

Postgraduate Internationalisation in Brazil

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Abstract

Understanding the current state of the Internationalisation of postgraduate courses in Brazil was essential to serve as a basis for constructing effective policies in funding agencies. It also helps to understand the capacity of the higher education institution to carry out more effective strategic planning and internationalisation plans. This study looks at replies to a Brazilian national funding agency (CAPES) questionnaire on Internationalisation within Higher Education Institutes in Brazil, based on the postgraduate experience. Results showed that Internationalisation is based on mobility with little comprehensive thinking on its role towards academic achievement within the Postgraduate Programs realities, beyond the mobile individual. English language skills need to be improved. While most institutions have offices that treat this theme, they lack an active engagement with the postgraduate programs and strategic planning, seen as vital for almost all institutions. Resources are necessary to build infrastructure and capacitate lecturers and staff to this end.

Keywords: Brazil, Mobility, Strategy, Priority, Plan, Internationalisation.

Introduction

HEIs and financing agencies worldwide tend to recognise the importance of expanding student and staff learning and development outcomes, including global, international, and intercultural (GII) competencies (Lee *et al.*, 2012). Internationalisation of higher education gains relevance in this context both as part of the globalisation process and the knowledge economy rhetoric where GII competencies are valued and sought after. The concept of Internationalisation covers a wide range of actions (de Wit, 2011), including teaching, research and providing services to society, and helping to make higher education responsive to the requirements and challenges of a globalised society (Knight 1993). International, in this context, means mobility of programs, people and knowledge (Jowi, 2009). Mobility involves initiatives that are internal to graduate programs and cooperation between programs at the international level- This exchange promotes the circulation of brains, with the mobility of knowledge in the form of research and extension (Appelt *et al.*, 2015).

Internationalisation is seen to be changing the world of higher education (Knight, 2008). The way institutions act in the face of it determine how they position themselves in the international arena of science and education. Hahn's (2004) analysis of the German universities approach to Internationalisation draws attention to typical behaviours within higher education institutions. According to the author, there are three main action orientation types: the 'blind-chicken' approach, where the existing structures are enough; the casuistic approach, where Internationalisation is dealt with as an opportunity to acquire more funding; and the 'strategic players' approach, where strategies for Internationalisation are in place, thinking globally and acting locally, with different facets of Internationalisation being used.

Stukalova *et al.* (2015) state that the management of a country's educational Internationalisation is carried out by national governments and is determined by the state policy. Therefore, funding agencies should understand the level and processes of Internationalisation within HEIs to enact policy that favours constructing plans that can help in their implementation.

The Brazilian internationalisation process of universities remains passive (Lima & Maranhão, 2009; Finardi *et al.*, 2019), reactive and dependent on government initiatives, with mobility being seen as the primary internationalisation strategy in recent years (Morosini & Corte, 2018). de Wit (2020) looks to the need for more attention to Internationalisation's qualitative dimensions, such as citizenship development, employability, and improvement of quality of research, education, and service to society. To achieve this in Brazil, there is a need for change within the universities and funding agencies. Global and international themes can be embedded in several facets of campus life—from individual classrooms to collaborative research with faculty, from programming in residence life to adding new majors and certificates to the curriculum (Soria & Troisi, 2013).

Funding agencies have an important role to play in this process (Baeta Neves *et al.*, 2020) through their open calls for financing thereby stimulating improvements within the HEIs. Here we analyze data collected from a questionnaire of CAPES (Coordenação para Aperfeiçoamento de Pessoal de Ensino Superior, Ministry of Education, Brazil), after the end of the Brazilian Scientific Mobility Program (the largest internationalization program undertaken in Brazil). This program, also known as Science without Borders (CsF) aimed to give scholarships to 101,000 students and lecturers aiming to improve the internationalization of Brazilian Higher Education Institutions (HEI). The aim of the study was to understand the level of internationalization in the postgraduate (PG) programs in Brazil, especially to what level the vice-rectors for PG studies understand, plan and prioritize internationalization actions within their institution. The postgraduate system in Brazil is responsible for 95% of the science produced and is fundamental for the development of the country. The results were also used to identify specific areas whereby a new call for resources for internationalization could meet not only the expectations of the HEIs but also improve the efficiency of resource use.

Material and Methods

CAPES sent a questionnaire to the vice-rector responsible for postgraduate (PG) education in all institutions in Brazil (Table 1). PG is the central focus of CAPES' actions and of the questionnaire.

Table 1. Replies to internationalisation questionnaire to Brazilian Higher Education Institutions (HEIs)

	Sent		After cleaning	
	Number	%	Number	%
Sent	685		430	
Replies	320	46.70%	320	74.41%
Not Replied	79	11.53%	79	18.37%
Not an HEI	85	12.40%		
<i>Latu-sensu</i> , MBA, undergrad, score less than 3	170	24.81%		
Cancelled	31	4.52%	31	7.20%

The questionnaire had 254 questions, of which 169 were text and the rest numbers. These were initially categorised into: Internationalization situation, cooperation and partnerships, strategies and plans, financing, language, mobility, policies for attracting foreigners, return policy, publications and non-categorised.

Principal components (PROC PRINCOMP) were calculated between the replies for the current situation within the universities, capacity to implement internationalisation plans and actions and priorities for Internationalisation. Clusters (PROC FASTCLUS) were formed depending on the use of the sandwich doctorate scholarships (where students take up to one year abroad during their degree course). All

institutions with doctorates receive these scholarships. Discriminant (PROC DISCRIM) and canonical (PROC CANDISC) analyses were then performed between clusters to understand which factors discriminated them in terms of Internationalisation. SAS v. 9.4 (Statistical Analysis System Institute, Cary, North Carolina) was used for all statistical analyses.

Data was also available on 391,000 TOEFL tests administered by federal higher education institutions (HEIs). Factors such as age, sex, institution and number of times the test was repeated were investigated. The country of origin of the lecturer's PhD scholarship was obtained from CAPES (www.capes.gov.br).

