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Artículos científicos

Estudio del precio entre la instrucción virtual y la instrucción convencional: estudio de caso en el nivel de instrucción superior

***Study of the Price between Virtual Instruction and Instruction Conventional:
Case Study at the Higher Education Level***

***Estudo de preços entre a instrução virtual e a instrução convencional: um
estudo de caso no nível superior de instrução***

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Resumen

En el presente artículo se realiza un análisis y descripción económica acerca de lo que enfrentan los discentes universitarios de licenciatura y maestría que realizan sus estudios a través de la modalidad de instrucción virtual (IV) en comparación con la instrucción convencional (IC). Asimismo, se detecta el precio semestral y total en esas modalidades. La pregunta formulada fue la siguiente: ¿cuál es el precio total en instrucción virtual (IV) e instrucción convencional (IC), así como el precio total discente- semestre? El estudio se estima para Colombia utilizando información del Instituto Pedagógico. Los resultados indican una notable diferencia entre los precios financieros de acuerdo con los discentes de licenciatura y maestría, en donde para los primeros la instrucción convencional (IC) tiene más precio respecto a la instrucción virtual, mientras que en el caso de los alumnos de maestría, en la instrucción convencional el precio económico resultó menor.

Palabras clave: instrucción convencional, instrucción virtual, precios universitarios.

Abstract

In this article, an economic analysis and description is carried out about what university undergraduate and master's students face who carry out their studies through the virtual instruction modality (IV) in comparison with conventional instruction (IC). Likewise, the semester and total price is detected in the aforementioned educational modalities. The question asked was the following: what is the total price in virtual instruction (IV) and conventional instruction (IC) as well as the total price for student semester? The study is estimated for Colombia using information from the Pedagogical Institute. The results indicate a notable difference between the financial prices according to undergraduate and master's students, where for the former, conventional instruction (IC) has a higher price compared to virtual instruction, while, in the case of students from master's degree, conventional education the economic cost was less price.

Keywords: conventional instruction, virtual instruction, university prices.

Resumo

Neste artigo, é realizada uma análise e descrição econômica sobre o que enfrentam os estudantes universitários de bacharelado e mestrado que realizam seus estudos por meio da modalidade de ensino virtual (IV) em comparação com o ensino convencional (IC). Da mesma forma, o preço semestral e total é detectado nessas modalidades. A pergunta feita foi a seguinte: qual é o preço total da instrução virtual (IV) e convencional (IC), assim como o preço total aluno-semestre? O estudo é estimado para a Colômbia a partir de informações do Instituto Pedagógico. Os resultados indicam uma diferença notável entre os preços financeiros segundo alunos de graduação e mestrado, onde para os primeiros o ensino convencional (IC) tem um preço superior ao ensino virtual, enquanto no caso dos alunos de mestrado, no ensino convencional o preço econômico foi diminuir.

Palavras-chave: ensino convencional, ensino virtual, preços universitários.

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Introduction

Education plays a central role in the social life of every nation, since it seeks to improve the skills of citizens so that in the near future each person joins the labor field and contributes proposals that provide solutions to the needs that society demands. Although the concern of some institutions is to promote equilibrium - although in this ideal the differences that can occur between the pensums are usually forgotten - it is no less true that this is sometimes due to the lack of instruments that allow identifying the structure of prices between pensums. However, for the above to be crystallized, it is necessary to start and finish an educational curriculum in the different disciplines, either through conventional instruction (CI) —in a classroom— or through the different proposals that virtual instruction encompasses (IV), which require certain short, medium and long-term budgets.

In relation to the above, face-to-face educational training at the international level has become a productive economic factor that is sustained in three columns: quality, costs and coverage. As Daniel (1998) points out, quality is a direct characteristic of costs and the opposite of coverage, hence the importance of his analysis for the provision of instruction to applicants for bachelor's and master's degrees, academic degrees that could be truncated if the prices that each one of them demands are unknown.

In this regard, Rodríguez (2012) designed an operationality to establish the prices of higher education level in the absence of a practical instrument that would allow analyzing prices and collecting quality, accurate, timely, relevant and orderly information on said subject. If the nation and the institutions, both governmental and private, try to structure norms of a public nature to minimize academic, administrative, educational and economic problems, as well as to correct the crucial point of ambiguities, they would find themselves faced with the forcefulness that they are unaware of the origin of those ranks that explain such problems, such as the insufficiency of the infrastructure, the scarce group training of the different managerial degrees, among others.

