The Impact of Innovative Practices on the Performance of Universities under Effect of Resource Constraints:
An Exploratory Study in Brazil

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Abstract
The adoption of new practices in educational environments has happened for some time and play an impact on the development and behavior of students and teachers. However, considering the reality of Brazilian Educational Institutions - where resources are scarce - is a priority need, specially when evaluating which practices should be adopted. Based on that, this research was based on a conceptual model composed by variables classified as independent (innovative practices on Education), moderator (resource constraints) and dependent (metrics for measuring the performance of Higher Education Institutions). For verifying the conceptual model this research was divided into two phases. At the first one, we tried to identify, to the light of specialized literature, the innovative practices used at the Higher Education Institutions (HEI), restrictive factors to this practice and ways of measuring performance of HEI. During the first phase we tried to group the practices found (193) through a the cluster technique and, after that, we conducted a survey with specialists selected by technique and scientific criteria. We found that, when not considered the resource constraints, the most influential practices on the performance of HEI are associated to the use of Internet and mobile devices on the teaching and learning process. However, when under influence of resource constraints there was an impact which reduced the results, and the practice related to the approach based on problems and projects stood out, presenting less reduction on its performance. We could conclude that this study presented relevant points and significant implications to educators and managers, once it may subside decision-making processes related to the implementation of new practices aiming to improve educational performance, specially when considering the absence of resources in the HEI.

Keywords: Impact of innovative practices; Resource constraints; Performance on results; Higher Education Institutions / Public Universities/ Brazil
1. Introduction

It is known that the challenges on education in an innovative context are not simple, especially when we mention efficient and effective tools, methods, techniques and models for dealing with education. The process of enabling Higher Education Institutions (HEI) to formulate and implement innovative projects, as well as to decide which of the several option is the most appropriate, must be marked out by the confluence of strategies which allow correct evaluation about the alternatives presented. It means we must balance fundamental components: strong pedagogical design, methodological systematization and telematic support. “The confluence of these perspectives favors students to dispose of cognitively thought-provoking activities and to develop interactive and constructive methods of work” (CARVALHO, NEVADO and MENEZES, 2005). This balance between new practices and the HEI profile must be more and more observed, especially when considering that even with the popularization of ICT, many HEI find it expensive and far from Brazilian reality to count on the appropriate resources (MARCHISOTTI, OLIVEIRA and LUKOSEVICIUS, 2017; BAPTISTA, 2014).

The present analysis refers to this possibility and is based on the theoretical framework of the contemporary thought which follow the determinants of well succeeded experiences, to the light of better practices of international experiences, fundamentally backed up on technical and methodological innovations of planning which permeate education. This new scenario favours the stimulus to improving techniques more and more sophisticated and refined which support the building of educational models and methods. Thus, this work presents a proposal sustained by the relation among innovative educational practices, Performance of HEI and resource constraint. We expect this research to contribute by enlightening questions still underexplored on the context of Brazilian HEI, once some studies may be used as a reference about the topic (BECKER et al., 2017; MCALEESE et al., 2013; KING and SOUTH, 2017; VIELUF et al., 2012; WALDER, 2017; KHAN, HASAN and CLEMENT, 2012; OECD, 2014; MAINARDES, ALVES and RAPOSO, 2014), however, their approaches do not make evident the impact of innovative practices on the Performance of Brazilian HEI/Universities in a context of resource constraints.

2. Innovative Educational Practices in HEI and the Question of Resource Constraints

Higher education has a role to constitute the driving force to the society as a means of economic and social growth and as an equalizer of possible differences (KING e SOUTH, 2017). Constant studies have been directed to this subject, aiming to improve the educational experiences for students and for educators, through teaching practices which promote better interaction, motivation and personal satisfaction of the parties (VIELUF et al., 2012). Hence, according to Judi and Sahari (2013), in order to obtain exit, different resources must be provided so the knowledge is properly transmitted. For Shear (2011) and Ongardwanich, Kanjanawasee and Tuipae (2015), the success of this new educational environment perpasses the chosen approach, the teaching place and the use of Information and Communication Technologies (ICT) as a teaching support.

