Comparative study in the management of virtual university education: Peru and Ecuador

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Abstract: - This study compared the reality of Ecuador and Peru in the face of the impact of Covid-19 on activities in higher education, once universities were forced to im-plement online education. Despite being neighbouring countries with similar cul-tures, different results were obtained. 302 students of careers related to business and administration and continued their studies in 2020, participated in this inves-tigation. It was found that 95% of the Ecuadorian students surveyed consider that they dominate the use of the internet, while in Peru 84% affirm the same. In Ec-uador, a higher percentage of students have access to technological equipment, which facilitates access to online education; 38.5% of the Ecuadorian students consider that virtual knowledge management has been efficient, so they have less interest in returning to face-to-face classes; while 45.6% of the Peruvian students show a predisposition to study online.

Key-Words: - Covid-19, higher education, on-line education, management

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1 Introduction

As you can see for the title of the paper you must use 16pt, Centered, Bold, Times New Roman. The health emergency produced by Covid 19 forced countries to temporarily sus-pend activities that bring together large groups of people. The education sector was one of the most affected, because educational organizations were not prepared to face the new scenario, and worse still, the achievement of learning was in danger. The adaptation of the universities to the virtual modality was almost immediate, they had to acquire communication platforms and systems for the university community. However, there were problems with access to the internet, the availability of a PC that included a microphone and a web cam to interact in the synchronous classroom, in addition to the fact that digital gaps widened during the period of mandatory con-finement [1, 2, 3].

It should be noted that the virtual modality is not new, before the health emergen-cy several institutions at the higher level offered distance programs at the undergrad-uate and postgraduate level, which continued to operate, especially in urban areas. In the realities of most Latin American countries, it is considered a privilege to have access to the internet. Several countries have formulated action plans for the popula-tion to access the network and thereby reduce social mobilization to prevent the spread of the virus [4,5].

It is important to note that the levels of regular education as university in Colom-bia, was directed to the improvement of curricular plans in the face of the presence of virtuality, therefore, the use of virtual strategies has allowed the effectiveness of the teaching-learning process. It was also evidenced that teaching strategies are still ap-plied from a face-to-face system perspective. Virtual interactions and the use of vir-tual applications is scarce [6, 7].

In Ecuador, the effectiveness of virtual education not only depends on connectivi-ty, but on the formulation of interdisciplinary projects that involve

the educational community. In this sense, it has been possible to demonstrate the use of social net-works to connect with students by teachers and, in the case of administrators, with users [8, 9].

In the same way, in the Peruvian sphere it has been agreed that the interaction has been substantive in urban areas and that it has led to the change from face-to-face to virtual curricular planning, as well as to prioritize institutional management strategies remotely. In the case of the university context, an increase in the socio-economic gap was evidenced, based on the accessibility by students of public universities in relation to private ones, coupled with the fact that many of them live in rural areas. Teachers do not apply strategies for virtual teaching [10,11].

2 Literature review

Management is perceived as that capacity that allows generating a convenient rec-iprocity between the various organizational areas around the structure, strategies, styles, human resources, objectives. In this way, the favourable resources are articu-lated in a coherent way to achieve the desired achievement. The management of virtual education corresponds to the ability to establish a relational medium to com-bine planning, strategy and evaluation aspects in an educational organization [12,13].

When approaching virtual education, perceived as online teaching, it implies the interactive development of the training process as it is carried out remotely on digital platforms that replace face-to-face and learning is mediated by virtual strategies and tools that have gained a lot of interest in the distance education programs. Thus, online education is that formative teaching that takes place in a remote, non-face-to-face setting, whose particularities will depend on the use of the respective digital plat-forms. [14].

The main digital tools, which have been used by both realities with a pedagogical and administrative intention. The use of e-mails and their online classrooms, such as the Classroom in Gmail accounts, has been an achievement of coverage of the edu-cational service and institutional care, since it is free and has a drive storage capacity that allows the teacher to save the evidence sent by the learners and design sessions in Google Meet video conferences by available time. Also, according to the predispo-sition of the flipped Classroom or flipped classroom as a teaching model, it has been applied in the university environment. Similarly, other related platforms have gained notoriety such as Canvas, Blackboard; and applications such as Menti, Kahoo have enabled interactive development among students, teachers and managers [15].