A Wordcloud (<https://wordart.com/>) was designed with the frequency of replies as to the major internationalisation programs in CAPES, identified by the vice-rectors.

Results and Discussion

One hundred and seventy-four (174) institutions receiving a sandwich doctorate abroad (SDA) quota did not use all quotas received, almost all in cluster 1. Eight of these were state universities and nine federal. Twenty-one institutions received quotas but did not answer the questionnaire; these were responsible for 99 scholarships. Five clusters were formed (Table 2). Cluster 1 had the lowest usage of sandwich doctorates (less than 1/10th of those available per course). Most of this in cluster 1 were private universities from the south-eastern region (Table 3). As scholarship usage increased, so did the percentage of courses with the highest evaluations¹.

Table 2. Means for clusters formed by number of sandwich doctorate scholarships

Cluster	Number Courses/HEI	Mean Number SDA per HEI	Mean usage per course	Mean % of courses with scores 5, 6 or 7
Low (185 HEI)	8	0.7	0.09	8.79
Medium Low (29 HEI)	39	35	0.89	17.11
Medium (16 HEI)	73	110	1.51	37.53
Medium High (3 HEI)	136	285	2.10	53.83
High (11 HEI)	7	15	2.14	68.27

SDA - sandwich doctorate abroad; HEI – Higher Education Institution;

Table 3. Percentage of institution per cluster by region of the country and type of institution

Region	Cluster				
	Low	Medium Low	Medium	Medium High	High
CW	7.23	10	6.25	0	0
N	5.22	10	6.25	0	0
NE	17.67	20	25	0	0
S	21.69	23.33	25	0	23.08
SE	48.19	36.67	37.5	100	76.92
Type					
Private	59.04	13.33	0	0	46.15
State Public	12.45	13.33	12.5	66.67	15.38
Federal Public	25.7	73.33	87.5	33.33	38.46
Municipal Public	2.81	0	0	0	0
Total (Number)	249	30	16	3	13

CW- centre-west; N – North; NE – Northeast; S – South; SE -Southeast

87% of lecturers in Brazil gained their PhD's in the country (Table 4), which does not vary between university type (State: 89.8%; Federal 86.3%; Municipal: 93.1% and Private: 85.7%) or region. Of the

¹ Postgraduate courses in Brazil are regularly evaluated by Capes, which assures recognition and reliability based on quality assured by peer review, within 49 knowledge areas Grades range from 1 to 7 (1 and 2 – cannot function; 3 only master's course; 4 and 5 – master's and doctorate; 6 and 7 – international level)

lecturers with Brazilian PhDs, 23.2% got their PhD degree from the University of São Paulo. The USA, followed by France, the UK, Germany and Spain, with the most foreign PhDs.

Table 4. Country of PhD studies by Brazilian university postgraduate lecturers

Country	Center west	Northeast	North	Southeast	South	Total
Brazil	6,965	17,263	4,844	42,499	16,701	88,272
USA	255	470	148	1,812	471	3,156
France	184	643	98	945	507	2,377
UK	155	458	76	1,091	352	2,132
Germany	79	178	64	487	343	1,151
Spain	86	372	58	292	311	1,119
Portugal	37	225	60	176	150	648
Canada	41	104	17	188	134	484
Italy	32	96	5	201	108	442
Belgium	18	49	5	85	34	191
Rest	104	271	93	551	298	1,317
Total	7,956	20,129	5,468	48,327	19,409	101,289

Source (Sucupira platform www.capes.gov.br)

While most institutions (around 90%) said they had information on agreements, papers, etc. (Figure 1), this fell to 70% when the information was on students and lecturers. Information availability fell again when planning and implementing internationalisation strategies were considered, with only 27% having pages in other languages. The HEIs need to improve the quality of information available (Figure 1). This is necessary not only for internal decision making but also to support decisions made by funding agencies. The lack of information is especially notable when referring to students and policies for decision-making and prioritising actions within the HEI.



Figure 1. Percentage of Brazilian Higher Education Institutions that have information on internationalisation indicators.

All HEIs (Figure 2) registered the USA as a priority country (143 as 1st priority). Little difference was seen between overall priority for France, Canada, Germany, UK and Portugal. These six countries accounted for 70% of the priorities, and ten countries accounted for 90%. The definition of priority countries varied but was concentrated in the global north. Finardi *et al.* (2019) criticized this approach. Still, many of these criticisms show a lack of understanding of CAPES' mission which does not include solidarity internationalization, which is linked to the Ministry of Foreign Affairs².

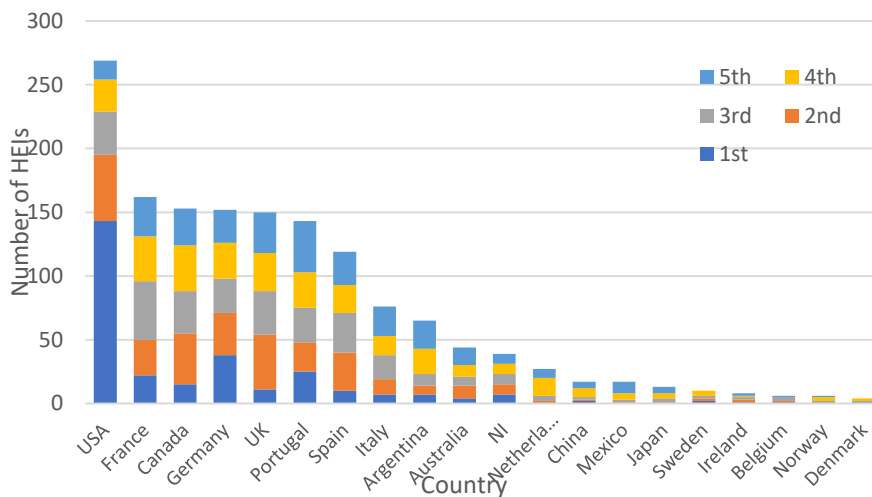
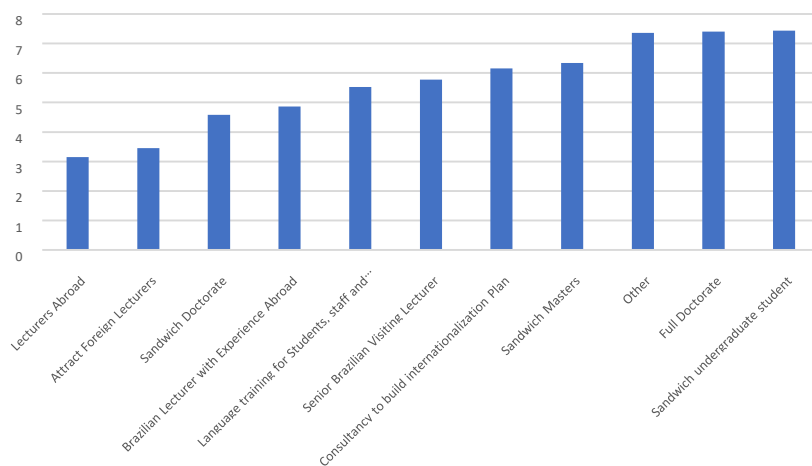