Therefore, the objective of this research was to detect the total price in virtual instruction (IV) and conventional instruction (IC), as well as the total student-semester price to find the monetary gap between these two educational modalities. To do this, the following question was formulated: what is the total price in virtual instruction (IV) and conventional instruction (IC), as well as the total student-semester price? The hypothesis raised was that there is the total price in virtual instruction (IV) and conventional instruction (IC), as well as the total price for student-academic period in the instructional curriculum of the Pedagogical Institute, both in current and in constant currency with reference to period A for virtual instruction (IV), conventional instruction (IC) from period A to I. For this, the direct price method (Alexander, 2015) and the indirect price were applied (Baker, 2008).

Object of study

The object was the investigation of prices in the modalities of virtual instruction (IV) and conventional instruction (IC) in the Pedagogical Institute from the academic period A to I (2011-2019).

Objective

Discover the total price in virtual instruction (IV) and conventional instruction (IC), as well as the total price for student-academic period in the instructional curriculum of the Pedagogical Institute with respect to period A.

Hypothesis

Distance education is more economically affordable according to the total price for instruction in the type of virtual instruction (IV) and conventional instruction (IC), as well as the total price for student-academic period in the instructional curriculum of the Pedagogical Institute, both in current and constant currency with reference to period A for virtual instruction (IV), conventional instruction (IC) from period A to I.

Research question

What is the most affordable educational option according to the total price in virtual instruction (IV) and conventional instruction (IC), as well as the total student price-academic period?

Conceptual framing

The conceptualization of a virtual educational pedagogy does not differ much from other educational formats, as they also include teachers, students, content, learning methodologies, and managers. This means that in virtuality, as in face-to-face, the different ways in which content information is transferred coexist. Thus, learning in both models presents a guarantee for the generation of knowledge through a high level of teaching quality. However, virtual instruction demands a whole redesign and communication mechanisms different from those of face-to-face instruction (Duart, 2000).

Now, the important elements among these types of processes are the prices in virtual instruction (IV) and in conventional instruction (IC). Regarding the number of students, virtual instruction (IV) is feasible in a reduced range from the economic point of view, as long as the resources used are appropriate from the price point of view (Negi, 2009). These, in turn, in virtual instruction (IV), depend more on the changes produced by the interactions in institutional policies (Brimley, 2002; Ugeux, 2014). This means that the economic success of small virtual instruction (IV) models depends on the intelligence used in policy setting and skillful administration (Aubry, 2015; Baum, 2016; Canning, 2007; Clothier, 2003; Chapman, 2014; Checchi, 2006; Dobson, 2013; Fabian, 2018; Gerard, 2014; John, 2004; Johnstone, 2010; Jones, 2007; Patti, 2009; Ripoll and Balada, 2003; Seligman, 2012; Thompson, Peteraf, Gamble and Strickland, 2000; Unesco, 2003; Zumeta, 2012). The most significant reasonable prices that virtual instruction attracts (IV) are media performance, academic content transfer, and management. (Negi, 2009).

- a. *Price*: It is the value produced by the management of a pendulum or structure (Checchi, 2006; John, 2004).
- b. *Price per academic period*: This concept refers to the sum of values applicable to any of the matches by any denomination in an academic period. It includes entirely the values caused responsibly of whether they have been paid or not (Jones, 2007; Podmoguilnye, 2006).
- c. *Immediate price*: It is the one that is assigned to all the values that are attributable first-hand to the instruction carried out by the different school matches and that come from the procedures expressly granted for their instructional calculation (Clothier, 2003; Dobson, 2013).
- d. *Critical price*: It is that produced by the money markets of essential managerial correspondences, that is, global management, school utility, procedural assistance, physical structure, printers and bookstores. Likewise, everything that supports the instructional correspondence (BenDavid-Hader, 2018; Brimbley, 2002).

For their part, Anderson and Raiborn (2007) refer to the concept of price as the value given to the goods, resources or services acquired. This is the result of an economic sacrifice, the value of which is determined by the monetary exchange rate. In addition, prices may vary depending on the area where the student is located.

Instrumental framing

Demography

The census was drawn up with all the demographics and the computerized relationship information provided by the organizational secretary and the school secretary for the conventional instruction (IC) and virtual instruction (IV) variants.

