MULTIDISCIPLINARY SCIENTIFIC JOURNAL

NEYART NA

— Vol. 4 No. 4 —

July–December 2026

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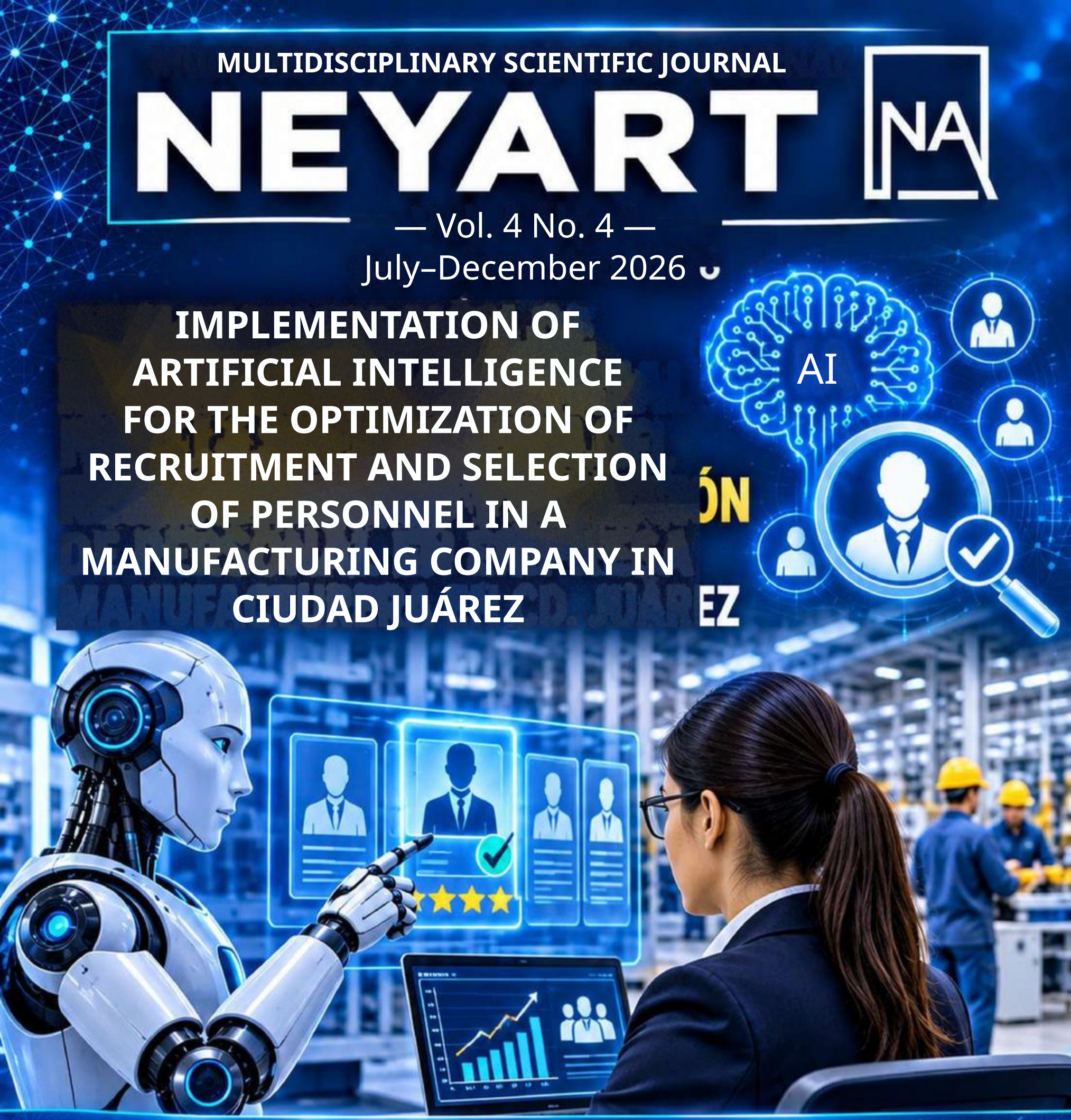

ARTIFICIAL INTELLIGENCE | SMART RECRUITMENT | SELECTION OF PERSONNEL | HUMAN CAPITAL | MANUFACTURING COMPANY

ISSN: 2992-7161

Innovation • Human Resources • Industry 4.0

NEYART Journal
ISSN: 2992 - 7161

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IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE FOR THE OPTIMIZATION OF RECRUITMENT AND SELECTION OF PERSONNEL IN A MANUFACTURING COMPANY IN CIUDAD JUÁREZ

Ángel Ricardo Lerma Fuentes
Instituto Tecnológico de Cd. Juárez
https://orcid.org/0009-0001-5010-1737
lerma.aricardo@gmail.com