Figure 2. Priority Countries (NI – Not Informed)

The highest priorities (Figure 3) were for sending Brazilian lecturers abroad and attracting foreign lecturers. At the same time, sandwich doctorate was the 3rd highest priority, while sandwich scholarships for masters and undergraduate students were low priorities. It is important to reiterate that CAPES is responsible for PG studies in Brazil (financing and evaluation), based on an interaction with the HEI and not individual researchers. The questionnaire was applied to the PG vice-rector. Therefore, several of the results seen here should be viewed in this context, such as low priorities for undergraduate students' mobility. Also, CAPES' primary resources are based on scholarships for mobility. This is probably why Brazilian HEIs focus their Internationalisation on this (Figure 3).

According to Altbach & Postiglione (2015), the lecturers are the key to any internationalisation strategy. Therefore, any policies should benefit lecturers in some way, such as seen here (short visits, congresses and visiting scholars abroad). For example, Appelt *et al.* (2015) showed that mobility could positively influence knowledge flows in both directions, rather than one dominating the other. Thus, the internationalisation process should consider broader Brazilian policy conditions and social-economic realities, considering its values and traditions.



² <http://www.itamaraty.gov.br/en/>

Figure 3. Priorities for internationalisation actions (lower number – higher priority)

According to the survey (Figure 4), over 60% of students were fluent, and 15% had classes, in another language. Almost half the lecturers had experience abroad, but only 9 and 8%, respectively, were foreign permanent or visiting staff. Joint supervision and double degrees are little used (<1%).

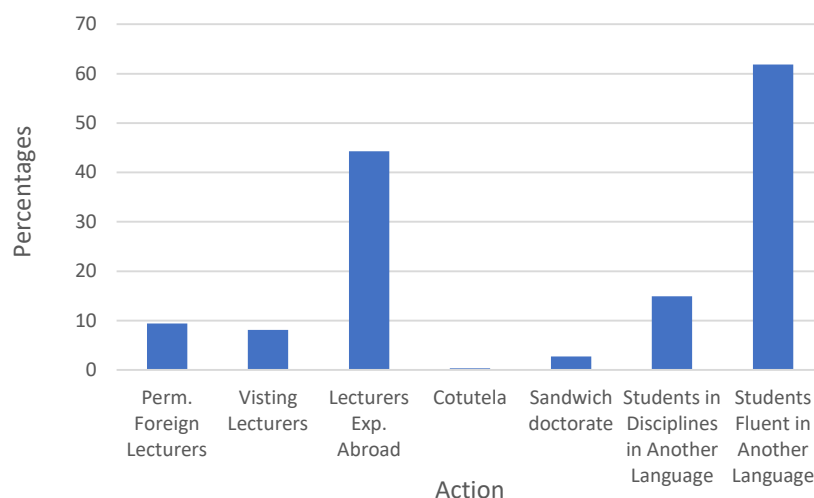


Figure 4. Current percentages of internationalisation indicators in Brazilian HEIs

More projects with international partners (Figure 5) were related to the number of papers published in journals with JCR, international coauthorship, visiting lecturers and lecturers with experience abroad. This was related to higher language fluency, more sandwich doctorates and classes in another language. These were not associated with the number of agreements with foreign institutions but were related to double degrees and permanent lecturers abroad. Incentives, at present, are mainly for the mobility of Brazilians abroad, with little active Internationalisation or use of other facets of Internationalisation indicated (Figure 5).

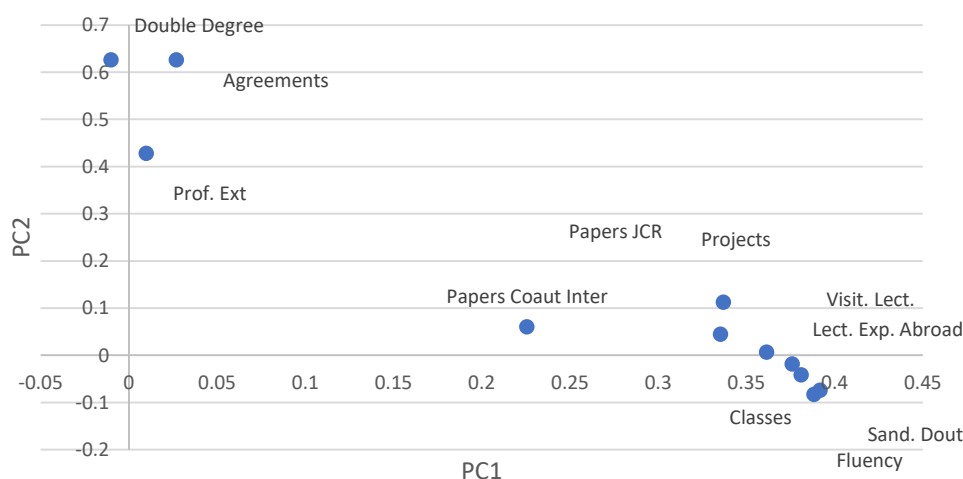


Figure 5. Current Relationships between internationalisation indicators (principal components)

Those institutions that claimed they had conditions to attract foreign lecturers and students (Figure 6) also had policies to capacitate their staff for Internationalisation and fix foreign researchers in Brazil. They tended to have an office/advisory committee for Internationalisation, all linked to an Internationalisation plan. Those without these conditions also replied that they were unable to implement an internationalisation plan.