In face of this new scenario, Hadjimanolis (1999) considers important to identify the obstacles or barriers which may stop the implementation of innovations, once, when one can identify their nature, origin and importance, it is possible to evaluate their impact and then measure their effect and possible consequences. In relation to the barriers, they can be classified as internal (intrinsic) or external (extrinsic) (PALMER-NOONE, 2000). For Rogers (2000), the external barriers may be related to availability and accessibility of some resource (hardware or software, for instance), institutional and technical support and development of the parties (abilities). The internal barriers, on their turn, are related to the teachers’ attitudes or perceptions towards the innovative practices, as well as to possible resistances to the adoption of the practice (PALMER-NOONE, 2000).
Thinking about this relation between innovation and barriers, identifying what must be measured as a satisfactory result is not something simple. However, indicators associated to innovation on the educational field must be related to different social and educational goals. Among these goals, three stand out: educational results derived from innovative practices, cost efficiency and the satisfaction of the parties (OECD, 2014). The three indicators pointed should be considered once the educational results (SCHEERENS, LUYTEN and RAVENS, 2011), cost efficiency (THANASSOULIS et al., 2011; ROBST, 2001) and satisfaction of teachers and students (MAINARDES, ALVES and RAPOSO, 2014; DOUGLAS, DOUGLAS and BARNES, 2006; JAGER and JAN, 2016) have a primordial role on interpreting educational quality, specially on the monitoring of aspects associated to the productivity and effectiveness of education.

3. Methodology
3.1. Conceptual Mode

Figure 1 Presents the conceptual model adopted for this study. During this section we will examine the variables which compose the model (Figure 1) as well as the hypothesis tested for this study.

We propose a conceptual model in which innovative practices may influence in a greater or lesser extent the results of HEI performance when considering different social and educational resources under effect of resource constraints. Figure 1 illustrates the constructs identified for this study which will ground further discussions. According to what we mentioned before, we propose that resource constraints may influence in a greater or lesser extent the results of HEI performance. From the conceptual model proposed and aiming to analyse the effects of innovative practices we elaborated the dependent, moderator and independent variables, as well as the hypothesis for this study:

**Independent Variables:** The independent variables were extracted from the literature and submitted to specialists for external validation. At the end, we could identify 193 practices, which were submitted to the Cluster statistical technique aiming to reduce this number without losing relevant information.

**Moderator Variables:** The moderator variables were extracted from literature and submitted to specialists for external validation. After this study we could identify as impediment or difficult factors the constraint of technical, human and economic resources.

**Dependent Variables:** The dependent variables were extracted from the literature and submitted to specialists for external validation. Through the studies of this literature we could identify as a way of
measuring the performance of HEI the following indicators: educational results derived from the innovative practice, efficiency of institutional costs and personal satisfaction of the related parties.

Hypothesis: The innovative practices have a greater or lesser impact on the performance of HEI under the moderator effect of resource constraints.

3.2. Data Collection and Sample

The population for this study was composed by specialists on education with knowledge and experience about the object of investigation. The authors investigated the impacts of innovative practices on the performance of Brazilian Higher Education Institutions. The data was collected through a judgment matrix of scalar type - Likert. The research tool was elaborated based on the theoretical framework and has three segments. The first segment intends to obtain information related to the specialist’s profile as: highest education level, training area and professional experience. The second part of the research tool has the focus of inquiring, through a judgment matrix, the degree of impact of using the innovative practices in HEI, by a scale of one (1) to five (5), being one the lowest degree and five, the highest. The third and last part, also through a judgment matrix, was to identify the specialists’ opinions about the impact of resource constraints on the different social and educational goals of HEI. We applied pre-tests to make the required adjustments before the definitive application, which include time of application, redundancy, complexity degree, amongst others. After that, we verified the validity and reliability degree of the questionnaire. The external validity was assessed by specialists. For internal reliability of the questionnaire we used the Cronbach Alpha. Later, we selected the HEI, which compose the object of our research, through the General Index of Courses (GIC), located on the website of the National Institute of Studies and Researches (INEP). We selected Brazilian public and private higher education institutions. For selecting the specialists we used the CNPq/Lattes Platform basis (contacts). Finally, the questionnaires were sent over email and filled on the tool Google Forms. The research was applied during the months of November 2017 to February 2018. Of 1637 questionnaires sent, 5% were answered, which represents a significant sample, considering the exploratory nature of this study. To reduce the subjectivity of the results, we applied statistical techniques of Data Mining. These techniques are considered appropriate to the case. Then, we used Cluster grouping techniques. On the following section these procedures are detailed.

