

## ATTITUDES TOWARDS ONLINE LEARNING: WHAT DO BRAZILIAN STUDENTS THINK ABOUT?

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**Received:** 11/11//2018 **Accepted:** 24/04/2019

### ABSTRACT

The purpose of this study was twofold. First, it aimed to determine whether there are differences in Brazilian students' attitudes towards online learning compared to their purpose in seeking for this modality and the localization of the pole where they received face-to-face support. Second, it aimed to identify if Brazilian students' attitudes towards online learning predict their self-perception of performance in the course. A correlational and explanatory quantitative approach was taken through a survey. Data was collected from 593 undergraduate students enrolled in the online public administration course offered by different Brazilian universities. Descriptive statistics, Pearson correlations, group comparison (ANOVA) and multiple linear regression were employed for data analysis. Findings revealed that there are differences between students' attitudes compared to their purpose in seeking for online courses and compared to the localization of the pole where they received face-to-face support. Statistically significant differences were found for Favorable personnel and dispositional aspects (PDA), Negative affects (NA) and Internalization and habituation of use (IHU) attitude dimensions. Furthermore, the study identified predictors of students' self-perception of performance in online courses corresponding to how much students perceive they are accustomed to and capable of taking an online course, represented by the attitude dimension IHU. Results showed significant positive relationship between two attitude dimensions (PDA and PC) and the dimension IHU. In addition, significant negative relationship was found between the biographical variable family income and the dimension IHU. The model explains 40% of the variance of IHU in which PDA represents the strongest predictor.

**Keywords:** Online learning, attitudes, self-perception, online courses, internalization and habituation.

## INTRODUCTION

The Internet has brought a new dimension of communication that allowed the leverage of personal and professional life and school education. In educational sector, information technology has led to the online revolution (Selim, 2007) and has influenced the evolution of the online learning modality (Mill, 2016), which has a considerably presence in higher education (Cheawjindakarn, Suwannathachote, & Theeraroungchaisri, 2012; Croxton, 2014; Costa, 2016).

Accordingly, a growing number of students are opting for online learning due to its conveniences (Kauffman, 2015). Several benefits have been mentioned in the literature as the elimination of temporal and geographical barriers (e.g., Beldarrain, 2006; Sanchez & Hueros, 2010; Ribas, Moreira, & Catapan, 2011; Joo, Lim, & Kim, 2013; Hew, Qiao, & Tang, 2018; Sivo, Ku, & Acharya, 2018), flexibility in participation and ease of access (e.g., Croxton, 2014) and flexible schedule (e.g., Park & Choi, 2009). Moreover, the emergence of new technologies enhances opportunities for interaction and collaboration among students, both in asynchronous and synchronous learning networks (Beldarrain, 2006).

Covering these possibilities, Beldarrain (2006) highlighted the importance of not compromising the quality of instruction. The potential for a quality delivery in online learning has also been pointed out (e.g., Schlünzen Junior, 2013; Cigdem & Ozturk, 2016; Mill, 2016).

However, online learning shows high dropout rates which imply notable costs for students, faculty and institutions (Willging & Johnson, 2009), becoming a concern for those who are involved in its implementation (Park & Choi, 2009; ABED, 2016). Research has also addressed attrition, for example, reviewing the role of interactivity in students' satisfaction and persistence (Croxton, 2014), identifying predictors of students' satisfaction, achievement and persistence (Joo et al., 2013) or comparing individual characteristics, external and internal factors between students who persist and those who drop out (Park & Choi, 2009).

In fact, the online learning environment may not be suitable for every student (Kauffman, 2015). In consonance with Sivo et al. (2018), good students in face-to-face classes may not be so in online courses owing to the importance of the voluntary engagement required for the latter modality. Therefore, changes in learning habits are necessary (Puspitasari & Oetoyo, 2018). Competences that are expected of the online learning student may be illustrated by the need of high levels of self-regulation and motivation (de Barba, Kennedy, & Ainley, 2016), perceived self-efficacy, learning autonomy, student preparation (Valencia-Arias, Chalela-Naffah, & Bermudez-Hernandez, 2018), and skills of independent learning (Puspitasari & Oetoyo, 2018). Thus, it is noteworthy to investigate factors influencing students' behaviors in the online learning context considering their importance to improve student persistence and online learning expansion (Sivo et al., 2018). In like manner, Coelho Junior et al. (2018) argued for the role of identifying students' attitudes in order to improve management course systems and consequently students' performance in online learning environment.

In this way, it is relevant to understand how online students perceive this learning modality. In light of these reflections, the current paper is based on the premise that students' beliefs about online learning and its effectiveness as well as their perceptions of requirements demanded by this modality may influence their self-perception of performance in online courses. Thus, the first research question of the study is as follows:

RQ1. Do students' attitudes towards online learning predict their self-perception of performance in the course?