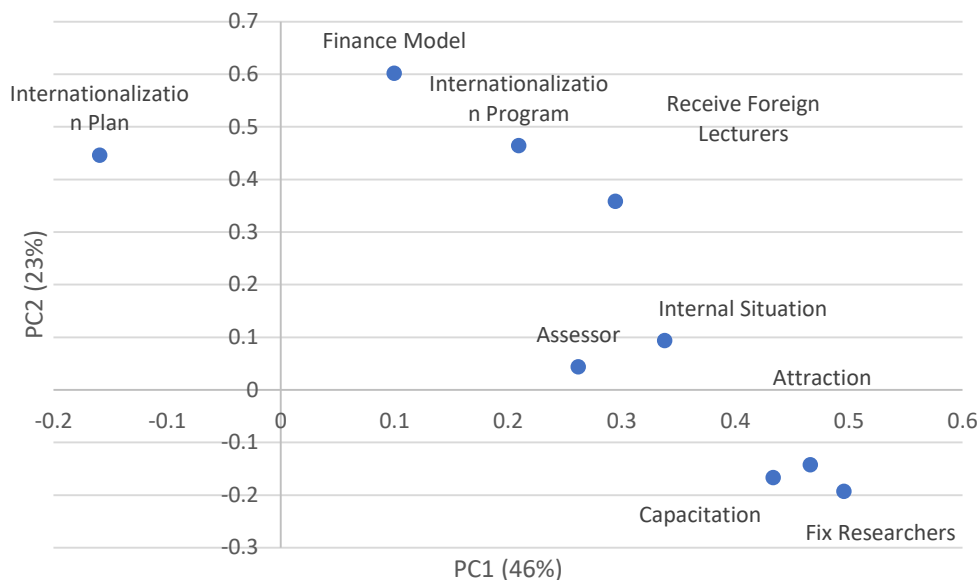


Figure 6. Conditions for Internationalisation from principal component analysis

As to priorities for Internationalisation (Figure 7), mobility at all levels tended to be closely related (sandwich experiences abroad for masters, doctors, lecturers and undergraduate students). This was opposed by the need to build plans or have senior lecturers in the universities.

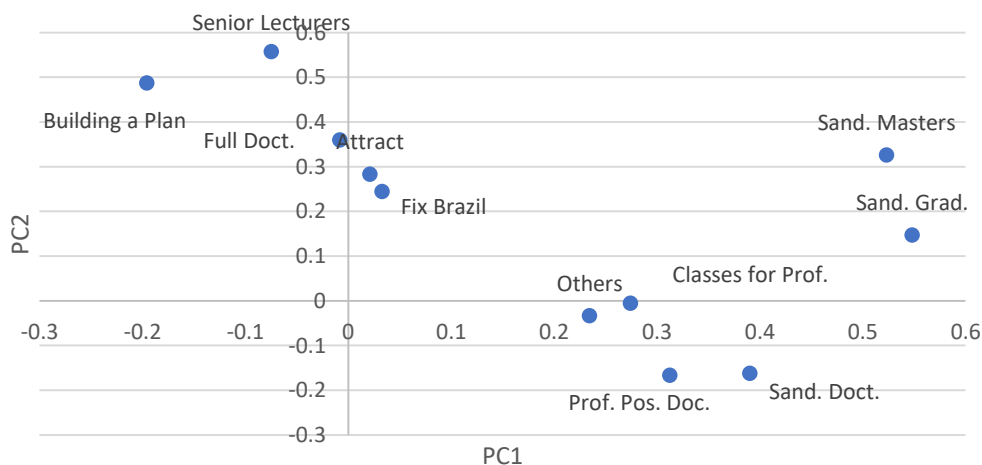


Figure 7. Priorities for Internationalisation from principal component analysis

Those universities with high to medium % of courses with high scores (Figure 8) were seen to have high usage of scholarships made available, a higher % of foreign postgraduate students, and a high % of foreign visiting and permanent lecturers. The other clusters showed variable responses, which did not closely associate them with any of the characteristics studied. The opposite was seen when future demands were studied (Figure 9). Lowly rated institutions had more requests in terms of scholarships abroad and in Brazil to fix ex-students, but the better-rated universities showed more varied results.

