection and follow-up of students. The funding agency, Capes, is responsible for all the process, and the management inefficiency has substantially hindered the quality of the program. For Oliveira & Freitas (2016) and Pereira (2013), the selection of grantees did not respect the prerogative of universities to adopt their own selection processes, based on academic merit.

The university did not have the decision power on the program, it was an agreement between Capes/CNPq and their counterparts in other countries. The university had only to certify the students' academic situation. When the exchange finished there was no capitalization of the relation between the institutions (origin and destination). The internationalization was focused on the student, not the institution (I4, comunicação pessoal, 2017).

There was also the pulverization of public resources without a qualitative target, with not impact indicator that guaranteed the efficiency of the program (I4; Lira & Balmant, 2014). To I4, CsF only had a target: send 101,000 Brazilian students to a foreign country, even if they did not have fluency in the language. Therefore, the target was political and extremely quantitative, thus the selection criteria had to be very lax, allowing the departure of students without the necessary academic base or personal maturity.

In CsF, Capes stipulated the participation of students in the exchange since their 3<sup>rd</sup> semester.

Up until the third year, mainly in the Engineering courses, the subjects are basic to all formations and in all parts of the world ( scientific base). That is, a mobility before the third years is to see the same thing in another place...academic mobility is important exactly to allow the student to see what is different, complementary. This will happen only in the two last years. It is in this period that they will see the formation differences between universities, and, even more, between countries ( I4, comunicação pessoal, 2017).

Another factor regarding students' academic maturity refers to the minimum grade average of CsF candidate ( the only performance criteria). I4 reports that UTFPR stipulates a general average of 6.0, what means a student with repetitions in the course, reflecting another problem in the selection process of CsF. For this interviewee, a student that does not have a successful history in their own country, in their own language, has a huge chance to have a much worse performance abroad, where they will find another social and cultural context.

The lax selection, especially regarding language knowledge, compels the student to use six months of scholarship to learn the language ( I1, I2, I4, and I5). To I1, this reflects a badly

structured strategy from the program “a very high investment for those students to have language courses abroad”.

The lack of language knowledge caused losses in students’ academic performance, signaling learning losses due to linguistic barriers (Souza, 2014). Only 27% of CsF grantees affirmed they were fluent in the language of their destination country before the exchange (“Requerimento n° 4”, 2015). Souza (2014) highlights that there is a contradiction between the requirements of the academic mobility programs, such as CsF, and the linguistic policies implemented in Brazilian educational systems. It is demanded a level of proficiency that is foreign to Brazilian educational context, “that does not envision the teaching of a foreign language as a way to overcome the communicative skills needed for the exchange” (Souza, 2014, p. 56).

The lack of planning of the activities and subjects chosen was also pointed out as disadvantages of CsF. The CsF student was not followed by Capes and was left to choose their own activities and subject courses, which normally, were not beneficial or useful to them, nor the country (I1, I4, and I5). This was noticed by French professors and was pointed out by I2 as the most harmful factor of the program.

In CsF, the student does everything alone, he doesn’t have a support, the guidance of a professor, of a coordinator, to help choose the subjects...things like that. It is as if he were an isolated subject, that chooses to leave and the only thing they have to prove is a certain level of French from *Alliance Française* to get a scholarship (I2, comunicação pessoal, 2017).

With no demand or follow-up, CsF student did not feel the burden to retribute to society the academic performance wished from an international mobility (I2), neither to help consolidate a program aimed to contribute the internationalization process of the country, creating opportunities of cooperation between Brazilian and foreign research groups (“Decreto n° 7.642”, 2011).

Another negligence of CsF presented by I1 and I4 was the lack of obligation of an internship, considered an essential element to students’ complementary formation and that would support some of the objectives proposed by the program which was to “contribute to the competitiveness of Brazilian companies”, aiming the “scientific and technological development and innovation” (“Decreto n° 7.642”, 2011), as internationalization is directly

related to the area of teaching/education, innovation, and industry competitiveness (Ribeiro, 2015).