Regarding the skills to use the internet, it is important to emphasize the develop-ment of digital skills. In this sense, it is concrete to propose the continuous implemen-tation of methodological strategies for the improvement of educational practice that includes not only knowledge of computer programs but also interactive applications and in the preparation of online materials. Thus, the development of digital skills will allow teachers to improve their educational practice and innovate activities with an emphasis on mutual interaction and virtual experience, thus distancing all forms of traditional teaching [4,16,17].

Traditional education, focused on expository teaching and with a particular cult of reproductive memory activities, focused on results and not on processes in which students present a banking, listening and receiving attitude of information has been subtly maintained in the student training process. Although it is true, they are not evident in the curricular programs, they are revealed during the educational teaching practice as an emerging attitude. Faced with the change of face-to-face modality for virtual teaching, it is considered that its pedagogical reminiscences have no place in the new educational scenario, since the protagonist is assumed by the student through interaction with the mediator teacher and problematized of contextual situations [18,19].

The adaptation of educational entities to virtual education constitutes an institu-tional challenge for both managers and staff assigned to the teaching entity, since this contextual situation of social isolation has predisposed virtuality to be the char-acteristic means to be able to carry out institutional activities and functions. It has been considered that attention to students and external users, guidance and good treatment may prevail. In the same way, managers are responsible for adapting their strategic plans and management documents to the virtual modality [20,21,22].

In this sense, the teacher's attitude towards virtual education must include a will-ingness to open up to a new scenario, since the change from face-to-face to online teaching has shown uncertainty and moderate fear of use of technologies in some teachers. Peruvian teachers have had to adapt to the new scenario, showing that those under the age of fifty have presented fewer difficulties than those over the aforementioned age. In the Ecuadorian case, the uncertainty has been shared by adding that teachers in rural areas had not been implemented in the acquisition of digital skills before the pandemic

and face-to-face teaching strategies were prioritized, which constituted a difficulty that was largely corrected by the willingness of teachers to innovate their educational practice [23,24].

Soft skills during the virtual teaching process are essential, since they constitute those skills developed in the training process to optimally consolidate the perfor-mance of the student and teacher in the academic, attitudinal, emotional and indi-vidualized areas. In this way, it cannot be separated from educational practice and is predisposed to continuous interaction. Undoubtedly the development of soft skills is directed in relation to students and teachers. Thus, in the case of the former, the sense of responsibility, assertiveness and communicative dialogue, adaptation to digital changes and information management are prioritized. In teachers, it focuses mainly on reciprocal interaction strategies around creativity and innovation, critical and decisive judgment of problematic situations, knowledge management in the virtual modality [25,26,27].

The management around an organization has directed at work, production, the ef-ficiency of its processes in accordance with its planning, structure, strategic capacity, leadership and related factors that the contributions of Taylor's administrative theory and Fayol's proposal have constituted the precise references when addressing the relevance of management, since the first was directed towards the efficiency of the work effort, performance and the presence of planning and control principles; in the case of the second, the elements of organization, planning, direction, coordination, control are addressed as essential as the organization grows. In this sense, in the edu-cational field, this corresponds to the pertinent administrative and academic forms that lead to obtaining the results planned in advance [28].

Regarding virtuality, it is important to consider the theoretical proposal of Connec-tivism, insofar as it tends to address the significant implications in the adequate ap-plicability of virtual tools and environments that include information management and its coherent systematization. In this way, this specific proposal in a coherent way that organizational processes tend to be directed to contextual changes and the use of virtual platforms for the fulfilment of their planned institutional actions. Thus, this researcher's proposal is pertinent and more far-reaching in the current context of virtuality due to the state of health emergency, and e-learning methods are funda-mental for the development of the remote teaching process [29,30,31,32].