René Saucedo Silva
Instituto Tecnológico de Cd. Juárez
https://orcid.org/0000-0002-8123-4313
resa6314@hotmail.com

Aztlán Elohim Bastarrachea Almodóvar
Ciudad Juárez Institute of Technology
https://orcid.org/0000-0002-3577-6621
aztlan.ba@cdjuarez.tecnm.mx

Alejandra Herrera Chew
Ciudad Juárez Institute of Technology
https://orcid.org/0000-0003-4482-4370
alejandra.hc@cdjuarez.tecnm.mx

Portillo Gallardo, María Elizabeth
Ciudad Juárez Institute of Technology
https://orcid.org/0009-0006-3410-3966
maria.pg@cdjuarez.tecnm.mx

DOI: https://doi.org/10.61273/neyart.v1i2.241 | **Received:** July 14, 2026 | **Accepted:** September 21, 2026 | **Published:** October 26, 2026

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Abstract— This research project, titled "Implementation of Artificial Intelligence for the Optimization of Recruitment and Selection of Personnel at a Company Located in Ciudad Juárez, Chihuahua," This company specializes in the manufacturing and supply of fuel injection systems and components for the automotive industry. The objective is to reduce the time required for the recruitment and selection process, thereby increasing efficiency and the quality of hires through the implementation of an artificial intelligence system in the company's Human Resources department. The project methodology included an analysis of the current process, as well as the selection and implementation of the most appropriate artificial intelligence tools, such as: LinkedIn Talent Insights for analyzing talent trends and identifying potential candidates in real time; HireVue for assessing communication, leadership, and adaptability skills; and Recruitee to facilitate automated application management and optimize communication with applicants; Training for Human Resources staff on the use of the new tools was also included. The main results achieved include a significant improvement in the recruitment process, with the identification of suitable candidates and a significant reduction in selection times, leading to a 43% reduction in hiring times.

Keywords-- Artificial Intelligence, Optimization, Human Resources, Personnel Selection.

Abstract-- This research project, titled "Implementation of Artificial Intelligence to Optimize Personnel Recruitment and Selection in a Company Located in Ciudad Juárez, Chihuahua," focuses on a company dedicated to manufacturing and supplying fuel injection systems and components for the automotive industry. Its objective was to reduce the time required for personnel recruitment and selection, while improving hiring efficiency and quality through the implementation of an artificial intelligence system in the company's Human Resources department. The project methodology involved analyzing the current process and selecting and implementing the most appropriate artificial intelligence tools, such as LinkedIn Talent Insights to analyze talent trends and identify potential candidates in real time; HireVue to assess communication, leadership, and adaptability skills; and Recrutee to automate application management and optimize communication with applicants. Human Resources staff were also trained in the use of the new tools. The main results included a significant improvement in the recruitment process, the identification of suitable candidates, and a considerable reduction in selection times, leading to greater efficiency and a 43% reduction in hiring time.

Keywords-- Artificial Intelligence, Human Resources, Optimization, Personnel Selection.

INTRODUCTION

Currently, in most companies—especially where the project was implemented—the process follows a manual and traditional approach, which entails a series of drawbacks, such as excessive consumption

of time, difficulty in identifying the most suitable candidates, and communication problems among Human Resources team members.

Binns (2018) notes that the time required for the selection process is one of the main challenges, as decision-making depends largely on recruiters' ability to manually review a large number of applications and conduct thorough interviews. The number of suitable candidates is sometimes limited, as the process lacks an automatic filter to quickly identify the most suitable profiles. There are also communication issues among the various members of the Human Resources team, since the process depends on the availability of those in charge to coordinate interviews and assessments. This leads to delays in hiring new staff, which in turn affects the department that needs them.

Artificial intelligence (AI) has become a key tool in the business world, revolutionizing numerous operational processes. In Human Resources, AI has proven to be an effective solution for optimizing tasks such as recruitment, hiring, performance evaluation, and employee data management. Among its main benefits are the ability to analyze large volumes of information more quickly, eliminate bias in the selection process, and improve the experience for both candidates and recruiters. These advantages have led many companies—especially those with high hiring volumes—to adopt AI-based technologies to increase the efficiency and quality of their Human Resources processes. (Lievens & Chapman, 2009).

Rationale

Efficiency and accuracy in personnel selection, as well as hiring time, are the main challenges companies face today. The implementation of an AI-based solution has demonstrated the ability to address these challenges by significantly reducing pre-screening times and identifying suitable candidates. This enables recruiters to focus on more in-depth interviews and assessments, leading to a more objective selection process for the required position. (Binns, 2018).