Furthermore, it is acknowledged in this paper that these perceptions may vary according to the learners' purpose to study online and the support they receive during the course. These variables are considered here since a wide range of factors affecting success and acceptance in online learning are reported in the literature. As stated by Ali, Uppal, and Gulliver (2018), barriers to successful online learning implementations are related to technology, individual, pedagogy and enabling conditions. The second research question is thus:

RQ2. Are there differences in students' attitudes towards online learning compared to their purpose in seeking for this modality of course and the localization of the pole where they received face-to-face support?

## **Purpose of the Study**

The goal of this study is twofold. First, it aims to determine whether there are differences in Brazilian students' attitudes towards online learning compared to their purpose in seeking for this modality of course and the localization of the pole where they received face-to-face support.

The second aim of the study is to identify if Brazilian students' attitudes towards online learning predict their self-perception of performance in the course. It is considered here that self-perceived performance will correspond to how much students perceive they are accustomed to and capable of taking an online course. Consequently, it makes reference to their resourcefulness in the use of the learning tools, as well as the degree of maturity and effectiveness they claim to have in online courses. To this purpose, dimensions of attitudes and biographical data are included as possible predictors that may influence their self-perception of performance.

## **FACTORS AFFECTING SUCCESS AND ACCEPTANCE IN ONLINE LEARNING**

Successful online course developments and implementations depend on the consideration of several factors (Cheawjindakarn et al., 2012). Therefore, empirical research efforts have been made in order to identify success factors required or barriers that may hinder successful enactments.

In a survey with 1056 participants, Muilenburg and Berge (2005) carried out an exploratory factor analysis aiming to point out students' barriers to online learning and listed: administrative issues, social interaction, academic skills, technical skills, learner motivation, time and support for studies, cost and access to the Internet and technical problems. Regarding university students' perceptions through a confirmatory factor analysis, Selim (2007) found the following online learning critical success factors: instructor's attitude towards and control of the technology, instructor's teaching style, student motivation and technical competency, student interactive collaboration, online course content and structure, ease of on-campus internet access, effectiveness of information technology infrastructure and university support of online learning activities.

Besides empirical researches, literature reviews have been performed aiming to classify these factors. Specifically in the higher education context, Cheawjindakarn et al. (2012) grouped elements for enhancing online courses efficiency in critical success factors, that are: institutional management, learning environment, instructional design, services support and course evaluation. As well, Ali et al. (2018) consolidated 68 barriers found in previous researches (in learning domains as higher education and training contexts) to the success of online learning implementations in a conceptual framework composed by 4 categories, namely technology, individual, pedagogy and enabling conditions.

As the aforementioned factors are related despite different classifications and the comprehensive literature review accomplished by Ali et al. (2018) developed a framework that includes the interplay of barriers, their study will be used herein to organize this review section according to the categories they stipulated. The general categories will be taken into account including discussions concerning success factors, implementation requirements and difficulties of the online learning context.

## **Technological Barriers**

Technological barriers encompass elements such as technology infrastructure and technical support (Ali et al., 2018). These conditions may affect students' persistence. As Willging and Johnson (2009) indicated, among the reasons for online courses dropouts are technology-related ones, for instance, de-personalized learning environment or lack of support from the technical staff. Furthermore, frustration with the technology may discourage students in online courses (Kauffman, 2015).

Consistently, a learning management system (LMS) needs to exhibit good performance and enable friendly use (Cigdem & Ozturk, 2016). Moreover, technical support is imperative for the service quality improvement (Ghazal, Al-Samarraie, & Aldowah, 2018) and more assistance options and support services should be provided for both students and teachers (Sanchez & Hueros, 2010).

It is worthy of mention that university support may offer more than technical aid. In the survey conducted by Selim (2007), library and information availability was included in this support besides technical assistance. In the Brazilian context, within the Open University of Brazil program, university support is also seen as more comprehensive since face-to-face support poles are available for pedagogical and technological assistance for the students.

These face-to-face support poles provide the space required for technological issues, laboratories and libraries as well as activities such as students' guidance and assessments, although on occasions under insufficient conditions (Ribas et al., 2011). For this reason, Ribas et al. (2011) warned that management skills are needed for the pole coordinator and development programs in specific management themes should be offered. According to Schlünzen Junior (2013), academic and administrative guidance to these poles are relevant for quality standards definitions.

### **Individual Barriers**

Students' individual barriers bound 26 elements as revealed by Ali et al. (2018), for instance, prior knowledge, student motivation, computer literacy, perceived usefulness and ease of use perceptions, sense of isolation due to less face-to-face/social interaction, conflicting priorities, student's economy and self-efficacy. Yet Willging and Johnson (2009) reported varied and unique reasons to each individual concerning decision to dropout.

According to Puspitasari and Oetoyo (2018), student motivation is related to the learner's purpose to study. Possible reasons for opting to enroll in online courses are discussed in the literature. A survey conducted by Willging and Johnson (2009) found, among the reasons, the search for professional development and the strong reputation of the university. Puspitasari and Oetoyo (2018) noted that the majority of the students chose the modality with the purpose of supporting their performance at the job.

These results seem relevant since Beldarrain (2006) asserted that advancements in real time communication which are required in today's workplace show promises to the online learning context. In this regard, Schlünzen Junior (2013) claimed that online courses should be designed to provide students with the professional performance required in the job market.

