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# Evaluating management performance and challenges in Ecuadorian online education

*Evaluación del desempeño y los desafíos de la gestión en la educación en línea ecuatoriana*

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## Abstract

This research responds to a diagnostic gap concerning management performance in Ecuadorian online higher education. It evaluates an academic unit of a private HEI in Cuenca. The objective is the assess critical issues such as sustainable planning, pedagogical innovation, quality assurance (integrity) and student engagement. Afterward, a literature review contextualizes global trends in different regions including Southeast Asia, Europe, Latin America, and Ecuador. The methodology employs a sequential explanatory mixed-methods design, triangulating qualitative content analysis with a quantitative maturity model, a financial review (2021-2023), and enrollment contingency tables. Findings indicate a "Defined Level" of management maturity (3,62/5,0), reflecting established processes but unoptimized. Financial analysis demonstrated resilient profitability (13,11%) after an initial decrease, while a targeted pricing strategy increased new student enrollment probability by 76,73%. These results contribute with direct evidence for the necessity of optimizing technology-related processes to advance from established procedures to data-managed operations.

Keywords: Online Education Management; Digital transformation; Higher Education Institutions-HEIs.

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## Resumen

Esta investigación responde a una brecha diagnóstica concerniente al desempeño de la gestión en la educación superior en línea ecuatoriana. Evalúa una unidad académica de una IES privada en Cuenca. El objetivo es evaluar cuestiones críticas como la planificación sostenible, la innovación pedagógica, la garantía de calidad (integridad) y la participación estudiantil. Posteriormente, una revisión de literatura contextualiza las tendencias globales en diferentes regiones, incluyendo el Sudeste Asiático, Europa, América Latina y Ecuador. La metodología emplea un diseño de métodos mixtos explicativo secuencial, triangulando un análisis de contenido cualitativo con un modelo de madurez cuantitativo, una revisión financiera (2021-2023) y tablas de contingencia de matrículas. Los hallazgos indican un "Nivel Definido" de madurez de gestión (3,62/5,0), que refleja procesos establecidos pero no optimizados. El análisis financiero demostró una rentabilidad resiliente (13,11%) después de una disminución inicial, mientras que una estrategia de precios dirigida aumentó la probabilidad de matrícula de nuevos estudiantes en un 76,73%. Estos resultados contribuyen con evidencia directa sobre la necesidad de optimizar los procesos relacionados con la tecnología para avanzar desde procedimientos establecidos hacia operaciones gestionadas por datos.

Palabras clave: Gestión de la Educación en Línea; Transformación Digital; Instituciones de Educación Superior (IES).

## Introduction

Nowadays, the Higher Education outlook is extending beyond traditional classrooms to implement digital tools that offer a remarkable learning accessibility. The Organization for Economic Co-operation and Development-OECD emphasizes how this change resulted from the necessity for higher education systems to adapt and succeed in this evolving environment. The projections indicate a growing tendency for 2030, over 300 million young people worldwide will hold higher education qualifications in G20 countries (OECD, 2019). Hence, Private Higher Education Institutions-HEIs need to implement digital transformation strategies to increase accessibility, improve flexibility, and meet the necessities of their students.

The technological advancements, widespread connectivity, and the demand for a workforce with advanced digital skills are driving the transition to online higher education. This implies a growing necessity to be aligned with a digital world, where technological specialization has become essential (Palvia et al., 2018); nevertheless, this transition is not only about the adoption of digital tools. For private HEIs, it represents a multidimensional framework involving the reconceptualization of academic approaches, resolving problems related to academic integrity, and validating the recognition of qualifications (Pathak & Palvia, 2021).

The COVID-19 pandemic accelerated the response to these challenges, uncovering a digital gap that limits access to education and digital literacy (Flores, 2023). This transformation needs a balance amid financial stability, academic quality, and social impacts. These core components are explained in detail below.

## The convergence of multidimensional challenges

Globally, private Higher Education Institutions (HEIs) face complex difficulties in online education management, particularly in finding a balance amid resource constraints and the demands of an evolving, commercialized academic field (De Wit & Altbach, 2020). This creates a discrepancy between how HEIs generate revenue and maintain education quality, resulting in difficult decisions between implementing short-term, market-based approaches or investing in long-term academic excellence. This aspect defines the modern digital education landscape, exposing a complex of deeply interconnected issues that affect institutional strategy, operations, and stakeholders impact.