Synopsis of the scheme carried out in the observation of total prices

The observation of prices was calculated with reliable reference from the academic period A to I. The immediate price is characterized by the salary of the teachers, and the critical prices are made up of the total price of the administrative positions (Alexander, 2015). Therefore, the other critical prices caused in the pensum are constituted by type of conventional instruction (IC) undergraduate, virtual instruction (IV) undergraduate and conventional instruction (IC) master's degree (Baker, 2008).

S_j = Addition of immediate prices and critical prices of an academic curriculum j .

k = Subgraph that distinguishes the registration of hike by academic period.

I_q = Graph of rise by academic period q admitting as price variation in relation to academic period A to I.

PT = Total price of the instructional curriculum for bachelor's and master's degrees in constant currency in relation to the academic period A to I.

$$PT = \left[\sum_{h=1}^f S_j \right] \cdot \left[\sum_{k=1}^g I_q \right]$$

About instrumental performances

The scheme uses the direction of the information of the educational prices of the undergraduate and master's levels through instruments in whose election comments and information from the following secretariats were contemplated: Academic Planning, Administrative Secretariat, Academic Secretariat, Structure Secretariat, of Computing, Secretary of Accounts, Secretary of Expenditures and Income, Secretary of Employment Liaison and Secretary of School Control.

Regarding the economic indicator, the price rise graph by academic period of Colombia was used.

About restrictions

One of the most significant obstacles was the school irregularity that has occurred in the Pedagogical Institute. In consideration of this observed inconsistency, each academic period was reviewed in a theoretical way, that is, when solving the relative prices by academic period, it was distributed from the conjecture that progress had been made regularly without setbacks. Once the immediate and critical prices were reached, theoretical by academic period, they were clarified considering school irregularity.

Analytical framing

Virtual instruction is interpreted by a succession of elements that are its own and that differentiate it from other types of training: non-presence, asynchronous communication, independent and autonomous work of the learners, the absence of face-to-face contact with the trainer and the use of technological resources.



In accordance with the above, it is important to note that the prices per student-subject and student-academic period have been considerably lower than their real price. It is, then, that the student-subject price in academic period A shows 157.15% above its calculated price, and for academic period I it increased even more, with a surcharge of 211%. In virtual instruction (IV), in academic periods A and B, the student-subject price was subordinate to its expected price, but throughout the season, and as of academic period A, the position began to change. In academic period I, the real price increased 1.61 times due to its approximate price, with a notorious 60.46% surcharge.

On the other hand, in the conventional type of instruction (CI), both in master's and bachelor's degrees, the price from academic period A to I has been higher than expected. In this last academic period I, the highest premium was in conventional instruction (IC) undergraduate, with 447.07%. The actual student-subject price had a price of \$ 305.00 current currency (table 2), while its expected price was \$ 69.00 current currency (table 1).

Tabla1. Cambio histórico del precio discente-asignatura previsto por periodo académico en el pénsum de instrucción, Instituto Pedagógico

Periodo académico	A	B	C	D	E	F	G	H	I
Pénsum de instrucción									
Total general	23	27	28	39	37	44	41	52	52
EC maestría	431	1133	631	689	649	1122	912	1087	1087
EC licenciatura	22	36	35	47	70	62	62	70	69
ENP licenciatura	811	3187	327	395	331	366	325	557	556

Fuente: Elaboración propia

Focusing only on the real price, the Master's Conventional Instruction (IC) achieved a higher student-subject price than the other instructional types, with \$ 2,012 common currency.

Differentiating this same price in the undergraduate field, the conventional instruction (IC) indicated a lower price than the virtual instruction (IV), equivalent to \$ 305.00 and \$ 894.00 current currencies, respectively (table 2).

Tabla 2. Cambio histórico del precio discente-asignatura por periodo académico en el pénsum de instrucción, Instituto Pedagógico en monedas corrientes

Periodo académico Pénsum de instrucción	A	B	C	D	E	F	G	H	I
Total general	56	48	80	114	120	111	118	143	157
EC maestría	1153	1877	1392	1461	1356	1804	1554	1853	2012
EC licenciatura	64	95	171	182	197	2016	251	278	305
ENP licenciatura	288	2316	383	602	632	569	578	788	894

Fuente: Elaboración propia

Framed in this academic period, the real price was \$ 25,575.00 current currency (table 3).