DEVELOPMENT

The process of implementing artificial intelligence (AI) in the company's recruitment and selection department followed a systematic and structured approach, with the goal of optimizing hiring times and improving the quality of the selected talent.

The analysis was both quantitative and qualitative, based on an analysis of data prior to the implementation process and on the measurement of results once the artificial intelligence tools were integrated. This methodology allowed us not only to evaluate the effectiveness of the implemented technologies but also to understand the perceptions of the human resources team and the day-to-day operational effectiveness. The following phases were followed:

1. **Evaluation and diagnosis of the current process.** The goal was to gather baseline data prior to the improvement, which involved reviewing previous recruitment and selection reports regarding time statistics, time-related costs, and turnover.

2. **Selection of Artificial Intelligence Tools:** Based on their ability to meet the objectives of reducing time, ease of integration into the company, predictive capabilities based on historical candidate data, and alignment with required needs.

3. **Implementation of AI in the Recruitment Process:** This involved training on how to use the tool, including data interpretation, bias mitigation, and practical application through simulations for decision-making.

4. **Measurement and Evaluation of Results:** Measurement of average times from job posting to hiring; performance of hired staff was tracked through evaluations based on KPIs (key performance indicators), results-oriented assessments, and soft skills evaluations to verify efficiency in assigned roles and job satisfaction;

5. **Data analysis and feedback:** Using statistical software such as SPSS® and Excel 2024, along with AI tools for quantitative and qualitative data—including time, costs, and effectiveness—and feedback from new hires. To verify results, monthly follow-ups were conducted to review preliminary findings and make adjustments.

ANALYSIS OF RESULTS

The results are as follows, in accordance with the phases implemented in the methodology.

Diagnosis and Initial Assessment

Prior to the implementation of AI, an analysis and assessment of the recruitment process was conducted over a six-month period. The key findings are summarized below:

Table 1. *Summary of the analysis of the recruitment process prior to the implementation of AI tools. Data are presented as averages.*

Indicator	Value Before Implementation of the " "
Average Hiring Time	21 days
Turnover rate	15%
Workload	60%
Resumes per opening	150
Candidates interviewed	10%

Source: Author's *own work* (2026).

Selection of Artificial Intelligence Tools

These tools enabled a more efficient process aligned with the project's objectives.

- LinkedIn Talent Insights: Used to analyze talent trends and identify potential candidates in real time. Bersin (2021) found that companies using LinkedIn to identify talent prospects have reduced hiring times by 35% and increased the average quality of hires by 20%.

- HireVue: A video interview platform that incorporates AI assessments to measure communication, leadership, and adaptability skills, which helps predict a candidate's potential success in a specific role, taking into account factors such as their prior experience, technical skills, and cultural fit with the organization (McKinsey & Company, 2020).

  Large companies such as Unilever, BCG, and J.P. Morgan Investment Banking use these assessments independently; at Capital One, IBM, and Amazon, they typically use them for software engineering candidates. The system processes up to 25,000 data points per interview, with usage expected to surge by 2026.

- Recruitee: Applicant tracking system (ATS) software that facilitates automated application management and optimizes communication with applicants. This approach is based on data collection and analysis to inform and optimize every stage of the recruitment process, from the

attracting candidates to onboarding. Furthermore, data-driven recruitment also improves companies' ability to measure the return on investment (ROI) of their hiring strategies. By analyzing metrics such as time to hire, hire quality, and employee retention, organizations can identify areas for improvement and adjust their processes accordingly (Kristof-Brown et al., 2005).

Implementation of AI in the recruitment process.

Reduction in Hiring Time

Following implementation, a notable decrease in the average time to hire was observed:

- The average hiring time was reduced from 21 days to 12 days.
- A 43% reduction in hiring time.
- Number of resumes analyzed automatically: 1,000 resumes in 24 hours; previously, a similar number took approximately 2 weeks.



Figure 1. *Comparison of Hiring Time.*

Source: Author's *own work* (2026).

Improvement in Hiring Quality

An evaluation system based on KPIs as well as soft and technical skills was used, taking into account key indicators such as:

- Job performance during the first 6 months and team satisfaction with new hires.

Performance Results

- Percentage of employees who exceeded expectations: 80%.
- Percentage of employees who met expectations: 15%.
- Percentage of employees who did not meet expectations: 5%.
- Average performance rating (scale of 1 to 10): 8.5.



Figure 2. *Performance of New Hires.*

Source: Author's *own work* (2026).

Candidate Satisfaction

A satisfaction survey was conducted using a questionnaire based on the COSO report, developed by coso.org. It is based on five components that allow organizations to evaluate their internal controls to prevent errors and ensure processes operate correctly. Large companies use it successfully, including financial institutions, insurance companies, banks, Dell, Walmart, Coca-Cola, and others.