This multidimensional challenge is centered on four specific issues. The first is financial sustainability; private HEIs often depend on tuition fees and face volatile student demand, requiring innovative strategies and rigorous financial accountability to manage innovation costs (OECD, 2019). Second, the transition involves deep pedagogical innovation that extends beyond simply digitizing content, requiring robust professional development for faculty to design engaging and effective virtual courses. Third, quality assurance and academic integrity are necessary. The legitimacy of online programs needs proven value recognition, as they are often perceived by peers and employers as having lower standards (Palvia et al., 2018), while HEIs must implement rigorous digital processes to ensure academic honesty in unsupervised settings. Finally, these circumstances lead to student engagement, learners' isolation, technology access and cost barriers (Pathak & Palvia, 2021), making their continuous student feedback essential to refine program quality and identify potential issues (Palvia et al., 2018).

## Online learning management affairs in Southeast Asia

The growing demand of e-learning education in Southeast Asia highlights the importance of an adequate management in Higher Education Institutions-HEIs. A high-quality online learning experience for students entails a strong focus on refining pedagogical design, providing adapted training for educators and implementing strong evaluation mechanisms (ADB, 2011). These measures tackle challenges related to access, equity, and the overall quality of online learning programs.

The expanding digital economy, accelerated by post-pandemic growth, constitutes an opportunity to invest in the development of digital and essential 21st-century skills through collaboration of public and private sectors (ASEAN Secretariat, 2020). By equipping graduates with these relevant competences, HEIs can foster innovation, improve employability, and contribute to the current region's digital transformation. Furthermore, incorporating virtual exchange programs into curricula and strengthening quality control mechanisms can improve students' digital literacy, preparing them for the modern workforce needs.

## Digital education in Europe: quality and global connections

The quick evolution of digital education in European higher education was accelerated by the COVID-19 pandemic. Universities have adopted diverse online pedagogies, which includes synchronous hybrid, blended, and online learning. The standard of them requires a multi-level quality assurance approach that includes from the course design to national policies, which provides benchmarks for self-assessment and peer review (Ubachs & Henderikx, 2022).

Complementarily, the application of maturity, which reflects evidence-based decision-making, contributes to continuous improvement that refines digital education practices (Van Valkenburg et al., 2019). The management of virtual education is directly related with internationalization. The universities participate in collaborative initiatives such as joint curricula and virtual mobility, supported by regional plans, the European Universities Initiatives, for instance.

Technology has a critical role in these actions, redesigning internationalization through online partnerships and virtual exchanges. Students and staff gain a global perspective without physical mobility. This convergence of digital education creates challenges and opportunities for contributing to high-quality education in an interconnected world.

## An Ecuadorian evaluation on virtual education management in the Latin American context

These global disruptions are particularly relevant in Latin America, this evolution requires a critical re-evaluation of existing academic structures to secure the quality of education in distance and mixed learning environments (Argüelles-Cruz et al., 2021). Managing these transformations, which require a critical review of existing academic structures, depends on a strategic focus on the technological, pedagogical, and organizational dimensions (Zapata Cortés et al., 2021). In this context, the effective management of virtual education in the region needs special attention to technological, pedagogical, and organizational dimensions (Martínez-Pérez & Rodríguez-Abitia, 2021).

In Ecuador, this trend is also evident, with technological advancements influencing flexible academic models and online learning being considered as a strategy for social inclusion (Espín-Álvarez, 2021). Despite this, there is a gap in the literature because most Ecuadorian research has focused on student perceptions or initial transition difficulties (Castro Rivera & Hermosa Llanos, 2022), instead of on managerial effectiveness. Thereby, while general problems are identified, there is a specific lack of diagnostic studies using a mixed-methods approach to evaluate the management performance of online academic units in private Ecuadorian HEIs.

As a response to this gap, the objective of this research is to evaluate the management performance of an online academic unit at a private HEI in Cuenca, Ecuador. This study applies a sequential explanatory mixed-methods design, which includes content analysis, a maturity model,

financial analysis, and contingency tables to diagnose its performance and present data-driven insights for strategic enhancement. The next section explains it in detail.