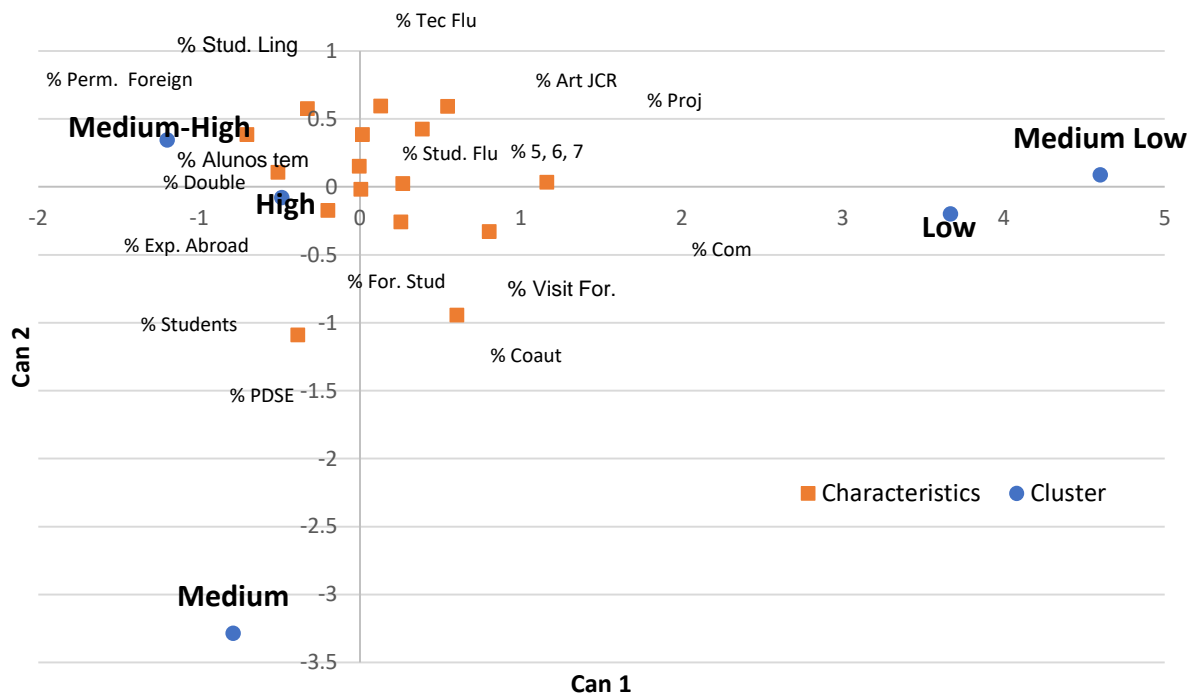


Figure 8. Canonical Analysis of Current State of Internationalisation in Brazilian HEIs by Cluster

Figures 6, 7, 8 and 9 show that HEIs require different solutions under different situations. To facilitate visualisation clusters 2 – 5 were joined together into high and low usage of the scholarships (Figures 10, 11 and 12).

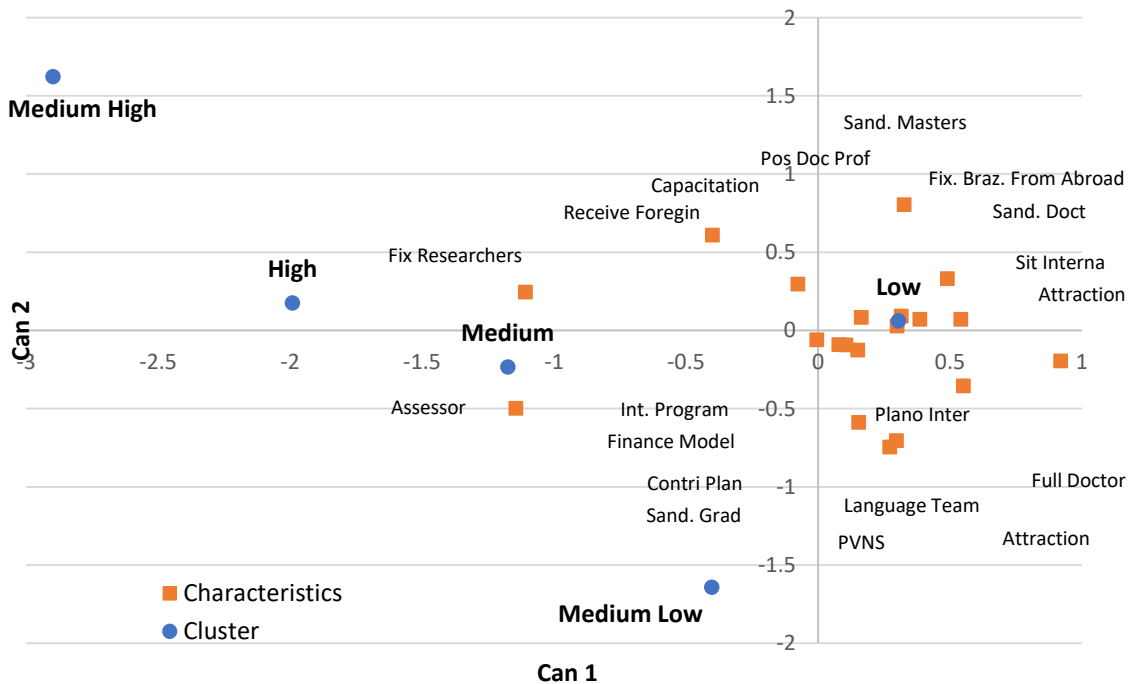


Figure 9. Canonical Analysis of Future Demands for Internationalisation in Brazilian HEIs by Cluster

The HEIs define strategic partnerships by country or institution, with a similar preference for South-South and North-South partnerships (Figure 10). The opinion of lecturers, excellence, strengthening of science had little influence on this choice. On return to Brazil, appropriation of knowledge acquired abroad is limited to a report or seminar. Selection of students is based on criteria within the individual postgraduate programs. The definition of priority partnerships (Figure 10) tends to be based on localisation rather than excellence or strengthening research priorities defined by the HEI. The mobility in Brazilian HEIs (usually

from Brazil to abroad) is not reverted into actions within the HEI on return (Figure 10), such as creating research projects or international networks and doctorates, focusing on talks, seminars, or no action at all. To be effective, mobility must be broad and include a strategy that promotes active and passive Internationalisation, avoiding negative impacts of restricted mobility under the development of research institutions and laboratories in the country (Furtado *et al.*, 2015). According to McManus & Nobre (2017), scientific mobility is necessary for both directions according to the 'brain circulation' paradigm, instead of the less desirable idea of brain drain or its absorption (brain gain). Mobility abroad must also be translated into benefits at home. As little is expected of the lecturers and students who return from abroad, knowledge is not efficiently disseminated throughout the university structure.