The results were as follows:

- Percentage of candidates satisfied with the process: 90%.
- Percentage of candidates who would recommend the company as an employer: 85%.

- Positive comments about the experience: “Streamlined and transparent process,” “Good communication throughout the process.”

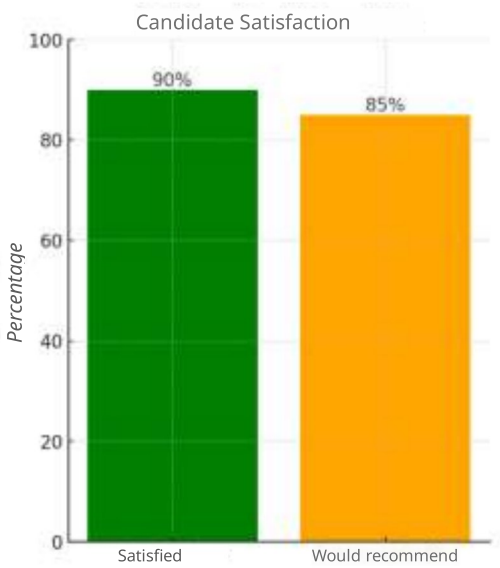

Figure 3. *Candidate Satisfaction.*

Source: Author’s *own work* (2026).

Conclusions from the Results

The implementation of artificial intelligence in the company’s recruitment and selection process has proven effective in several ways:

- **Significant reduction in hiring time:** A 43% decrease was achieved, facilitating access to suitable talent in less time.
- **Improved hiring quality:** 80% of new employees exceeded expectations, indicating an effective alignment between candidates’ skills and the company’s needs.
- **High satisfaction among candidates:** 90% of candidates expressed satisfaction with the process, which improves the company’s reputation as an employer.

CONCLUSIONS

By implementing AI, the company demonstrated that it met its stated goal of significantly improving the recruitment and selection process, reducing recruitment times while ensuring precision and quality in the hiring of new employees through AI tools.

The use of AI-based technologies enabled the automated sorting and prioritization of resumes, significantly reducing pre-screening times. This allowed the Human Resources team to focus on conducting more in-depth and effective interviews with the most suitable candidates. This helps improve communication and coordination among Human Resources team members by centralizing information and the decision-making process. This results in a more efficient and high-quality hiring process, ensuring that the selected candidates were the best fit for the open positions, which in turn helps maintain high quality and efficiency in the processes.

Finally, the training provided to the Human Resources team on using the AI tool was essential for effectively integrating the technology into the company's operations. This allowed staff to take ownership of the solution and use it effectively in the decision-making process.

FUTURE WORK

Monitoring of established processes to prevent the provision of incorrect information.

Continue to seek out and adopt advanced technologies to streamline Human Resources processes and maintain the company's position as an innovative and attractive employer for the most talented professionals.

Identify risk factors associated with employee turnover, enabling the company to implement preventive strategies to retain its key employees.

Foster teamwork to identify areas for improvement and make process enhancements.

DATA AVAILABILITY

All datasets used to support the findings of this study are available in the full article.

FUNDING SOURCE

There was no external funding for this study; it was funded by the authors' own resources.

STATEMENT ON GENERATIVE ARTIFICIAL INTELLIGENCE

The authors declare that no generative artificial intelligence tools were used at any stage of this study.

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COLLABORATIVE WORK TABLE

Role	Author(s)
Conceptualization	Ángel Ricardo Lerma Fuentes, René Saucedo Silva,
Methodology	Ángel Ricardo Lerma Fuentes, Aztlán Elohim Bastarrachea Almodóvar
Validation	Bastarrachea Almodovar Aztlán Elohim, Saucedo Silva René
Formal Analysis	Alejandra Herrera Chew, Aztlán Elohim Bastarrachea Almodóvar
Research	Ángel Ricardo Lerma Fuentes, Bastarrachea Almodóvar Aztlán Elohim

Resources	Portillo Gallardo, María Elizabeth; Saucedo Silva, René
Data Curation	Alejandra Herrera Chew, María Elizabeth Portillo Gallardo
Writing—Preparation of the Original Draft	Ángel Ricardo Lerma Fuentes, Aztlán Elohim Bastarrachea Almodóvar
Writing—Review and Editing	Ángel Ricardo Lerma Fuentes, Aztlán Elohim Bastarrachea Almodóvar, René Saucedo Silva, Alejandra Herrera Chew

MULTIDISCIPLINARY SCIENTIFIC JOURNAL

NEYART NA

Vol. 4, No. 4, July–December 2026

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ISSN: 2992-7161