## Methodology

This research applies a sequential explanatory mixed-methods design to investigate management challenges in the Online Academic Unit of a private Higher Education Institution in Cuenca, Ecuador. It integrates qualitative content analysis, which defines categories, and quantitative methods, including a maturity model to validate these categories within the HEI context, financial analysis for a comprehensive evaluation, and contingency tables based on online students' enrollment outcomes, ensuring methodological triangulation (Taherdoost, 2022).

### Qualitative Phase: Content Analysis

The first phase uses qualitative content analysis to reduce and examine textual and visual data, preserving its original context to find themes and determine significant interpretations (Vogl et al., 2019). This approach analyses institutional documents, processes, strategic plans and any other relevant qualitative data of the private HEI. This inductive strategy finds insights from the data that offers an excellent understanding of the institution's governance, strategic priorities, and management challenges.

### Quantitative Phase: Analysis in context tools

This phase complements qualitative findings, starting from macro-level insights to analyzing specific contexts. It begins with a digital maturity model under an online education approach, employing a Likert scale from 0 to 5, adapted from Santana, Daneva and van Eck's levels (2007). They are "0, non-existence of processes", "1, Initial level", "2, Repeatable level", "3, Defined level", "4, Managed level" and "5, The processes are optimized". Patterns are confirmed across categories derived from content analysis. Key data from the private Higher Education Institution's official documents, including Policy, Objectives scope of the Quality Management System, Educational and Pedagogical Model, Strategic Plan and Management reports, are evaluated to determine the level score for each category.

Next, the financial health of the HEI is evaluated using liquidity, solvency, profitability, and efficiency indicators. It examines balance sheets and income statements from 2021 to 2023. Finally, contingency tables analyze the probability of student enrollment in online programs in three academic periods.

## Sample

A non-probability sampling method is employed for both the qualitative and quantitative phases. Nevertheless, the usage of numerical information helps to reduce analysis bias and supports adequate triangulation. In the qualitative phase, snowball sampling is implemented to identify the most relevant categories, resulting in 20 representative analyzed resources.

For the quantitative phase (85 observations), convenience sampling is applied in the maturity model to assess the content analysis categories, using Likert scale evaluations derived from institutional policies and reports.

Concerning the financial analysis, judgmental sampling is conducted, based on the official quantitative data obtained from balance sheets of last four terms. Likewise, judgmental sampling is selected for the contingency tables analysis, derived from the official student enrollment report of the last three academic cycles.

## Results

The first part of this research examines the defined categories of content analysis that describe the HEI challenges, which are presented in Table 1, keeping in mind the Ecuadorian context within online education.

Table 1. Content Analysis results

| Category | Description | Source(s) |
|---|---|---|
| Strategic adaptation and digital transformation | Effective management of online HEIs requires an extensive digital transformation that involves changes in processes, cultural internalization and the definition of e-learning policies. It responds to evolving educational demands. Frameworks such as digital transformation roadmaps are essential for guiding these systemic changes. | Benavides et al., 2020; Pathak & Palvia, 2021; Roller & Lavrakas, 2015; Williams et al., 2015 |
| Operational management of online teaching | The adoption of best practices in online education is key for effective management during disruptions such as the COVID-19 pandemic. It needs quick solutions for the transition to virtual teaching and highlights the implementation of adaptable management protocols improved by continuous stakeholder feedback. | Roller & Lavrakas, 2015; Williams et al., 2015 |
| Addressing Challenges and Ensuring Efficacy | Despite the advantages of online education in terms of cost and time efficiency, it faces significant challenges that include student engagement, personalized learning experiences, and academic integrity. The adoption of synchronous online education counteracts these limitations of asynchronous education. | Palvia et al., 2018; Roller & Lavrakas, 2015; Williams et al., 2015 |
| Technological Infrastructure and Systems | The successful implementation of information and communication technology (ICT) is a critical factor. Institutions have to integrate digital platforms, IT infrastructure, and information systems. | Benavides et al., 2020; Pathak & Palvia, 2021; Piattini Velthuis & García Rubio, 2015; Roller & Lavrakas, 2015 |

| Category | Description | Source(s) |
|---|---|---|
| Data Analysis and Quality Improvement | Continuous data analytics is crucial in proactive management for maintaining quality in online education and service. Data-mining techniques can help identify students' needs and predict performance. Analyzing student interactions in online systems can refine the development of effective teacher support systems. | Platt, 1992; Roller & Lavrakas, 2015 |

Source: own elaboration.