Furthermore, in Brazil, online courses are frequently viewed as an alternative to students who do not have the opportunity to take a face-to-face course, as presented by Ribas et al. (2011), Schlünzen Junior (2013) and Mill (2016). The impossibility to enroll in traditional courses may be due to the prevalent characteristics of the students who choose online courses. Brazilian online students are often older than face-to-face students (ABED, 2016), above 30 years old, married and workers (Costa, 2016).

These characteristics arouse discussions concerning conflicting priorities, one of the individual barriers to online courses implementations listed by Ali et al. (2018). Consistently, Muilenburg and Berge (2005) observed time for study as one of the most severe student barriers to online learning. Willging and Johnson (2009) reported the difficulty in working full-time and taking the course as one of the reasons students withdraw. Costa (2016) explained that some students can't find balance between many activities involved in online courses and their work and personal needs. Ali et al. (2018) indicated that family commitments consume students' time and resources and work commitments are used as excuses for avoiding academic tasks.

As a result, Puspitasari and Oetoyo (2018) suggested that institutions should offer guidance in planning and managing time in order to help students reconcile work/family and study responsibilities. Moreover, Park and Choi (2009) recommended that learners' family and organization should be apprised of the course advantages since students are more likely to withdraw from online courses when they perceive lack of family and organizational support.

Other attrition reasons declared by dropout students are facing financial difficulties and judging that the long-term financial investment does not worth the benefit (Willging & Johnson, 2009). These reasons line up with student's economy, considered by Ali et al. (2018) as included in the individual barriers to online course implementations.

Lack of instructor and students interactions was also reported as a reason for leaving online courses (Willing & Johnson, 2009). In line with this result, Muilenburg and Berge (2005) found lack of social interaction to be the single most important barrier perceived by online students. It refers to the sense of isolation barrier (Ali et al., 2018). In this regard, Weidlich and Bastiaens (2018) investigated transactional distance, proposing that the concept should take the distance between student and technology into account besides the psychological distance between student and his peers, instructors and learning content, since all these interactions are dependent on technology mediation.

Related to the successful use of technology in online courses, research has also been conducted addressing students' acceptance of LMS (e.g., Sanchez & Hueros, 2010; Alshammari, Ali, & Rosli, 2016), technology acceptance (e.g., Sivo et al., 2018) and online learning tools acceptance (e.g., Valencia-Arias et al., 2018). Considering that prior knowledge is one barrier indicated by Ali et al. (2018), preparing students for online courses should be required. Valencia-Arias et al. (2018) suggested to train students in skills necessary for a proper usage of educational technologies resulting in a higher perception of self-efficacy for the use of these technologies.

In addition to the confidence in employing online learning technologies, self-efficacy is linked to students' beliefs in completing the course (Ali et al., 2018). One recommendation for students' self-efficacy development proposed by Ghazal et al. (2018) is the management of learning services with modern applications.

### **Pedagogical Barriers**

Pedagogical barriers embrace elements such as lack of feedback, quality course content, engaging students online, faculty training and pre-course orientation (Ali et al., 2018). Students want immediate instructor feedback (Beldarrain, 2006) and the absence of prompt responses may discourage them in online courses (Kauffman, 2015). However, individual attention may be a challenge in online courses since they facilitate the enrollment of a large number of students (Kauffman, 2015).

Furthermore, it may be difficult to engage students in online learning (Hew, 2015; Ali et al., 2018). In this regard, Joksimovic, Gasevic, Kovanovic, Riecke, and Hatala (2015) found that social presence in online learning community, which refers to students' ability to engage socially, may predict their academic performance and that this association is moderated by teaching presence. In line with this, Cheawjindakarn et al. (2012) highlighted the instructors role in courses based on the student-centered concept.

Therefore, traditional teaching must be overcome in online context (Schlünzen Junior, 2013) and instructors must develop skills to a more applied pedagogy (Valencia-Arias et al., 2018). In view of this, Croxton (2014) advised that training should be offered with practical strategies to foster interactivity because many instructors may be new to the online environment.

On the other hand, lack of pre-course orientation to students also represents a barrier (Ali et al., 2018). Information about how to take control of one's learning should be provided (Ghazal et al., 2018) and training sessions should include student motivation, learning habits and learning strategies (Puspitasari & Oetoyo, 2018). In addition, instruction design must contain clarification of objectives allowing easy access to course syllabus and details of the program (Cheawjindakarn et al., 2012).

Concerning course content, it should be relevant, up to date (Beldarrain, 2006) and meaningful (Joo et al., 2013). Thus, Park and Choi (2009) affirmed that skills and knowledge acquired may be seen as useful when students are given opportunities to apply them into real situations. Likewise, Croxton (2014) underlined the importance of learning environments producing rich interactions with students, instructors and course content.

### **Enabling Conditions**

Enabling conditions is a category that impacts all the preceding factors and comprises elements as administrative support, limited funds and regulations (Ali et al., 2018). Hence, factors as time/costs required for the revision of course design and delivery structures, and conflict of administrative control imposed by legal issues may hinder the implementation of technologies (Beldarrain, 2006).