Tabla 3. Cambio histórico del precio total discente-periodo académico en el pénsum de instrucción, Instituto Pedagógico

Periodo académico Pénsum de instrucción	A	B	C	D	E	F	G	H	I
Total general	25575	20564	41194	60236	64081	63773	67513	82105	90518
EC maestría	51810	44978	59778	62722	56882	72066	73962	81515	89840
EC licenciatura	25857	38626	61922	83634	96002	108162	129614	146929	164244
ENP licenciatura	8914	9250	10290	19826	29578	20370	31703	39740	50055

Fuente: Elaboración propia

Consequently, the price represented 24.28% of that referred to in academic period A, triggering a low gradient impact of 2.26% in constant currency. When considering the gradient figures, of the student price-academic period at current prices, it can be seen that although they have increased, the more expensive course has reduced their impact, at the moment of manifesting low repercussions in some of them (Clothier, 2003; Ugeux, 2014).

Discussion

The subject of face-to-face or distance education in terms of its price, as well as the definition of its concept in itself is - to date, and especially in this technological age - a topic that gives rise to various discussions. If we add to the above the need to evaluate the different modes of instruction, the task becomes a new task for those who try to conceptualize and define the way to carry out the teaching-learning process.

In this sense, the percentage of addition of the immediate prices and the critical prices of an academic pension proposed here should not be confused with the index of anchored on a specific date on which this scientific study was carried out, since it refers to figures that they may vary over time. For this reason, the percentages of the overpricing of face-to-face education could change to the point of being more economical, provided that the commitments and functions of every university are fulfilled, that is, transmission of information, coverage, equity and generation of knowledge (Maza -Ávila, Vergara-Schmalbach and Romero, 2017).

In addition, it must be taken into account that in order to compare the monetary between two educational modalities they must not only belong to the same institution, but also must be sure that the undergraduate and graduate degrees analyzed are from the same school year.

By expressing and evaluating the effects achieved, virtual instruction (IV) is economically feasible to a lesser degree, as long as the options that are applied are in accordance with the measure of the population being studied and are appropriate from the price parameter (Michael, 2005). At the time, in virtual instruction (IV) there is more obligation to the variants made by modifications in organizational skills (Ugeux, 2014). This implies that the economic acceptance of the reduced virtual instruction (IV) examples are derived in much of the reasoning that is applied in the indicative of policies and agile management (Thompson *et al.*, 2000).

It is also worth mentioning that the results reflect a relevant difference between the two types of education presented in this document due to the economic access advantages of virtual instruction; however, this educational modality needs an adequate methodology of use. In the future, it is hoped that the selection of information and communication tools can be solved to strengthen the various forms of education in order to support distance learning.

Conclusions

As has been accentuating since the beginning of this study, virtual instruction and digital learning are not only taking hold because technologies will always be an incentive for educational innovation. In fact, and according to the statistical organization of the Pedagogical Institute - and taking into consideration the importance of preparing a considerable number of subjects in the rural area - it is definitely inevitable that an increase in resources will be provided to the type of virtual instruction (IV).

In this sense, from academic period A to, I, the impact of the semester price gradient in virtual instruction (IV) at constant prices was one of the most increased, with 21.95% in comparison with conventional instruction (IC) undergraduate and mastery, which peaked 7.26% and 1.23%, respectively. On the other hand, the impact of their enrollment increase (with 18.43%) and that of the student price-academic period (with 15.26%) were high, which constituted a corresponding increase in their fees.

In conventional instruction (CI) undergraduate, the recovery of the price gradient was 7.26% at constant prices, and the number of students increased to one of the smallest repercussions (with 5.22%). This low gradient has to do with the school irregularity that has not accessed its staggered amplitude, which makes it difficult for recent applicants to enter. Therefore, the price of the student-academic period has been high, with an increase of 14.44%.

What has been stated in previous lines shows that the types of instruction with higher benefit in their prices (taking into account this benefit as the correspondence between the increase in enrollment and that of the price-academic period throughout the academic cycle) were virtual instruction (IV) and conventional instruction (IC) masters. Naturally, Conventional Instruction (IC) undergraduate underperformed on their prices.

Future lines of research

The following future lines of research emerge from this study:

- Inquiries in classrooms of primary, secondary, preparatory, bachelor's and master's degrees about the prices they make.
- Local studies in educational institutions on the effects of pandemics and the period of pandemics on the prices they make on their members.

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