Note. The categories consider documents of the private HEI.

These findings are triangulated in the second phase, starting with a Maturity Model (Table 2) to assess each category. Strategic adoption and digital transformation achieved a "Defined Level", which reflects the existence of specific policies and objectives that support digital transition. Operational management of online teaching, also reached a "Defined Level"; it highlights the implementation of learning and management digital platforms.

Similarly, Addressing Challenges and ensuring Efficacy obtained a "Defined Level", attributed to a model focused on continual improvement and the use of Key Performance Indicators to evaluate service quality results. Technological Infrastructure and Systems also reached a "Defined Level", evidencing the adoption of new virtual platforms, digital teaching resources, IT tools for management processes, digital document management systems with electronic signatures, the establishment of IT regulations and digital skills training for academic staff. Meanwhile, Data Analysis and Quality Improvement indicated a "Defined Level", corroborated by the implementation of policies and systems for continuous improvement, including the Balanced Scorecard and Strategic Operational Plans.

Table 2. Categories assessment of Content analysis in official documentation of the private HEI

| Categories | R1 Policy, Objectives scope of the Quality Management System | R2 Educational and Pedagogical Model | R3 Strategic Plan | R4 Management report | Result |
|---|---|---|---|---|---|
| (A) Strategic adaptation and digital transformation | 2,50 | 3,00 | 3,33 | 4,33 | 3,27 |
| (B) Operational management of online teaching | 1,00 | 4,00 | 3,50 | 3,50 | 3,50 |
| (C) Addressing Challenges and Ensuring Efficacy | 3,00 | 3,29 | 4,33 | 4,33 | 3,63 |
| (D) Technological Infrastructure and Systems | 1,00 | 3,75 | 4,00 | 4,00 | 3,74 |
| (E) Data Analysis and Quality Improvement | 2,67 | 3,44 | 4,30 | 4,33 | 3,80 |
| Total | 2,03 | 3,50 | 3,89 | 4,10 | 3,62 |

Source: own elaboration.

Note. The results present the total obtained points of a Likert scale, from 1 to 5, based on evidenced findings in the documents.

Given these results, the private HEI has started its digital transformation through the implementation of formal policies, plans, and management tools. However, the online aspects within each category are not fully integrated. Consequently, the overall assessment reaches 3,62, a "Defined Level"; this outcome reflects a precise evaluation across all categories within the organization context.

The financial health analysis (Table 3) also complements the triangulation. The private HEI maintains adequate liquidity to meet short-term obligations, with ratios generally above 1; nonetheless, the 2021 decline signals a need for caution in cash flow management during economic disruptions. The recovery in 2022–2023 is positive and stable, suggesting that the institution should maintain to maintain it due to handling potential enrolment fluctuations or operational cost increases. The solvency is healthy, with low debt levels and consistent ability to cover interest expenses. The conservative debt strategy minimizes financial risk. The 2021 challenges were temporary, and the institution's solvency remains robust, supporting long-term stability.

Table 3. Financial situation

| Indicator | | Formula | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|
| Liquidity | Current Ratio | Current Assets/Current Liability | 1,11 | 0,99 | 1,29 | 1,23 |
| | Quick Ratio | (Current Assets-Inv.)/Current Liability | 1,10 | 0,98 | 1,27 | 1,21 |
| Solvency | Debt-to-Equity | Total Liability/Total Equity | 0,21 | 0,3 | 0,24 | 0,22 |
| | Interest Coverage | EBIT/Interest Expense | 4,87 | 3,12 | 5,01 | 4,25 |
| Profitability | Net Margin (%) | Net Income/Revenue | 14,48% | 8,49% | 13,11% | 10,77% |
| | ROA (%) | Net Income/Total Assets | 4,95% | 2,89% | 4,97% | 4,03% |
| Efficiency | Receivables Turnover | Revenue/Accounts Receivable | 2,34 | 2,90 | 3,58 | 3,55 |
| | Asset Turnover | Revenue/Total Assets | 0,34 | 0,34 | 0,38 | 0,37 |

Source: own elaboration.