4. Verifying the Conceptual Model: Results and Underlying Analysis

The results and underlying analysis for this study are structured according to the following phases:

First Phase: Identification, to the light of literature, of Innovative Practices applied in HEI (Independent Variables), resources which are considered barriers to the implementation of innovative practices (Moderator Variables) and indicators to measure the performance of HEI (Dependent Variables).

Second Phase: Identification and analysis of the impact of Innovative Practices on the performance of Brazilian HEI, under the effect of resource constraint.

First Phase: Identification, to the light of literature, of Innovative Practices applied in HEI (Independent Variables), resources which are considered barriers to the implementation of innovative practices (Moderator Variables) and indicators to measure the performance of HEI (Dependent Variables).

The first phase is related to the understanding of the problem and deepening on the subject proposed. It was divided in two steps, which are:

Step 1 - Bibliographical research, aiming to understand the key concepts about innovative educational practices in HEI, resource constraints as a difficult factor and criteria for measuring the results on the performance of HEI

During this step, over 130 articles were researched. They were taken from the following basis: ACM, ScienceDirect, IEEE, Emerald, Google Scholar and Wiley InterScience. In this step we identified all the researches which could potentially contribute to the systematic review about the
subject. To search for the studies we defined specific keywords as: HEI/Universities Management; Innovation in HEI/Universities; Innovative Practices in HEI/Universities; Performance of HEI/Universities; Metrics for Measuring Performance of HEI/Universities; Resources Management in HEI/Universities. We first predicted the possibility of modifying the keywords according to the necessities. As result we obtained a list with 193 innovative practices; three resources with restrictive features (human, technical and economic); and three indicators for assessing HEI performance in different educational and social contexts, which are: educational results, cost efficiency and personal satisfaction of the parties.

**Step 2 - Identification and grouping of the variables which compose the conceptual model**

During the study we identified a list with 193 practices to the light of a variety of articles published on the basis *Emerald, Science Direct*, amongst others. In face of the great number of practices found and aiming to compose the survey we looked for ways to reduce or group these practices. The technique adopted to do so was the grouping, or Cluster, which focuses on organizing it in an automatized way, based on the similarity of items, a great collection of data in a smaller group, without losing the coherence among them (BASHA and KALIYAMURTHIE, 2017; HAIR et al., 2009). For calculating the similarity among the practices we used the Euclidean distance, resource usually applied in situations like this study (HAIR et al., 2009). Along with the distance calculation and focusing on the grouping of practices we realized tests with some agglomerative methods. We obtained more satisfactory data, after a series of tests with the provided methods, with the Ward method, once its grouping seemed to be more consistent. Intending to provide a better description of the groupings identified, we used a resource called Word Clouds (Figure 2). This resource is commonly used, according to Heimerl et al. (2014), because of its simplicity and visual appeal, once it provides a general view of a set of texts presenting the highest frequency in which specific terms appear. The word cloud elaborated for this study is presented on Figure 2:

**Figure 2:** Clouds of words which are evident on the 11 groups of better practices

Based on the description of the practices contained on the groups and with the aid of the word clouds and independent variables, the grouping of innovative practices in HEI could be then characterized. Finally, as a result, we obtained 11 groups, presented below and also on the Table 1:

**Group 1** – On the 26 grouped practices we identified as stronger terms the words: *Printing, Learning, Technology, Teaching, Internet and Mobile*. Then, looking for a more appropriate contextualization, we got to the definition for the group as: “Use of Internet and mobile devices in the teaching and learning process;
Group 2 – The largest group, with 42 practices, was based on the word cloud composed by the following terms: Develop, Student, Learning, Collaborative and Teaching. We realize, from the terms found, a strong relation to collaborative activities. Therefore, the group was named as: “Adoption of practices aiming collaborative learning”;