In Brazil, online learning has been promoted with achievements as the creation of specific legislation and investments made by public and private institutions (Mill, 2016). Costa (2016) verified that Brazilian professional market place may not distinguish online and face-to-face diplomas in the field of management although Beldarrain (2006) had stated that the Brazilian educational system discredited degrees obtained from online courses. Thus, initiatives such as the implementation of important programs and the online learning expansion in Brazil contributed to diminish previous prejudice faced by the modality (Mill, 2016).

## THEORETICAL MODEL OF RESEARCH

Students' attitudes towards online learning are contemplated in this study according to the students' social attitude dimensions presented by Coelho Junior et al. (2018). Each dimension of attitude is described in their work as follows:

- 'Favorable personnel and dispositional aspects' concerns positive beliefs about online learning. In general, the content of the items is related to commitment, motivation, and trust in the online learning efficacy.
- 'Procedural Characteristics' concerns perceptions about the requirements of online learning for both students and courses deliveries. Overall, the items are related to students' learning habits, knowledge of pedagogical project and technological skills as well as the quality of course infrastructure, LMS and communication.
- 'Negative affects' concerns a negative evaluation of online learning compared to face-to-face learning. As a whole, the items are related to conceptions about the ease of passing the courses, systematic aspects and differences in learning results.
- Lastly, 'Internalization and habituation of use' concerns perceptions of self-efficacy in online learning. Mainly, the content of the items is related to beliefs in one's effectiveness in studying, flexibility in scheduling and mastery of methods, procedures and tools employed in online learning.

For the purpose of the current research, as stated previously, self-perceived performance corresponds to how much students perceive they are accustomed to and capable of taking an online course and consequently relates to their resourcefulness in the use of the learning tools, as well as the degree of maturity and effectiveness they claim to have in online courses. Therefore, self-perception of the students' performance in online courses is operationalized here to be represented by the dimension 'Internalization and habituation of use'.

The theoretical model postulated to the research considers that students' perceptions about 'Favorable personnel and dispositional aspects', 'Procedural characteristics' and 'Negative affects' may generate predictive effects on their self-perception of performance in online courses. The theoretical model is pictorially represented as follows:

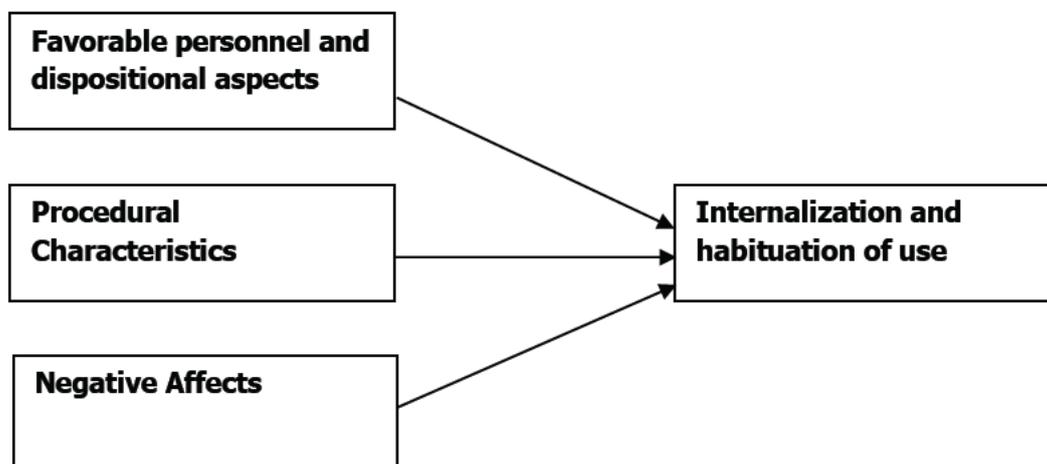


Figure 1. Theoretical model of research

## METHODOLOGY

In this study, a correlational and explanatory quantitative approach was taken. As a research method, a survey was conducted.

### Context

The study was set in universities that had established partnership with the program Open University of Brazil. This program is a Brazilian national initiative for undergraduate online courses deliveries involving federal and local governments and public higher education institutions (Mill, 2016).

The undergraduate courses are offered in the online modality with the provision of face-to-face pedagogical and technological support to the students. These face-to-face support poles are operational structures of the higher education institutions, located at or next to the city of the student registered in the course, where activities as guidance and assessments occur (Ribas et al., 2011).

Within this program, Moodle is adopted as the official LMS. This platform supports activities such as delivering course contents, allowing communication and assigning grades, as well as offers learning tools as quizzes, online chats and discussion forums (Ghazal et al., 2018).

The specific degree considered in this research was the undergraduate public administration course. This course is relevant once Costa (2016) affirmed that in online learning environments, Management, Finances and Business are the fields of study that present higher growth rates in Brazil in recent years.