Profitability weakened in 2021 (8,49%), likely due to pandemic-related circumstances. However, it demonstrated a resilient recovery in 2022 (13,11%). The 2023 drop in net margin and ROA (4,03%) suggests challenges in maintaining high profitability due to rising costs in salaries benefits and depreciation. The HEI must focus on cost efficiency and revenue diversification, which includes online programs, to stabilize tis margins.

The operational efficiency improved in the analyzed period, particularly in receivables collection, strengthening cash flow, a key factor in mitigating tuition dependency. Asset turnover remains low, consistent with the nature of significant fixed assets. Nevertheless, the slight improvement in 2022–2023 suggests better revenue generation from existing resources. There is a potential improvement in the assets and collections by optimizing and developing digital options, given that the current non-current assets are already the primary source of revenue.

After analyzing the online education management categories and financial situation from a macro perspective, Table 4 presents the final component of the triangulation, the total number of students enrolled in the last three academic periods.

Table 4. Contingency table of enrolled students by online careers

| Online careers | 0 (Non-students) | 1 (New-students) | Total |
|---|---|---|---|
| Career 1 | 195 | 30 | 225 |
| Career 2 | 536 | 110 | 646 |
| Career 3 | 154 | 58 | 212 |
| Career 4 | 214 | 73 | 287 |
| Career 5 | 229 | 56 | 285 |
| Total | 1.328 | 327 | 1.655 |

Source: own elaboration.

Note. The academic periods are April - September 2024, October 2024 - March 2025 and April - September 2025.

On average, there were 109 new students per period. The most popular online program is Law, accounting for 33.64% of new enrolments, with a 17.03% probability of being selected. The second most preferred online option is Pedagogy of National and Foreign Languages, attracting 22.32% of new students and showing a selection probability of 25,44%. Next is Social Work, representing 17.13% of new admissions, with a 19,65% likelihood of being chosen. Marketing and Market Intelligence also attracts a significant share, constituting 17.74% of new students, and has the highest probability of selection at 27.36%. Lastly, Accounting and Auditing is the least demanded online career, with only 9.17% of new students and a relatively low selection probability of 13.33%.

Table 5. Contingency table of enrolled students by academic period

| Academic Period | 0 (Non-students) | 1 (New-students) | Total |
|---|---|---|---|
| April - September 2024 | 694 | 105 | 799 |
| October 2024 - March 2025 | 409 | 142 | 551 |
| April - September 2025 | 311 | 105 | 416 |
| Total | 1.414 | 352 | 1.766 |

Source: own elaboration.

Complementarily, Table 5 presents the results for each academic period, covering all online programs. A notable improvement of 76,73% in the enrolment probability of new students, which increased from 13,14% to 24,54%, is observed between the April–September and October–March 2025 periods. This is result of an extensive advertising campaign that generated numerous reservations but did not result in enrolments payments. As a response, a benchmarking analysis identified a cost-reduction strategy that enhanced the enrolment conversion rate effectiveness. It involved reducing 18,33% of reservation fee, one month before the start of classes, as well as lowering 19,35% the enrolment fee. Additionally, a monthly payment option for five months (covering the full cycle) was applied.

During the October 2024-March 2025 and April–September 2025 periods, a noticeable improvement in efficiency and effectiveness was observed, marked by a 2.86% increase in the total number of new enrolled students. Despite a decrease in the total number of prospective clients, the enrolment ratio rose to 25.24%. This outcome resulted from the personalized service provided to the smaller group of reservations, which included continuous follow-up through phone calls and emails to secure enrolment.

## Discussion

This research indicates that planning, operational processes, and technological transformation still require greater process maturity in the reviewed private HEI. It is important to highlight that the presented model has not been evaluated in Ecuador. With this in consideration, the outcomes are discussed for each component in the following paragraphs.

First, the Policy, Objectives, scope of the Quality Management System reached the "Repeatable level" because it is primarily optimized for classroom-based education. Professors are still in the process of adopting online teaching methodologies. Although, quality management considers the ISO 9001:2015 standards, its implementation remains partial. Furthermore, digital infrastructure has not been prioritized.