Group 3 – Composed by 12 practices whose relevant terms were: Student, Schemes, Support, Group, Discussion and Forums. Due to the terms found we decided to name the group as: “Student support through discussion groups, forums etc.”;

Group 4 – The second largest group, with 32 practices, presented as most frequent terms: Role, Scientific, Teaching, Learn and Professionalization. Amongst the groups, this one presented a bigger diversity of practices, but, after observing the complete textual composition of them we realize a strong inclination to resources associated to professionalization and roleplay simulation. Thus, the name defined for this group was: “Roleplay simulation aiming the professionalization of students”;

Group 5 – One of the smallest groups, with eight practices, presented as relevant terms: Problem, Research, Approach, Based, Project, Skill and Pedagogical. Even though it did not present a great number of practices grouped, the identification of the terms enabled the definition of its name as “Pedagogical approach based on Problem, Project or Competences and Abilities”;

Group 6 – Containing 15 practices, it is composed by the following relevant terms: Web, Map, Tool, Slides, Clickers, Databases e Online, this group was focused on the term Tool. Therefore, its name was defined as “Use of tools as conceptual maps, mind maps, clickers, slides, etc.”;

Group 7 – Composed by 13 practices, it was formed by the terms: Video, Teaching, Clips, Digital, Game, Strategies and Learning. We opted by the definition of the group with main focus on the term Digital. Thus, the identification of the group was defined as “Use of digital strategies of teaching and learning as: videos, clips, games, etc.”;

Group 8 – With the intermediary value of 17 practices, this group was identified by the relevant terms: Development, Action, Resource, Research, Sustainable and Digital. Due to the difficulty of characterizing this group, we opted by the most distinguished term: Sustainable. So, the name of the group was defined as “Approach of actions or research focused on sustainable development”;

Group 9 – Is composed by 14 practices with the following terms: System, Learning, Intelligent, Based, Adaptive, Web and Support. For this group we opted by the term Adaptive as a focus. The name chosen was defined as “Use of intelligent web based learning systems”;

Group 10 – The smallest group, with only five practices and the terms Massive, Courses, Mooc, Online, Discussion, Technology and Open, was defined as “Use of Massive Open Online Courses (MOOC)”;

Group 11 – Finally, the last group is composed by nine practices and has the following relevant terms: Education, Media, Social, Networking, Sites, Wiki, Web and Blogs. For this group the focus was on the social media, which made we identify it as “Use of social media/networks (Wikis, Blogs, Facebook, etc.) as an educational resource”.

Second Phase: Identification and Analysis of impacts on the performance of Brazilian HEI under resource constraints

At this phase we tried to present and analyse the results obtained through the application of the survey sent to the specialists and answered by them. The survey was organized in matrices (Likert) with values varying between one (1) and five (5), being one (1) considered “very low” impact on the performance of HEI, and five (5) defines “very high” degree of impact of the innovative practice on the different HEI’s goals. From the specialists’ answers we tried to assess the performance of HEI in relation to the Educational Results ($\alpha = 0.77$), Cost Efficiency ($\alpha = 0.87$) and Personal Satisfaction of the Parties ($\alpha = 0.87$). It is important to highlight that the coefficient which measures the internal consistency of the questionnaire through the Cronbach Alpha ($\alpha$) for each practice is above $\alpha = 0.75$ ($p < 0.05$), which characterizes the questionnaire with the acceptable classification (TAVAKOL and DENNICK, 2011). At this phase, aiming to better understand the problem and deepen on the subject, we divided the presentation of results into two stages, which are:

Step 3 - Direct impact of innovative practices on the educational results
This step focused on analysing the descriptive results obtained through the application of the Survey. On the Table 1 we present the direct impacts of the independent variables (innovative practices) in relation to the dependent variables (HEI Performance).