With shallow criteria of participation and the lack of planning and follow-up of CsF students, the co- validations of subjects were often impossible ( I1, I4, and I5), leading to poor results and no gain to the universities and national science. Corroborating to this result, Mari & Thieng (2014) posit that one of the negative impacts, revealed by the lack of contact between the universities, was situations in which students arrived in foreign institutions and did not even find subjects available in their areas of knowledge.

Another disadvantage identified by I1 and I2 was that the great majority of CsF scholarships were granted to undergraduate students, considered immature to manage all the process “by themselves”. In this line of thought, Lira & Balmant (2014) present the perspective of the scientific director of the program SciELO, Rogério Meneghini, that the departure of undergraduate students abroad will make no difference in the development of national science. This can mean an important personal experience and help their growth, or bring some skills and perspectives of future, but will not have any relation to science itself. A program such as CsF, with no due support, is too expensive for the State to pay.

In the interviewees’ perspectives, all factors considered as disadvantages in the program have shaken the interinstitutional trust relations and hindered the connections that had been build with Brafitec, as French universities noticed the difference of involvement and efficiency of CsF students.

I heard from institutions that they would not receive more students of CsF, that they would only receive Brafitec students because the students’ level was incompatible of what was expected...some students were uncommitted with the process, to the point it became a joke among them, “Tourism without Borders” because there was not commitment. The performance was almost null, he would return to the institution and had no subject validated, there was no gain (I1, comunicação pessoal, 2017).

Consequently, the image and the reputation of Brazilian students were hindered in universities abroad. Many students did not go to class and took advantage of their stay abroad to do “public tourism” (I4; Lira & Balmant, 2014). Besides this, I2 says that, in both programs, there was a lack of guidance regarding cultural differences between Brazil and France:

of course there is a great cultural difference, on the way of teaching, the learning is different, the student comes here...it is a shock to them, because in Brazil there is a way to study that is different from here, so in this aspect, a preparation for the cultural part of the student who is coming, so that he does not have a cultural shock when arriving in France (comunicação pessoal, 2017).

We can see there is a concern of French universities to prepare the exchange student for mobility. According to Oliveira & Freitas (2016), the familiarized dispositions from the origin country are not reproduced in the destination one. The students' perspective about the new country encompasses multiple variable that go from their personal and family history, mobility experiences, linguistic competences, to even personality traits, as openness towards differences and others. To Castro & Cabral Neto (2012), mobility does not encompass only the displacement movement: "it is much broader, because it is social and involves structures, environments, cultures, and meanings" (p.77).

Though CsF had structural problems, it was still a young program that could be improved and not extinguished. Capes could have used the knowledge acquired with Brafitec to improve CsF: " Brafitec was a more mature program, ...it is over 10 years. CsF, however inconsistent it might be, is from the same ministry as Brafitec...and it did not use its expertise, its know-how that had already been developed by Brafitec" (I1).

We can see that the disadvantages of CsF shown by the interviewees, which corroborate some authors, exceed the disadvantages observed by Brafitec. CsF showed fragilities that started in its selection process, with lax criteria, and extend to the lack of management in the development of the program. Such disadvantages did not strengthen the connections between the partners and brought negative impacts to the image of Brazilian students and the relations build between IES.

## **Brafitec x CsF: a comparison**

Until 2015, Brafitec had offered 9,100 scholarships involving the mobility Brazil/France and France/Brazil. CsF offered, between 2011 and 2014, the total of 92,880 scholarships, 7,279 to students going to France. There we can see a quantitative boost of student mobility in Brazil.