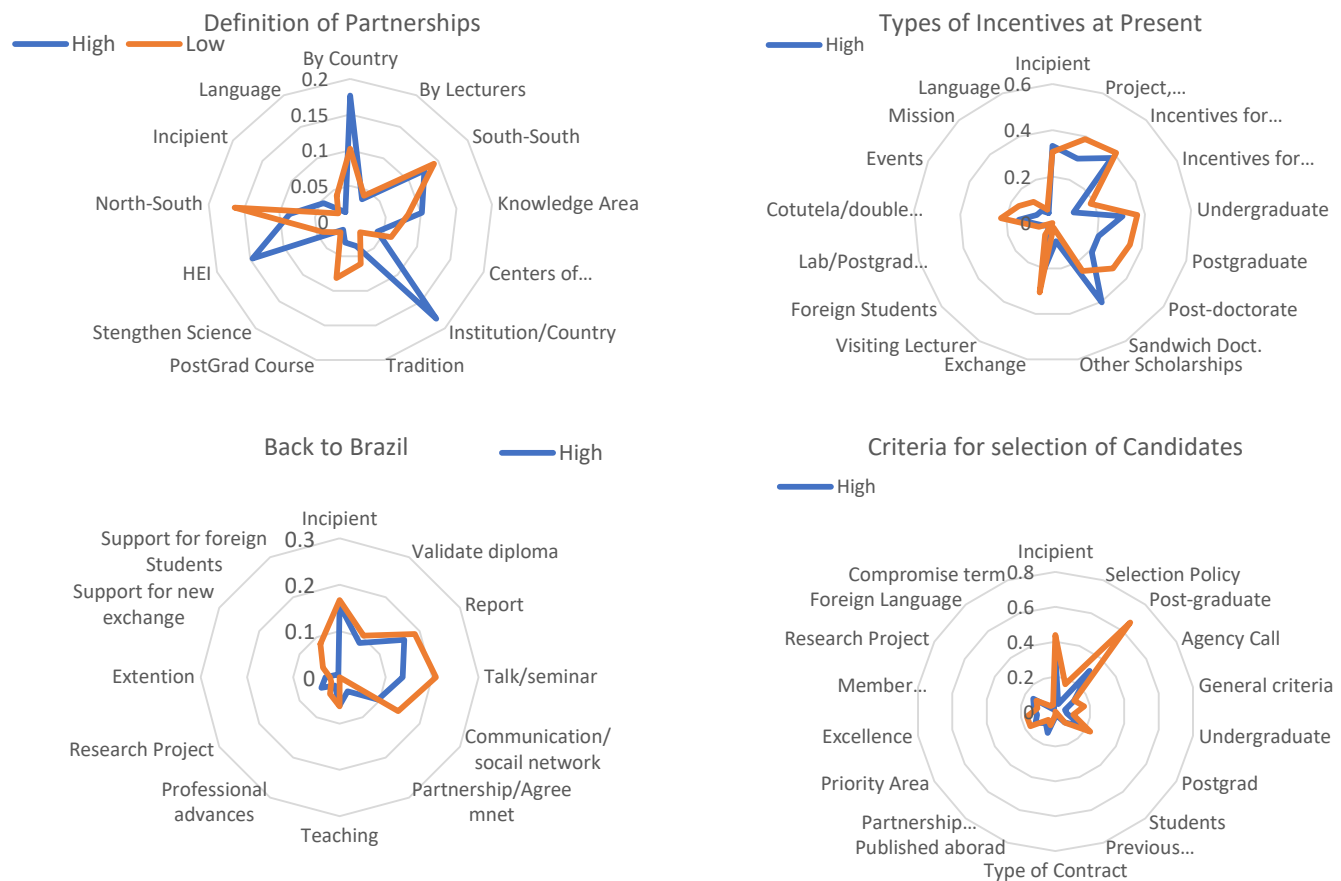


Figure 10. Current policies for Internationalisation in Brazilian Higher Education Institutes

Most HEIs said that the management of the internationalisation process (Figure 11) and its financial management should be concentrated in the internationalisation department, respecting the autonomy of each HEI. This is limited (Figure 1) due to the lack of strategic plans and infrastructure or implementation. Almost all institutions recognised the need for a strategic plan to improve Internationalisation, but showed little indication of diversified internationalisation activities (Figure 12). One of the questions raised by this questionnaire, which was sent to the vice-rectors for postgraduate education and research, was that the management of resources, the definition of priorities etc., should be maintained within the internationalisation office and not with the postgraduate office. These offices have traditionally worked with undergraduate education within Brazilian institutions, possibly deflecting focus from the aim of any postgraduate program of internationalisation. Negligible differences were seen between high and low groups for priority areas of knowledge, with social and exact sciences and Languages, Linguistics and Arts showing low priority (Figure 12).

The present study shows that there was a need to consider the needs of universities in different stages of development of their Internationalisation. The principal component and canonical analyses reflected that there are probably two types of universities. The first group contemplates those institutions that use scholarships to send staff and students abroad, publish with foreign partners and participate in international projects. The other group needs help to construct an internationalisation plan and set priorities.

Public policies have a strong influence on the reaction of universities and their capacity to change. It is possible to find country discussions on university internationalisation (Russia: Marginson, 2014, Stukalova *et al.*, 2015; Japan: Ishikawa, 2011, Yonezawa, 2011; China: Bentao, 2014; Africa: Jowi, 2012, among many others). According to Horta (2010), looking at Portuguese universities, the state played (and still plays) a critical role in the internationalisation process of universities by supporting the build-up of institutional knowledge capacity and by rewarding internationally oriented scholarly activities. Although these public policies did not lead to the emergence of prominent national universities able to compete with global research universities, they allowed for the Internationalisation and integration of the Portuguese universities in international higher education. The same is probably true for Brazilian universities, whereby public policies can stimulate change. Still, given the locality and language barriers and lack of specific public policies to this end, Brazilian HEIs have difficulty becoming global research universities. Nevertheless, this study showed that policies could be implemented that focus on rewarding HEIs on producing change.

These plans were seen to include attraction for international students, researchers and teachers (Marrara, 2007), which depends on highly complex and costly measures. Other actions are the organisation of research areas and the creation of excellence centers, selection processes for admission of international students, fee regulation, structuring of international cooperation committees able to receive and accompany foreign visitors, the availability of financial resources to receive visiting professors (partially overcome by the support of research funding agencies), the use of foreign languages in classes, as well as the need to improve physical infrastructure (such as libraries and laboratories) and other political and administrative transformations in the scope of each HEI. This is in line with the results seen here, whereby most HEIs desired infrastructure improvements and help in building strategic plans to improve their internationalisation process (Figures 9 and 11).