### Participants and Data Collection Procedures

The research was taken with a non-probabilistic and intentional sample of students from different geographical regions of Brazil, enrolled in undergraduate online courses. At the time of data collection, the total population was estimated in 900 students. All participants were informed of the purposes of this study and gave informed consent for their spontaneous participation. The information was processed in confidential and anonymous way.

The survey was hosted online (survey monkey) and, for data collection, first, e-mails were sent by the coordinator of the online public administration course at the University of Brasilia (UnB) to all students of this UnB course. After a resent of e-mails, the return rate was about 30%, a little below initial expectations. Thus, to expand data collection to other degrees in public administration courses offered in online modality, coordinators of the face-to-face support poles were contacted and the aims of the research were presented to them.

A list containing the e-mails of all students enrolled in the online public administration course was then sent by these coordinators. The questionnaire access link was sent to all the students of these poles. All respondents received an e-mail with some initial guidelines and the link to access the survey. Respondents agreed to participate in the survey from the acceptance of prior consent. The responses of the participants were tabulated in a database and there were no questionnaires filled out incompletely because the tool only saved the data when all items had been filled. The data collection process took was about 120 days (4 months).

The final sample consisted of 593 students. Despite the extrapolation to others support poles, the great majority of the valid answers came from the students of the online public administration course offered by UnB. Table 1 summarizes the sample characteristics.

**Table 1.** Students' characteristics (n=593)

<b>Characteristics</b>	<b>Frequency</b>	<b>%</b>
<u>Gender</u>		
Male	219	36,9
Female	358	60,4
Not answered	16	2,7
Total	593	100
<u>Age Group</u>		
15 to 19 years old	16	2,7
19 to 29 years old	196	33
29 to 39 years old	179	30,2
>39 years old	193	32,6
Not answered	9	1,5
Total	593	100
<u>Do you have computer in your home?</u>		
Yes	561	94,6
No	20	3,4
Not answered	12	2
Total	593	100
<u>In which period of the day do you study?</u>		
In the morning	34	5,7
In the afternoon	51	8,6
In the evening/night	483	81,4
Not answered	25	4,3
Total	593	100
<u>Do you work?</u>		
Yes	520	87,7
No	55	9,3
Not answered	18	3
Total	593	100
<u>What is your level of computer knowledge?</u>		
None, I don't know how to use the computer	8	1,3
Basic level	213	35,9
Intermediate level	290	48,9
Advanced level	66	11,1
Not answered	16	2,8
Total	593	100

Table 1 indicates that the majority of the respondents were female (60,4%) and almost all of them were part-time students or working students (87,7%). Most of them claimed to have an intermediate level of knowledge in the use of computers and technology (48,9%), but a small percentage (1,3%) informed not having the least knowledge or mastery in the use of computational tools. Furthermore, 94,6% declared to own a personal computer and 79,8% (n=473) to have wi-fi in their home.

## The Scale

A Brazilian scale, validated by Coelho Junior et al. (2018), was utilized in the study. All the procedures adopted for construction of items, as well the semantic validation, validation by judges and factor analysis were described by these authors.

The scale has a total of 41 items, with reliability coefficient (KMO) of .94. The scale is in the type of 10-point Likert scale ranging from I totally disagree (1) to I totally agree (10).

The correlations of each item with total point were between .30 and .79. A factor analysis was run using direct oblimin rotation for construct validity, resulting in 4 factors structure explaining 47.12% of total variability.

These empirical factors are “Personnel and Dispositional Aspects” (19 itens; eigenvalue = 16,50; explained variance = 31,72%; Cronbach’s alpha = 0,94), “Procedural Characteristics” (13 itens; eigenvalue = 3,35; explained variance = 6,44%; Cronbach’s alpha = 0,89), “Negative Affects” (3 itens; eigenvalue = 2,72; explained variance = 5,24%; Cronbach’s alpha = 0,60) and “Internalization and habituation of use” (6 itens; eigenvalue = 1,94; explained variance = 3,72%; Cronbach’s alpha = 0,79). Findings showed that scale is a valid and reliable instrument.

## Data Analysis

Data were tabulated and categorized, and analyzed using the SPSS (Statistical Package for Social Sciences), version 20.0. Initially, data were submitted to descriptive statistics (mean, standard deviation and frequency), followed by analyzes of Pearson correlations and group comparison (t test and ANOVA) to verify the associations between the study variables.

In addition, multiple linear regression analyzes were performed (Enter method) to identify predictors associated with students’ perceptions of performance in online learning (see pictorial representation of the hypothetical model in Figure 1).

The factorial scores of each of the four empirical factors of the scale were calculated, as well as all procedures of multiple regression analysis were adopted to achieve the aims of this research.

## FINDINGS AND DISCUSSIONS

Brazilian students’ attitudes towards online learning have been compared to the purpose in seeking for this modality of course as declared by students. Adopting possible reasons to enroll in online courses found in previous works, in the present study, the differences between groups were tested considering these four options listed: *‘this course is the only opportunity that I will have to take an upper course’*, based on Ribas et al. (2011), Schlünzen Junior (2013), and Mill (2016); *‘I think that the diploma of an online course has the same importance and recognition as a diploma of a face-to-face course’*, based on Costa (2016); *‘I am interested in improving my professional qualification’*, based on Willging and Johnson (2009) and Puspitasary and Oetoyo (2018), and *‘this is a course that has status, as it is offered by the University of Brasilia’*, based on Willging and Johnson (2009).