At the university level, the management of virtual education has been predisposed in the Ecuadorian case to the improvement of administrative aspects, such as remote service to users, the implementation of digital methodological strategies for teachers who were unaware of the use of the virtual tools. In the Peruvian educational reality, universities in the interior of the country have experienced a regular number of stu-dent dropouts due to connectivity problems due to living in rural areas without inter-net connection. In the same way, educational management has evidenced the need to implement teaching and administrative staff in digital skills, because the virtual modality has come to stay in academic and management activities in basic and university educational institutions both in Ecuador, Peru and the other countries of the globalized world [33,34,35].

Faced with the problem described, it has been raised: What is the comparative analysis between Peru and Ecuador on the management of virtual education during the pandemic? The purpose of the research has been to provide an academic contri-bution by comparing the virtual educational management processes in the Peruvian Ecuadorian educational realities in order to expand the theoretical framework around virtuality and its impact on the teaching environment of the aforementioned coun-tries.

3 Methods

Type, method and design: The research is of a basic type, because the objec-tive was to develop the theory of investigative competences, in addition to describing, explaining and predicting [36,37].

Participants in the study: In this sense, the research paradigm was positivism and the quantitative approach, characterized by being sequential and testing the hypotheses raised in the study, in application of the hypothetical deductive method [38,39]. In the study participate 302 students. There studied in the covid time. In this sample 33% and 39.7% was man of Ecuador and Perú for this work was de mayor percentage. The participants have between 17 and 55 years old. 58,3% was between 17 and 26 years old. 33.1% between 27 and 36; 6% between 37 and 46, finally 2.6% between 47 and 56. 92.1% of the participants was register in a private institution, 97.4% from de Ecuadorian and 86.8% from the Peruvian who answered the ques-tionary. In the table 1, described the distribution of participants by professional ca-reer.

Table 1: Distribution of participants by professional career

Career	Ecuador		Perú	
	f	%	f	%
Tourism and Hospitality	47	31.1	15	9.9
Management and Administration	41	27.2	20	13.2
International Business and Administration	48	31.8	41	27.2
Accounting and auditing	-	-	47	31.1
Systems engineer	1	0.7	13	8.6
Industrial engineering	1	0.7	7	4.6
International relations	13	8.6	8	5.3

Data collection technique and instrument: The survey technique was applied, for this the link of the electronic questionnaire was distributed to students residing in Guayaquil and Lima. The fundamental requirement was to have studied at the undergraduate level during the pandemic. Only the students interested in answering the questions proceeded to record the answers.

The questionnaire used and adapted is from Butnari, Nita, Anichiti and Brianza (2021), which collects data on the following variables: (a) PHCA, Students' desire to return to face-to-face classes; (b) ETC, Effectiveness of face-to-face courses; (c) EOE, Effectiveness of online courses during the pandemic; (d) AEI, Adaptation of the university to online education; (e) TSA, Adequacy of professors to virtual education [40].

Data analysis: The data were analyzed in the first instance with descriptive statistics. Then the U Mann Whitney test was applied to contrast the hypotheses and demonstrate the significant differences between the scores of each variable between Peru and Ecuador. The software used was SPSS 24 in Spanish.

4 Results and discussion

In table 2, students acknowledge mastering the use of the internet, allowing access to information for their learning process. There is a preference to enter the room through the shared link, and not directly through the virtual classroom. The technological resource available for the classes is a laptop and a smartphone.

Table 2: Internet domain and technological resources

Items	**Ecuador**		**Perú**	
	f	**%**	**f**	**%**
Master the use of the internet	144	95.4	132	87.4
Prefers to enter the class through the link and not the virtual classroom	105	69.5	126	83.4
It has a complete desktop PC (speaker, web cam, microphone)	71	47.0	61	40.4
Have an incomplete desktop PC	30	19.9	38	25.2
Have a laptop	133	88.1	126	83.4
Have a tablet	53	35.1	27	17.9
Have a smarthphone	144	95.4	133	88.1

Of the students from Ecuador, only 34.4% want to return to traditional classes, allowing them to share with their classmates (53.0%) and teachers (43.7%). 24.5% do not prefer face-to-face courses. 28.5% consider that it is not decisive for their learning to attend classes in person. There is a predisposition to communicate electronically with colleagues (74.2%). They consider that the development of a 100% virtual course by the university is possible (64.2%). 76.2% considered that the university developed online courses before the pandemic, allowing them to improve and continue with this modality during Covid-19. 60.3% consider that the teachers were understanding with the students, because many had difficulties adapting to the virtual platform. 62.3% considered that the teachers managed to transmit the thematic contents through the online class, for this they used some digital resources such as You tube, Kahoot, Menti, among others (73.5%), in addition to having effective communication between teacher and student (59.6%).