### Table 1: Descriptive results of innovative practices in relation to the different results.

<table>
<thead>
<tr>
<th>Innovative Practices</th>
<th>Educational Results</th>
<th>Cost Efficiency</th>
<th>Personal Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>DP</td>
<td>M</td>
<td>DP</td>
</tr>
<tr>
<td>Use of Internet and mobile devices in the teaching and learning process</td>
<td>3.741</td>
<td>0.833</td>
<td>3.222</td>
</tr>
<tr>
<td>Adoption of practices aiming collaborative learning</td>
<td>3.728</td>
<td>0.825</td>
<td>3.148</td>
</tr>
<tr>
<td>Student support through discussion groups, forums etc.</td>
<td>3.716</td>
<td>0.990</td>
<td>3.025</td>
</tr>
<tr>
<td>Roleplay simulation aiming the professionalization of students</td>
<td>3.284</td>
<td>1.028</td>
<td>2.975</td>
</tr>
<tr>
<td>Pedagogical approach based on Problem, Project or Competences and Abilities</td>
<td>3.728</td>
<td>0.949</td>
<td>3.062</td>
</tr>
<tr>
<td>Use of tools as conceptual maps, mind maps, clickers, slides, etc.</td>
<td>3.531</td>
<td>0.867</td>
<td>2.951</td>
</tr>
<tr>
<td>Use of digital strategies of teaching and learning as: videos, clips, games, etc.</td>
<td>3.444</td>
<td>0.949</td>
<td>3.123</td>
</tr>
<tr>
<td>Approach of actions or research focused on sustainable development</td>
<td>3.049</td>
<td>1.048</td>
<td>2.926</td>
</tr>
<tr>
<td>Use of intelligent web based learning systems</td>
<td>3.062</td>
<td>1.041</td>
<td>3.086</td>
</tr>
<tr>
<td>Use of Massive Open Online Courses (MOOC)</td>
<td>2.556</td>
<td>1.061</td>
<td>3.049</td>
</tr>
<tr>
<td>Use of social media/networks (Wikis, Blogs, Facebook, etc.) as an educational resource</td>
<td>2.877</td>
<td>1.061</td>
<td>2.728</td>
</tr>
</tbody>
</table>

We realized that part of the specialists think that the innovative practices apply moderate to high impact of the innovative practices on the educational results of HEI. The practices which highlight the most for concentrating higher impact levels are: “VI1 - Use of Internet and mobile devices in the teaching and learning process (M = 3.74)”, “VI5 - Pedagogical approach based on Problems or Projects (M = 3.73)” and “VI2 - Adoption of practices aiming collaborative learning (M = 3.72)”. By considering these results we realize that they meet several studies related to innovation and positive gains on Education. Another important topic in relation to the practices is the collaborative nature they are associated to. When considering them as bigger parts of a whole, it is possible (YANG, TIAN and WU, 2016; NWAGWU, 2010; SO, 2016; TANG and HEW, 2017; JALENIAUSKIENĮ, 2016), with the use of apps available on the Internet, provide bigger opportunities to extend and improve the educational gains, especially when these practices are associated to group activities focused on the collaboration and interaction of the participants (WANG et al., 2017; BOWER, LEE and DALGARNO, 2016). Besides the gains, the results also show coherence in relation to advances that HEI must provide if they expect to be different in a globalized and competitive world such as ours (BECKER et al., 2017; KING and SOUTH, 2017).

When considering cost efficiency we could see a similar result to the ones found for educational gains. However, there was a change on the order of practices, and the practice “VI1 - Use of Internet and mobile devices on the teaching and learning process (M = 3.22)” loses its first position when considering the number of answers associated to a high (4) or very high (5) impact. So, the practice “VI2 - Adoption of practices aiming collaborative learning (M = 3.15)” takes the position of the practice with the highest impact. This high impact on cost efficiency may be explained once, even with popularization and decrease on the price of ICT, for many HEI it is something expensive and distant of the Brazilian reality to afford appropriate technical resources to provide Internet access and collaborative platforms (MARCHISOTTI, OLIVEIRA and LUKOSEVICIU, 2017; BAPTISTA, 2014). A similar situation may justify the change on the practice “VI10 - Use of Massive Online Open Courses (MOOC) (M = 3.05)” which presents a high frequency of answers associated to a high or very high impact in relation to cost efficiency, once the costs required to the implementation of an environment for this kind of course are very high (FISCHER et al., 2014).