These possible interests that motivated students to seek for an online course were compared towards each dimension of students’ attitudes proposed by Coelho Junior et al. (2018). Table 2 demonstrates results of the single factor ANOVA test carried out within this framework.

**Table 2.** Attitudes towards online learning according to students' motivation

Variable		Sum of square	DF	Square mean	F	Sig.
Personnel and dispositional aspects(PDA)	Intergroup	41,861	5	8,372	3,205	0,007
	Intragroup	1345,110	515	2,612		
	Total	1386,971	520			
Procedural Characteristics (PC)	Intergroup	4,267	5	0,853	0,880	0,495
	Intragroup	499,704	515	0,970		
	Total	503,971	520			
Negative Affects (NA)	Intergroup	55,896	5	11,179	2,467	0,032
	Intragroup	2333,778	515	4,532		
	Total	2389,674	520			
Internalization and habituation of use (IHU)	Intergroup	29,292	5	5,858	2,640	0,023
	Intragroup	1142,968	515	2,219		
	Total	1172,260	520			

Results indicate that there are statistically significant differences between students' attitudes and their reason for opting to enroll in online courses. The single attitude dimension that didn't present a statistically significant difference due to the interest that motivated students to seek for this modality was Procedural characteristics ( $F = 0,880$ ;  $sig. = 0,495$ ).

These results reveal that there are differences in students' positive beliefs about online courses, their negative evaluation compared to face-to-face courses and their perceptions of self-efficacy in online learning (respectively Favorable personnel and dispositional aspects, Negative affects and Internalization and habituation of use dimensions, according to Coelho Junior et al., 2018) due to their purpose to study online.

As suggested by Valencia-Arias et al. (2018), motivating students to engage with online course tools demands higher education institutions employ strategies that promote the advantages of online learning tools usage. The observed differences in perceptions found in the current research may expand this recommendation by highlighting the importance of considering, when fostering these advantages, diverse purposes students have to choose online courses.

In other words, the promotion of the advantages of virtual tools usage should take into account what is the students' interest because their attitudes towards online learning may differ. For example, if the students opted for online course as the only opportunity they believed to have, benefits such as the elimination of temporal and geographical barriers, as mentioned by Beldarrain (2006), Sanchez and Hueros (2010), Ribas et al. (2011), Joo et al. (2013), Hew et al. (2018) and Sivo et al. (2018), might be more suitable to be focused on. Otherwise, if the reason was to seek for improvement of professional qualification, the potential to acquire expertise and problem-solving skills required in the workplace presented by Beldarrain (2006) could be more appropriate.

Brazilian students' attitudes towards online learning have also been compared to the localization of the pole where they received face-to-face support. Differences were tested considering groups based on the localization of the face-to-face support poles distributed throughout Brazil since, as stated by Ribas et al. (2011), these spaces are located at or next to the city where the learner is enrolled. Table 3 demonstrates results of the single factor ANOVA test.

**Table 3.** Attitudes towards online learning according to the localization of the face-to-face support poles

Variable		Sum of square	DF	Square mean	F	Sig.
Personnel and dispositional aspects (PDA)	Intergroup	114,748	8	14,344	5,782	0,000
	Intragroup	1061,686	428	2,481		
	Total	1176,435	436			
Procedural Characteristics (PC)	Intergroup	10,903	8	1,363	1,318	0,233
	Intragroup	442,734	428	1,034		
	Total	453,638	436			
Negative Affects (NA)	Intergroup	78,824	8	9,853	2,281	0,021
	Intragroup	1849,152	428	4,320		
	Total	1927,976	436			
Internalization and habituation of use (IHU)	Intergroup	72,875	8	9,109	4,437	0,000
	Intragroup	878,694	428	2,053		
	Total	951,569	436			

Statistically significant differences were identified between attitudes of students towards online learning according to the pole in which they received face-to-face support. However, as showed in Table 3, no significant statistical differences were identified between Procedural characteristics and the fact of attending the face-to-face support pole which the course is linked to.

One possible interpretation for these observed differences in students' perceptions is the absence of standards for infrastructure and management in these spaces. As stated beforehand, Ribas et al. (2011) noted that some poles do not offer appropriate conditions requiring skills of their coordinators and Schlünzen Junior (2013) suggested guidance for quality standards definitions.

Previous studies have already indicated lack of technical support as a barrier for online learning implementations (Ali et al., 2018) as well as a cause for leaving an online course (Willing & Johnson, 2009) thus reinforcing the value of technical support availability (Sanchez & Hueros, 2010; Ghazal et al., 2018). On the other hand, Ribas et al. (2011) explained that the face-to-face support poles related to the program Open University of Brazil provide other activities, for instance guidance and assessments. Therefore, it seems reasonable to assume that these poles have the potential to help overcoming other online learning implementation barriers, for example, the pedagogical factors listed by Ali et al. (2018) such as engaging students online and tutor counselling sessions.