54.3% of students in Peru want to return to university. They prefer face-to-face classes (57.6%), because under this modality they guarantee their learning (55.6%). 66.2% want to see their classmates and 62.9% their teachers. Classes in the virtual mode are considered less motivating than face-to-face classes. Students have the predisposition to communicate online with teachers (73.5%). Faced with the Covid-19 scenario, the university adapted and provided the students with guides and videos to access and function in the virtual classroom, which for many was a new system, because Law 30220 did

not consider the virtual modality, which is why for which the universities did not develop the systems, nor technological competences.

In general, there is a predisposition of all students to adapt to online courses without having the direct assistance of the teacher or having to attend the synchronous class (56.3%), in addition to achieving self-discipline (72%). The universities implemented different security systems to access and protect the development of virtual classes. In summary, regarding virtual education during Covid-19 in Ecuador and Peru, 54.3% and 47.7% considered that it was efficient respectively.

Table 3 shows the results of the U Mann Whitney test statistic, where it is evidenced that there are no significant differences between Peru and Ecuador regarding the effectiveness of online courses during the pandemic (EOE, p = .350) and the Adequacy of professors to virtual education (TSA, p = .125). However, there are significant differences regarding: Students' desire to return to face-to-face classes (PHCA, p = .000), Effectiveness of face-to-face courses (ETC, p = .001) and Adaptation of the university to education online (AEI, p = .000). This situation is because Peruvian students want to return to face-to-face classes and consider that they are effective for their learning. However, Ecuadorian students consider that the university where they study quickly adapted to virtual education, in addition to the fact that the legal framework considers this system since the 1970s and has been adapting to the Ecuadorian educational reality.

Table 3: Test statistics

	EOE	PHCA	ETC	AEI	TSA
U de Mann-Whitney	10702,000	8480,000	8810,500	9017,000	10272,000
W de Wilcoxon	22178,000	19956,000	20286,500	20493,000	21748,000
Z	-,935	-3,924	-3,460	-3,513	-1,532
Sig. asintót. (bilateral)	,350	,000	,001	,000	,125

a. Grouping variable: Country Ecuador and Perú

Also, the multiple linear regression analysis was performed to determine the regression equation:

YEcuador = 14.752 +0.393 (X1) -0.542(X2)

YPerú = 10.647 +0.694 (X1) -0.331(X2)

YEcuador = EOE, Effectiveness of online courses during the pandemic

X1: TSA, Adequacy of professors to virtual education

X2: ETC, Effectiveness of face-to-face courses

Finally, the model explains the effectiveness of online courses during the pandemic in 38.5% and 45.6% for Ecuador and Peru, respectively, based on the adequacy of professors to online education and the effectiveness of its development, which allowed achieve the skills provided in each course.

The study showed that the management of virtual education in the Peruvian-Ecuadorian university contexts has been efficient from the perception of the students to the extent that they were able to adapt to the use of virtual educational tools during compulsory sanitary confinement.

This situation merited that teacher strengthen digital skills in interaction with students both in Peru and Ecuador with the effective purpose of achieving valid learning. The educational reality of both countries has shown the increase in the existing gaps in the lack of mobile and technological devices, online accessibility and little support from families [2,31,32]. The new virtuality scenario has represented a continuous challenge for all members of the Ecuadorian Peruvian university educational community in the development of professional and research skills [33,34].