On the selection process, we can infer that Brafitec recruits students with a higher number of credits, that is, students enrolled in the 7<sup>th</sup> and 8<sup>th</sup> semester, with a higher grade in

the course, and has as a selection requirement a minimum of fluency in French, what places the student in a better condition to enroll in subjects and to participate of projects in the destination universities. CsF selects students that are still in their 3rd semester, with lower grades, with no demand of language proficiency, what prevents students to start their activities in the beginning of the exchange program.

As to the follow-up during the programs, Brafitec students receive continuous guidance from professors (in both the origin and the destination institution), leading to a better use of the activities, and opening possibilities for a double diploma, when there is an institutional agreement. Contrariwise, CsF, managed by Capes, does not follow the students and their activities, allowing them to define their agenda with no adequate and necessary supervision.

The institutional cooperation that strengthens the bonds between universities and allows the exchange of knowledge between professors and coordinators was perceived by interviewees only in Brafitec. CsF was managed without the collaboration of IES, hindering the process of cooperation that would base the joint world, favoring the student.

Regarding grantees' performances abroad, of course with the differences of selection and follow-up process, Brafitec students had a better performance abroad, in the interviewees' perspectives, with institutional gains by the exchange of experiences, but, mainly, because they participated of a successful program.

As to the benefits acquired by the programs, we can infer that, in the case of CsF, the impact was predominantly personal. The students had the opportunity, sometimes a unique one, to live abroad, to know a new culture, to improve a language, but had little academic gain. Brafitec students, on the other hand, besides these same benefits, retuned with important complementary gains (access to different technologies), and an international experience in the industry (internship).

Analyzing the impacts or the effects of the programs in Brazilian universities, the interviewees understand that CsF did not bring impacts to national science nor to the IES. However, through Brafitec, there was a gain of flexibility in the processes of co-validation of credits, in the proposal of double diploma programs, research programs, and several exchange partnerships.

Regarding the curricular alterations that could take place through experiences in the programs, we can conclude that none of them led to changes or updated teaching strategies—CsF due to the previously mentioned reasons and Brafitec because there are still few professors involved in the program and they are the agents of change in the courses they take part.

The comparisons between the two programs, maybe the most important ones in Brazilian educational history, have valuable lessons for future public policies, as the importance to establish a selection in which the students' institution participates of the process, in which the planning of overseas subjects is drawn before the trip to allow co-validations, in which the student is followed abroad receiving guidance and support, and in which the intercultural experience serves as a way to improve the mastery of a foreign language as a way to support new discoveries and not as the only focus of the exchange program.

## Final remarks

In both programs analyzed in this study, Brafitec and CsF, there are significant implementations as policies and projects aiming advancements in scientific and technologic productions in the country, especially in some areas of knowledge, such as Engineering. Such programs have contributed to broaden interinstitutional partnerships, with the synergy of researches between Brazil and France, especially in the case of Brafitec, and with academic mobility. Brafitec, more punctual and lasting, and CsF, broader and more ephemeral, show the importance of planning regarding the resources to be managed and the regulatory bodies that evaluate the editions of the programs.

Regarding the advantages of the programs, Brafitec presented a more positive result regarding the rigorous selection, the following of students abroad, the planning of activities, the co-validation of subjects, and the double diploma. Though in smaller proportions to CSF, Brafitec has a better logistic acting structure in the phases of students' selection and follow-up, having more satisfactory and profitable results to the institutions.

On the disadvantages of the programs, we saw that CsF has more disadvantages due to bad management and disorganization in all phases, imply a low gain of the program to the student and to the IES involved. The only disadvantages of Brafitec, which could be seen as

simply limiting, would be the reduced number of places and the instability of scholarships offered annually.

Though there has been an increase in the last years of students participating of exchange programs through academic mobility, this does not mean that the objective of promoting an advancement of science and technology in the country has been reached. We know that CsF has finished and that the number Brafitec scholarships has been reduced year after year, a reflection on Brazil current economic situation.

From the lessons learned with both programs, it is possible to create more consistent public policies and structure programs that can change the scientific and technological scenario in Brazil.

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