The findings of the present research complement these discussions by showing that the fact of attending a certain support pole implies different attitudes concerning Favorable personnel and dispositional aspects, Negative affects and Internalization and habituation of use dimensions. Taking into consideration these dimensions proposed by Coelho Junior et al. (2018), the results mean differences in students' beliefs about commitment, motivation and trust in the online learning efficacy; their conceptions about the ease of passing the course, systematic aspects and learning results; as well as their beliefs in their own effectiveness in studying, flexibility in scheduling and mastery of methods, procedures and tools employed in the course.

For the next step of analysis, it was verified whether there was any relationship between Brazilian university students' attitude dimensions towards online learning and some of the participants' biographical data (age and family income). Table 4 shows the findings of the correlation analysis conducted.

**Table 4.** Relationship between attitude dimensions and biographical variables

Variables	PDA	PC	NA	IHU	AGE	FAMILY INCOME
PDA	1					
PC	.576**	1				
NA	-.209**	-.107**	1			
IHU	.603**	.494**	-.092**	1		
AGE	----	----	----	----	1	
FAMILY INCOME	-.101**	-.085	----	-.134**	.143**	1

Note: \* $p < .05$ , \*\* $p < .01$

The highest correlation identified was between Personnel and dispositional aspects and Internalization and habituation of use ( $r = .603$ ). The second one was between Personnel and dispositional aspects and Procedural characteristics ( $r = .576$ ). Nonetheless, it was observed that age did not present statistically significant correlations.

The sample obtained within the current research exhibits characteristics coherent to those informed by other reports (ABED, 2016; Costa, 2016) concerning Brazilian online learners, since 62,8% were 29 years old or older. However, although other studies in online learning field suggested age as a variable that may affect students' perceptions (as the research conducted by Muilenburg and Berge (2005), who found age to be one of the variables that affected students' views of barriers), in the present study no statistically significant correlation between age and attitude dimensions was observed.

In order to identify predictors of self-perception of performance, linear regression analysis was employed. Findings are summarized in Table 5. Results show significant positive relationship between two attitude dimensions (Personnel and dispositional aspects and Procedural characteristics) and the dimension Internalization and habituation of use. In addition, a significant negative relationship between the biographical variable family income and the dimension Internalization and habituation of use was found.

**Table 5.** Model Summary for Enter Regression Analysis

Variables	B	Standard model	$\beta$	t	Sig.
constant	2,222	0,531	-	4,182	0,000
pda	0,461	0,039	0,479	11,883	0,000
pc	0,325	0,060	0,215	5,393	0,000
family income	-0,046	0,024	-0,065	-1,947	0,005
R	0,637 <sup>a</sup>				
R <sup>2</sup>	0,406				
R <sup>2</sup> adjusted	0,400				
Standard error of stimative	1,215				

These findings suggest that Personnel and dispositional aspects, Procedural characteristics and family income are key elements to better understand students' judgment about their own performance in online courses. Thus, according to the descriptions of these attitude dimensions explained by Coelho Junior et al. (2018), the results of the present research mean that students' positive beliefs about online learning, understanding students' and courses deliveries requirements for online learning and family income affect students' self-perception of performance.

Favorable personnel and dispositional aspects towards online learning is the strongest predictor ( $\beta = 0,479$ ) of students' self-perceived performance. The items of Favorable personnel and dispositional aspects refer to students' commitment, motivation, and trust in the online learning efficacy (Coelho Junior et al., 2018). Therefore, this finding indicates that students' higher positive beliefs about commitment, motivation, and trust in the online learning efficacy are significantly related to higher self-perception of performance in the course.

Previous studies addressed commitment needs as a possible barrier to online courses, such as time for study (Muilenburg & Berge, 2005), working full-time (Willing and Johnson, 2009), balance with personal needs (Costa, 2016) and family and work commitments (Ali et al., 2018). The findings of the current study seem to indicate that positive beliefs about the need to commit to online courses, being motivated to study online and the trust in the learning effectiveness can contribute to overcome this barrier in the sense that these positive beliefs predict the students' self-perception of performance.

Furthermore, Kauffman (2015) found in the literature reports on online courses success as being equivalent or superior than face-to-face classes. Therefore, one possible suggestion to help minimize online course implementation barriers is to inform online students of its achievable effectiveness showing success cases that may improve students' trust, since it was found that these positive beliefs may predict their self-perception of performance.

Procedural characteristics ( $\beta = 0,215$ ) also shows a significant positive relationship with Internalization and habituation of use. Procedural characteristics is an attitude dimension concerning students' perceptions about the requirements of online learning and its items refer to students' learning habits, knowledge of pedagogical project and technological skills as well as course quality needs such as infrastructure, LMS and communication (Coelho Junior et al., 2018).