The results obtained are associated with Benites (2021) [23] when addressing post-pandemic university education research, in the new scenario that teachers and students will develop. In this way, the present study has shown that in the Peruvian case they want to return to face-to-face (54.3%), since face-to-face university classes guarantee a better development of learning (55.6%). In the Ecuadorian case, the percentage of students who want to return to face-to-face is lower (34.4%) and that traditional classes are not decisive in the development of their learning (28.5%). Undoubtedly, the presence of educational virtuality has been established in a relevant way in higher education institutions and coincides with the proposal of Valencia (2020) [17] who has supported the urgent need to strengthen the digital competences of teachers and students before the virtual stage that has been integrated into the university curriculum design. Thus, the present research has identified that around 37.7% of teachers in the Ecuadorian case have not been able to transmit the thematic contents through the online class, while 62.3% if they used virtual tools such as You tube, Kahoot, Menti, lo that deserves a continuous implementation for the following teaching cycles that will be remote. In the Peruvian case, around 73.5% of the participants stated that there were no communication problems with the teachers and that relevant digital resources were used. In the same way, Gutiérrez and Díaz (2021) [4] by consolidating their study on educational digital virtuality in times of pandemic are associated with the results obtained around the interactions and use of mobile phones, technological computers have aroused interest in

students and teachers, since in the Ecuadorian higher educational reality [32].

The 76.2% considered that the university developed online courses before the pandemic, allowing them to improve digital skills during the pandemic. In the Peruvian case, the virtual modality had not been considered in the University Law, which is why the universities did not develop the systems or technological skills, but they adapted to the circumstances that occurred. In this sense, Huanca, Supo, Sucari and Supo (2020) [11] agreed, who argued that the health emergency has increased the use of technological devices, their applications in learning sessions, implementing digital skills [33,34].

Also, the results are associated with the study by Campaña, Flores, Melendres and Acosta (2021) [7] regarding the effective management of knowledge and teaching processes that involve the efficiency of virtual courses in which it was identified in Ecuador and Peru, 38.5% and 45.6% respectively, which shows an adequate predisposition and effectiveness in managing the training process and university educational practice in achieving the competencies of the courses and learning experiences. Likewise, they are associated with the research carried out by Yépez (2021) [9] in the implementation of educational management at a higher level in the face of the health emergency, highlighting the relevance of digital competence as in the present study has shown and has been addressed as a current topic in relation to virtual and technological education at the higher education level.

4 Conclusion

The purpose of the research was to analyze the management of virtual education during the pandemic in Peruvian and Ecuadorian university students, in the face of a new teaching scenario, in addition to the development of digital competences of both teachers and students during social isolation, such as result of the health emergency due to the Covid 19 pandemic.

The research shows that Ecuadorian students are not inclined to return to face-to-face classes, this due to factors related to the convenience generated with virtual studies that allow students to attend classes regularly, on the other hand, their Peruvi-an peers want to return the presence due to connectivity factors, and the general perception is that better learning is achieved. In the same way, educational virtuality has shown the social gaps in both societies; the lack of infrastructure in both coun-tries has been evidenced; being more evident in Peru due to its size and socioeconom-ic deficiencies.

The study showed that in the Ecuadorian educational reality, before the covid there were already 100% virtual undergraduate studies, which allowed some universi-ties to adapt to confinement without any difficulty because the organic law of higher education and its application regulations require to all universities incorporate the use of tics with tools such as virtual classrooms in the development of their academic activities even when the modality of the career is face-to-face. While in the Peruvian case, Law 30220 did not consider the virtual modality, for this reason many higher education institutions did not develop the systems or technological skills when the central government decreed social isolation.

It is also important to note that the research identified an effective management of the virtual training process, as well as the effective predisposition of the university teaching educational practice in the achievement of the competencies of the courses and learning experiences.

The findings of this study are relevant, because the covid-19 forced all societies to change their way of doing things, making it clear that in some cases, people lacked the necessary infrastructure in a society that was supposed to be affected positively for technology; these deficiencies would have nothing to do with the sizes of the countries, because it has been shown that two neighboring countries in the case of Ecuador and Peru, which are opposite in size and available resources, dealt with the impact of the pandemic in the development of academic activities in education. It is expected that in both countries the governments and control entities can develop the pertinent improvements so that these activities can be carried out more effectively and efficiently in a new normal that the world faces.

Consequently, future studies may address a systematic investigation, considering the perceptions of teachers, administrative staff, curricular managers during the de-velopment of virtual education, because the conception and work of digital compe-tences had a work accelerated by the presence of the pandemic in the Peruvian and Ecuadorian realities.

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