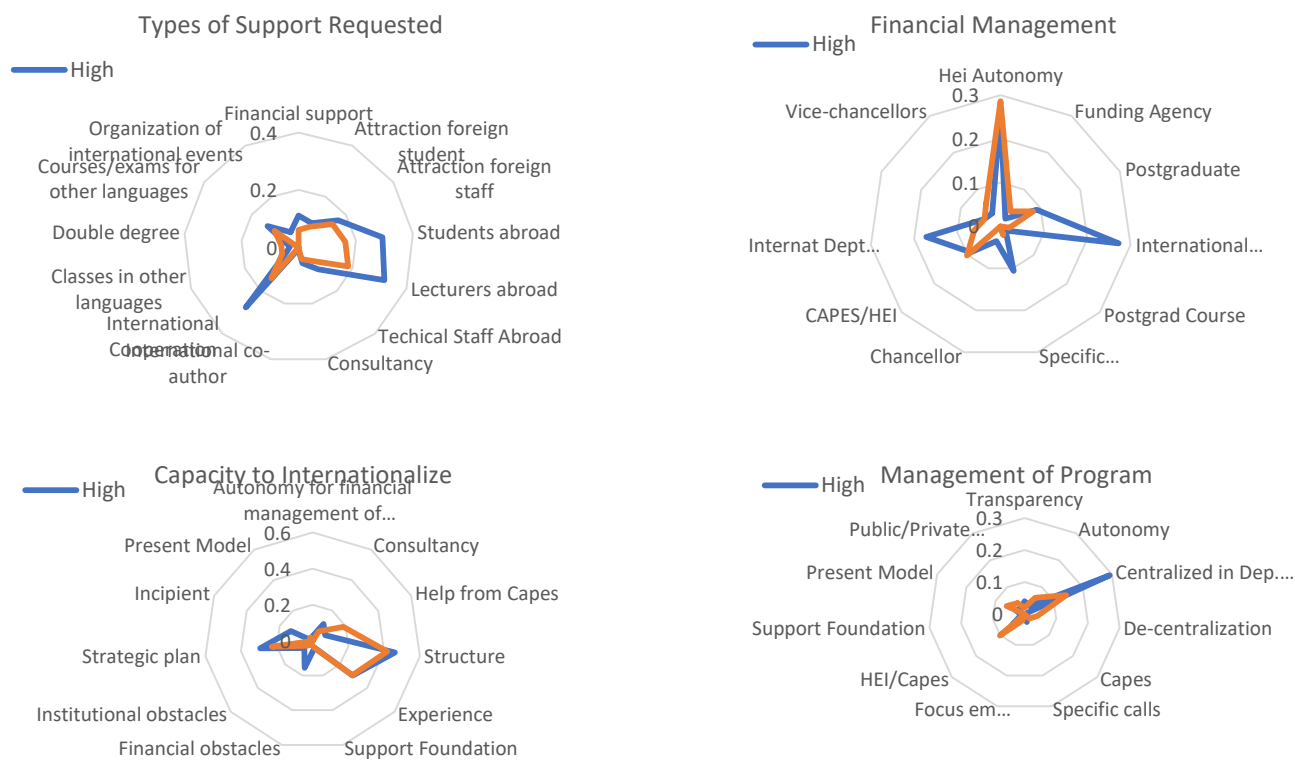


Figure 11. Management of Internationalisation in Brazilian Higher Education Institutions (percentage replies)

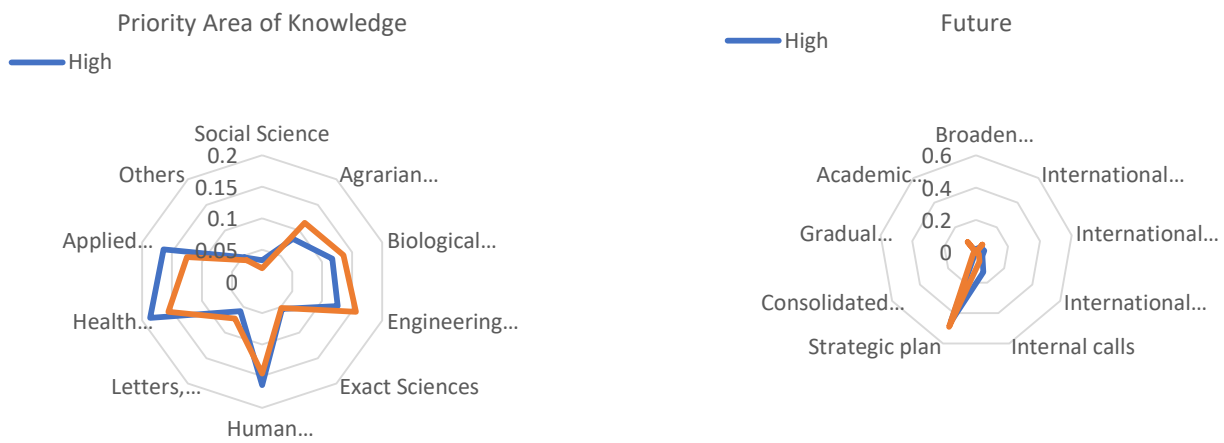


Figure 12. Priority areas of knowledge and future actions with Brazilian Higher Education

Recognising the resource availability for internationalisation is also important (Figure 13). The postgraduate vice rectors were asked to nominate the most important CAPES programs for internationalisation. The most recognisable programs were the sandwich doctorate, Cofecub (with France), DAAD (with Germany), PEC-PG (call together with Ministry for Foreign Affairs for Underdeveloped countries), and FCT (with Portugal). Many vice-rectors replied “None”. Programs such as Brazilian Scientific Mobility Program, PLI (Language training for teachers), DGPU (Spain), CAFP (Argentina), FIPSE (Undergrad USA), Unibral (Undergraduate Germany), Conicet (Argentina), CAPG (Argentina), Grices (Portugal), Udelar (Uruguay), AULP (Portuguese Language) and Mincyt (Argentina), among others, have been discontinued. Brafitec and Brafagri are undergraduate programs. PAEC, Marca, Setec, Nanobio, INRA, MRE, are/were not a CAPES programs.