We could also verify a strong presence of answers related to “high” and “very high” impact. We highlight the strong sinalization of the practice “VI1 -Use of Internet and mobile device on the teaching and learning process (M = 3.69)” as a propellant for personal satisfaction, once this practice...
obtained 75% of the answers associated to a high and very high impact on the performance of HEI. In addition to this practice, other practices stand out with high impact on the personal satisfaction with focus on collaboration among the parties, like: “VI5 - Pedagogical approach based on Problems or Projects (M= 3.741)” and “VI2 - Adoption of practices aiming collaborative learning (M= 3.679)”. The results obtained indicate a higher impact than the other indicators (educational results and cost efficiency), which may be explained due to the fact that the traditional way of teaching - teacher centered - is considered old fashioned and claims for changes (KIRSTEIN and KUNZ, 2015; SHEAR, 2011). Besides that, educational environment which enable more interaction and technological challenges to teachers and students tend to arouse interest and increase involvement and satisfaction on the teaching and learning process (KANGAS et al., 2017; AL-SAMARRAIE et al., 2017).

Step 4 - Impact of innovative practices on the Performance of HEI under the effect of resource constraints

At this point, we aim to present the relation among innovative practices (independent variables) and their impacts on the Performance of HEI (dependent variables), influenced by resource constraints (moderator variables). After this analysis, it is possible to answer the research problem: evaluate the impact of innovative practices on the performance of HEI in conditions of resource constraints. To identify the correlations investigated and answer the problem proposed, we used the statistical technique called Spearman Correlation. This choice is justified due to the features of the data, which are ordinal and nonparametric, and because it is a robust method which answers to this research’s needs (CORDER and FOREMAN, 2014). Aiming to better improve the intensity of the impacts of each of the innovative groups on the performance of HEI and considering resource constraints, we elaborated a surface contour graph (Figure 3) based on the correlation coefficients identified on the relation amongst “Innovative Practices” x “Resource Constraints” x “Results derived from the application of practices”. For this graph, shades close tending to dark red represent more intensity of impact. On the other hand, practices related to dark blue are characterized by a lesser impact on the performance of HEI, when influenced by resource constraints.

Figure 3: Intensity of the impact of innovative practices on the Performance of HEI about the different educational and social results, considering resource constraints

When observing the results obtained between the innovative practices and the performance of HEI, without considering the influence of resource constraints (Table 1), we can see that the practice with the highest impact was “Use of Internet and mobile devices on the teaching and learning process (VI1)”. This practice presented the highest impact on all of the three indicators considered as ways of
measuring the Performance of HEI: educational results (VD1), cost efficiency (VD2) and personal satisfaction of the parties (VD3). However, when considering the influence of resource constraints on this practice we realize a drastic reduction on its results, especially when considering the indicators associated to education results and the personal satisfaction of the parties. This effect pointed by the specialists is corroborated by Harper, Chen and Yen (2004), Ruthven, Hennessy and Deaney (2005) and Koivunen, Hatonen and Valimaki (2008), which point that one of the biggest impediments for adopting educational practices is the lack of resources, especially the practices which depend on resources associated to the Internet. This scenario combined with the insatisfaction for not having the educational practice completely supported may explain the results presented.

Another point identified in the results is about the practices which present little modification when considered the resource constraints, which gave them a kind of “immunity” to these constraints. Amongst these practices, the ones focused on collaboration between teachers and students stand out. The nature of these practices are not always dependent of technological resources (GLEN and WILKIE, 2000; WALKER et al., 2015) for full operation, which may favor their application on teaching environment, even under restrictive effects. In this list of practices are: “Adoption of practices aiming collaborative learning” (VI2) and “Pedagogical approach based on Problem, Project or Competences and Abilities” (VI5). They were respectively pointed as the second and third practices with highest impact on the performance of HEI when considered restrictive effects. This scenario makes clear why collaborative practices have been affecting HEI in a positive way, once they enable throught cooperation among students - to understand the importance of working in a cooperative way, focusing on the development of competence for information analysis and synthesis, as well as on the commitment with their own learning process (GÓMEZ-PABLOS, POZO and MUNOZ-REPISO, 2017; AMIAMA, MONZÓN and BALLESTA, 2017; HERMANS et al., 2017; VIDAL, CASTILLO and GÓMEZ, 2017; DADO and BODEMER, 2017).