The importance of these elements to successful online course implementations is in accordance with previous findings. For instance, Cigdem and Ozturk (2016) found students' self-directed learning to be the strongest predictor of their course grades. Regarding knowledge of pedagogical project, Cheawjindakarn et al. (2012) indicated instructional design as a critical success factor for online courses in higher education suggesting easy access to syllabus and details of the program. In addition, Ali et al. (2018) listed elements such as lack of prior knowledge, interaction, and technology infrastructure and weak LMS as barriers to online course implementations.

Furthermore, offering trainings for the purpose of preparing students to online courses has been recommended. The findings of the current research demonstrate that understanding to a greater extent the requirements for online learning is significantly related to students' higher self-perception of performance in the course. Therefore, these results may imply that students' training should target necessary skills to the use of technologies, as proposed by Valencia-Arias et al. (2018), as well as learning habits and learning strategies as suggested by Puspitasari and Oetoyo (2018), in addition to the understanding of other requirements of online learning environments, i.e., the pedagogical project, and quality of infrastructure, LMS and communication provided.

The last variable that presented statistically significant relationship with Internalization and habituation of use was family income. The relationship observed was negative, that is, lower family income is significantly related to higher self-perception of performance. This finding seems relevant since financial difficulties are mentioned as a barrier to online course implementation (Ali et al., 2018) or as a reason to dropout of online courses (Willing & Johnson, 2009). Therefore, more research is needed to know how financial difficulties impact the success of online learning implementations.

Considering the hypothesized theoretical model of research, it was identified that only Negative affects did not contribute significantly to the prediction of Internalization and habituation of use. According to Coelho Junior et al. (2018), the Negative affects dimension refers to a negative evaluation of online learning compared to face-to-face learning.

The theoretical model was, thus, partially corroborated. Using the enter regression method, the overall model explains 40% of the variance of Internalization and habituation of use. This attitude dimension refers to perceptions of self-efficacy in online learning and its items are related to beliefs in one's effectiveness in studying online, flexibility in scheduling and mastery of methods, procedures and tools employed in online learning (Coelho Junior et al., 2018). It was employed in the present research to represent self-perceived performance of online students, corresponding to how much they perceive they are accustomed to and capable of taking an online course and consequently relates to their resourcefulness in the use of the learning tools, as well as the degree of maturity and effectiveness they claim to have in online course.

Therefore, the present study intends to contribute to literature by complementing discussions about factors affecting success and acceptance in online learning. Specifically, it analysed students' perceptions about attitudes towards online learning, addressing issues noted in previous works. Firstly, in accordance with Sivo et al. (2018), it investigated factors influencing students' behaviors in the online learning context considering their importance to improve student persistence and online learning expansion. Secondly, in accordance with Coelho Junior et al. (2018), it investigated the role of students' attitudes in order to improve students' performance in online learning environment.

## CONCLUSION

The present research revealed that there are differences between students' attitudes compared to their purpose in seeking for online courses and compared to the localization of the pole where they received face-to-face support. Statistically significant differences were found for Favorable personnel and dispositional aspects, Negative affects and Internalization and habituation of use attitude dimensions.

Furthermore, the study identified predictors of students' self-perception of performance in online courses represented here as how much students perceive they are accustomed to and capable of taking an online course. Results showed significant positive relationship between two attitude dimensions (Favorable personnel and dispositional aspects and Procedural characteristics) and the dimension Internalization and habituation of use. In addition, a significant negative relationship was found between the biographical variable family income and the dimension Internalization and habituation of use.

Contributions to online literature refer to discussions about factors affecting success and acceptance in online learning. Students' perceptions about their attitudes towards online learning were presented and may contribute to discussions aiming online learning expansion as well as students' persistence and their performance in online courses. Implications of results concern recommendations related to online learning expansion such as the development of activities to foster online learning tools advantages considering diverse purposes students have to enroll in online courses. Moreover, suggestions to improve students' self-perceived performance involve providing success cases examples that might enhance students' trust in online learning effectiveness and training students considering a broad range of online learning requirements.

Nevertheless, the research had limitations. The first one is the use of self-reporting measures. It is possible that students' perceptions have generated some kind of bias, such as leniency or severity in their judgment. This may have either over or underestimated the results. Another limitation concerns the lack of precise information about the reality of the operation of the face-to-face support poles. It is possible that some particular features of one of these poles (e.g., hours of operation, available physical and virtual library infrastructure, or even if there is a face-to-face tutor) would help explain the statistically significant difference in the opinion expressed by the students. For reasons of accessibility, this information was not collected for the purpose of this study. It is recommended, for further research, that a qualitative approach should be used to collect and catalog information about the infrastructure provided by the poles.

In addition, since family income presented a negative significant relationship with the attitude dimension Internalization and habituation of use, more research is suggested in order to investigate how financial difficulties impact the success of online learning implementations. Other variables influencing human behavior need to be investigated in the context of online courses. We suggest some research questions: What are the social expectations that online students have? Studying online can generate future behaviors not provided by face-to-face courses? Is the motivation to study online different from the motivation to face-to-face learning?

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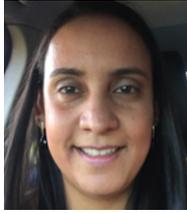
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