Figure 13. Word Cloud for Capes' international programs in Brazilian Higher Education Institutions. Size of letter is relative to number of replies with largest (Sandwich Doctorate) representing 32% of the institutions.

Approximately 22% of the students achieved grades B2 or above for English proficiency (Table 5), which is the lowest required for a CAPES scholarship abroad. As the number of times the test was taken increased, the percentage of the highest grades decreased. Most of the students taking the exam were undergraduate students, with a mean age of 25 years. Higher grades were seen in southern and south-eastern regions, as well as Brasilia. Still, the institution with the highest mean grade was Federal Institute from Rio Grande do Norte (IFRN) in the north-eastern region (but with few students). There was no relation between the age or sex of the candidate and the final score (Male 484, Female 468). Native language, in general, did not affect the result of the exam (477: Portuguese; 476: Spanish; 465: Other) except English (547). Most studies on Bibliometric impact of research, including Brazil (McManus et al., 2020, McManus & Baeta Neves, 2021), point to the advantages of publishing in high-impact international journals and, therefore, in English.

Table 5. Percentage of grades per number of tests taken and total number of TOEFL-ITP tests in Brazil.

Grade	Number of times repeated			All	Total
	1	2	3+		
A1	0.35		0.55	0.38	1,480
A2	43.41	48.82	59.25	45.19	176,973
B1	32.12	31.45	26.13	31.67	124,030
B2	20.03	16.77	12.76	19.09	74,750
C1	3.42	2.42	1.24	3.13	12,267
No grade					2,118
Total number	305,363	64,095	22,160		391,618

The need to learn English include political, scientific and technological reasons as it is widely seen as the language required by the world for communication. Many students are interested in learning and interacting in one or more foreign languages for scientific, cultural or political, economic exchange (Akbari *et al.*, 2016) and the migration of skilled workers (Rumsey *et al.*, 2016). Communication is the most common problem faced by university students worldwide (Ahmad, 2016), mainly in English. Brazil scored 40th (Low Proficiency) in the EF English Proficiency Index (EF EPI), which ranks countries by the average adult English language skills level. Students here showed low proficiency overall, with only 22% acquiring scores in B2 or C1, which would be suitable for studying in English. Therefore, programs such as Language without Borders³ (IsF) and My English Online⁴ (MEO) (Passoni, 2019), where scholarships were cancelled at the beginning of 2019, should be evaluated as to their efficiency and effect on Brazilian university students.

The literature on public policy identifies five key stages: 1) identifying the problem, 2) building a political mandate, 3) exploring policy options, 4) executing the policy, 5) evaluating the policy, and 6) enforcing the policy (Cochran & Malone 1995; Starling 1998). Research conducted to prepare or evaluate public policy can be carried out at all these stages, effectively reducing public policy costs. However, they are usually limited to moments 5 and 6 (Hastak *et al.*, 2001). The analysis of this questionnaire helped the agency understand the problems faced by the institutions and their underlying understanding of Internationalization as it referred to the PG system and research. To the best of our knowledge, this survey was the first *ex-ante* evaluation research conducted to plan a federal public policy containing dimensions of opinion, structure and installed capacities in Brazil. The results were internalized within the agency and discussed with working groups and vice-rectors for PG education, and used in preparation for the launch of the new strategy for Internationalization of Brazilian, idealized in the Institutional Program for Internationalization (PrInt) (THE, 2018).

As well as PrInt⁵, another program was designed to help institutions in strategic planning for Internationalization (PlanEs⁶ – Program for Qualification of Brazilian HEIs for PG Strategic Planning), taking into account the two groups of institutions identified here.

According to McManus & Nobre (2017), looking at the aftermath of the CsF program, an internationalisation program should actively include universities and other government agencies to formulate the program to stimulate the creation of sustainable partnerships or networks between Brazilian and Foreign HEIs. With the end of CsF, there was a need to continue the progress of postgraduate Internationalization, in line with the mission of CAPES. In the CsF, implemented by CAPES (72%) and CNPq (National Council for Scientific and Technological Development), 79% of the scholarships were for

³ <http://isf.mec.gov.br/>

⁴ <http://isf.mec.gov.br/noticias/157-my-english-online-tem-novas-regras-de-participacao-e-inscricao>

⁵ <https://www.capes.gov.br/images/stories/download/editais/10112017-Edital-41-2017-Internacionalizacao-PrInt-2.pdf>

⁶ https://www.in.gov.br/materia/-/asset_publisher/Kujrw0TZC2Mb/content/id/57600918/do1-2019-01-02-portaria-n-292-de-28-de-dezembro-de-2018-57600828

undergraduate students, which led to a PG funding crisis in 2015/2016. There were over 40,000 students abroad, so resources were taken from PG to maintain these students and pay college fees.

Conclusions

Several of the findings here were directly related to items in the PrInt call. These included the need for strategic planning, choice of priority areas and countries within each HEI, and the need to form research networks to improve the quality of research and a sunset clause. The HEIs would need to prepare scholarship holders for their stay abroad and define how the knowledge acquired would be better disseminated back home. The plan initially increased flexibility in using financial resources but with a higher demand for results, such as the impact and relevance of research. These results from this questionnaire reemphasise results from McManus & Nobre (2017), whereby there is a need for Brazilian HEIs to be more actively involved in and plan for the internationalization process.

The knowledge economy has led to the creation of new global infrastructures where information technology has played an increasingly important role in the global economy, and the popularity and prominence of information technology have changed the nature of knowledge and is currently restructuring higher education, research, and learning (Mok, 2007). This has become especially evident during the COVID crisis. The present paper also serves as a benchmark for changes during times of pandemic. As De Wit (2020) points out, due to the increase in this knowledge economy, there is a need for a strategic approach to Internationalisation in higher education.

Conflict of Interest

The authors declare no conflict of interest

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