The performance indicator which suffered more impacts when considering resource constraints was related to the “personal satisfaction of the parties (VD3)”. It happens especially because this indicator had the highest averages when considered the direct impacts of innovative practices on the performance of HEI. Thus, the results pointed to a problem situation which may be observed, once considering that personal satisfaction of teachers and students is an extremely important factor to avoid school dropout and to attract new students, as well as to reduce insatisfaction of the parties (MAINARDES, ALVES and RAPOSO, 2014; IGNAT and CLIPA, 2012). For this scenario only one practice continued to register high effects on the performance of HEI: the practice associated to the “Pedagogical approach based on Problem, Project or Competences and Abilities”, which again makes evident the importance of this practice for the educational environment.

6. Implications to Management Practices on HEI
In face of the results presented, we expect this study to have practical utility for Higher Education teachers and managers, once it presents significant implications and may subside on decision-making process related to the implementation of new practices aiming to improve educational performance. Besides, it also allows to identify which educational practices may present better results when considered the needs of every HEI, especially about resource constraints. This fact represents an aspect of the Brazilian reality. In face of this relation among “Innovative Practices” x “Resource Constraints” x “Impact of Practices on the Performance of HEI”, many combinations may be possible. For example: when considering the direct results there was greater impact when used practices associated to the use of Internet and mobile devices, followed by more collaborative practices, oriented to problems. However, when considering resource constraints some practices suffered an extreme reduction on their results, as the practice “Use of Internet and mobile devices on the teaching and learning process (VI1)”. Yet, some practices have a profile of immunity to this restrictive scenario and, among those, the one which stood out was “Pedagogical approach based on Problems or Projects (VI5)”, which, even under limitant effects presented great impact on the performance of HEI. Besides, we can see that
innovative practices are associated to a high impact when considered personal satisfaction of the parties, which may be a way of motivation teachers and students, looking for a driving force on educational activities. However, under the influence of resource constraints this effect was attenuated, which may be observed by managers and educators when choosing which practices should be adopted. In face of this scenario the importance of this study becomes evident, once it was possible to elucidate a new point of view for managers and educators.

7. Conclusions
The main focus on this study was on the assessment of the impact of innovative practices on the performance of HEI, based on the Brazilian experience. The researches point to a lack of studies which consider the approach discussed here, which is the relation among “innovative educational practices” x “social and educational results” x “resource constraints”. In face of this scenario the relevance of this study becomes evident, as it elucidates a new point of view to managers and educators. Based on the results of this work we may conclude that:

- Innovative practices present impacts of lower and higher degree on HEI, when considered the indicators related to educational results, personal satisfaction and cost efficiency;
- The impact is higher when the practices are related to personal satisfaction of the parties, followed by the educational results;
- The most influential practices on the performance of HEI were, respectively: “Use of Internet and mobile devices on the teaching and learning process”, “Adoption of practices aiming collaborative learning” and “Pedagogical approach based on Problems and Projects”;
- When considering resource constraints we could identify practices highly influenced by these restrictions, especially when considered resources of technical nature;
- We could also identify practices which are immune to restrictive effects, especially when considering the practices oriented to the approach based on Problems or Projects.

The results found show that the methodological processes adopted were appropriate for solving the problem proposed as as well as to the validation of the hypothesis. In other words, at the end of this study, we proved that the innovative practices influence on the performance of HEI, through different educational and social results. We understand that this research presented relevant points and significant implications for educators and managers. However, it is important to point that, even though this research was an embracing study of practices, and statistical techniques were analysed and chosen based on the experience of different specialists, this research is still subject to criticism. This statement is justified by the qualitative nature of the variable analysed and the high degree of subjectivity, which enables opening to questionings and uncertainty about the results obtained.

Finally, we suggest as future works: replication of the research, expanding the sample and including foreign specialists; adoption of other research methodologies and different statistical techniques aiming to confront the results; evaluation of the impact played by innovative practices on the performance of HEI considering a bigger roll of practices and ways for measuring the results; case studies aiming to assess - in real environment - the relations of influence identified on this work.

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