Second, the Educational and Pedagogical Model achieved a "Defined level", showing opportunities for improving previous decision-making procedures. Online teaching staff need to strengthen and update their competencies in digital education. Additionally, indicators are defined to measure learning results from multiple perspectives (students, managers and co-workers). The teaching framework is designed according to market-based trends in Hispanic America and Europe.

Third, the Strategic Plan also obtained a "Defined level". The guidelines for addressing changing market requirements are evident at the macro (managerial) level. Nevertheless, digital infrastructure must not only follow trends but also ensure that professors are well trained in its use. The Balanced Scorecard incorporates specific indicators for monitoring the accomplishment of each objective, including the development of specific processes for online education such as document management systems, IT usage regulations, security, among others. Explicitly, the plan emphasizes in continuous process improvement, management tools, operational indicators and data-driven strategic decisions.

Fourth, the Management Report attained a "Managed level". Its objectives include digital transformation, internationalization and specific goals for measuring strategy accomplishments, while differentiating between teaching formats. Furthermore, monitoring the coded and executed budget represents an effective mechanism to control the use of financial resources. Complementarily, compliance indicators value student enrolment, faculty and programs. This represents transparent accountability, which is key for quality enhancement.

The financial analysis and the contingency tables reinforce the findings obtained in the five evaluated categories. Profitability remains stable after the pandemic period, and solvency provides enough capacity to make upcoming investments in digitalization, training, academic control and management evaluations. Likewise, efficiency indicators confirm the existence of a quality management approach in the HEI. All these efforts contribute to an increment in student enrolment for online programs, driven by efficient client service and targeted advertising.

The evidence presented above can be contrasted with other regions. In Asia (ADB, 2011) the focus is also on enhancing professors' competences in digital skills. A similar tendency exists in Europe (Ubachs & Henderikx, 2022), where funding is located in technologies that adapt to program needs. In Latin America, private HEIs are digitalizing administrative, operational and academic processes (Argüelles-Cruz et al., 2021), improving the curricula and organizational chart to respond to the requirements of e-learning education. However, Ecuadorian HEIs in their next strategic decisions must include online exchange programs, the implementation of hybrid models combining online and in-person programs, and governance structure adaptations to these relevant changes.

Further investigation, applying the same methodology across private HEIs in Ecuador, is necessary to define a benchmarking framework for Ecuadorian online education. Nevertheless, this study contributes data-based insights for Higher Education decision-makers, complementing their analyses and supporting evidence-based policy and management strategies.

## Conclusion

This research evaluated the management performance of the Online Unit in a private HEI though a robust triangulation of Content Analysis, Maturity Model, Financial Analysis and Contingencies tables, which increased the validation of the results. Although the HEI has made significant progress in its digital transition, it is necessary further internalization and optimization of technology related processes at the Strategic, Managerial, and Operational levels. Despite the consideration of technology challenges in strategic planning that includes defined policies, digital tools, and infrastructure development, the organization needs to enhance efficiency and effectiveness of managerial and operative tools to integrate them across all the departments.

The management of online education represents more than a technological challenge; it requires a comprehensive and adaptive approach. Operational excellence is relevant, with particular focus on online teaching practices, student engagement, and learning quality. This suggests that HEI must implement planned digital solutions across all areas of their operations and maximize them. Furthermore, while the digital infrastructure and systems are essential, the continuous feedback from students and staff, using Key Performance Indicators-KPIs, is not only beneficial but necessary to refine educational online strategies and respond to evolving student needs.

At the same time, there are adequate conditions to enhance the financial health by allocating resources to the online unit. This would diversify the income and respond to the demand requirements of e-learning programs. Additionally, the optimization of the current technology could lead to cost reductions in operational areas. It is highly recommended to perform a cost-benefit analysis when planning further investments in digital infrastructure, especially given the enrolment rate fluctuation and the growing competition in the online education sector locally and internationally.

Lastly, the successful management of the Online Unit in a private HEI needs to be a dynamic and continuous process. It requires constant adaptation, with a strong emphasis on strategic alignment, operational agility, and technological advancement. Despite the fact that the strategic level has defined policies for digital implementation, the development of digital tools and infrastructure is pivotal for optimization in all the organization.

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