NEYART
Magazine
ISSN: 2992-7161



# COMPETITIVE INTELLIGENCE IN MEXICO: UPDATED SYSTEMATIC REVIEW AND META-ANALYSIS (2000-2024)

**Poblano Ojinaga Eduardo Rafael**
National Technological Institute of Mexico/IT of Ciudad Juárez https://orcid.org/0000-0003-3482-7252
eduardo.po@cdjuarez.tecnm.mx

**Rodríguez Medina Manuel Arnoldo**
National Technological Institute of Mexico/IT of Ciudad Juárez https://orcid.org/0000-0003-1676-0664
manuel_rodriguez_itcj@yahoo.com

**Alvarado Tarango Lizette**
National Technological Institute of Mexico/IT of Ciudad Juárez https://orcid.org/0000-0001-7934-8330
lizette.at@cdjuarez.tecnm.mx

**Mendoza Montero Fátima Yaraset**
National Technological Institute of Mexico/IT of Milpa Alta https://orcid.org/0000-0003-0240-5434
fatmendez71@hotmail.com

**Medina Molina Yearim**
National Technological Institute of Mexico/IT of Milpa Alta https://orcid.org/0009-0000-4128-2524
yearim.mm@milpaalta.tecnm.mx

**DOI:** https://doi.org/10.61273/neyart.v3i3.153 | **Received:** 11/01/2025 | **Accepted:** 12/02/2025 | **Published:** 01/03/2026

***Abstract--*** Faced with an adverse global business environment, organizations seek to improve their competitive position through strategies, including competitive intelligence (CI). This study offers a comprehensive analysis of the literature on CI practices in Mexico, published between 2000 and 2024, and updates the research conducted by Ojinaga (2018). This study aims to evaluate competitive intelligence (CI) practices in Mexico using the PRISMA statement, in order to review the identification of essential success variables derived from the systematic review of the literature and meta-analysis conducted between 2000 and 2015. A search was conducted for articles and studies on CI practices in Mexico, covering publications from 2000 to 2024.

***Keywords—*** Competitive, Business, Intelligence, Mexico, PRISMA.

***Abstract--*** Faced with an adverse global business environment, organizations seek to improve their competitive position, including through competitive intelligence (CI). This study offers a comprehensive analysis of the literature on CI practices in Mexico, published between 2000 and 2024, and updates the research conducted by Ojinaga (2018). This study aims to evaluate competitive intelligence (CI) practices in Mexico using the PRISMA statement, in order to review the identification of essential success variables derived from the systematic literature review and meta-analysis conducted between 2000 and 2015. A search was conducted for articles and studies on CI practices in Mexico, covering publications from 2000 to 2024.

***Keywords –*** Competitive, Entrepreneurial, Intelligence, Mexico, PRISMA.

## INTRODUCTION

Global corporations are significantly affected by competitive intelligence. Prescott and Miller (2002) characterize competitive intelligence (CI) as an intelligence function that confers a competitive advantage. CI has established itself as a crucial component of business strategy, given the urgent need for organizations to remain viable in the face of technological and environmental fluctuations, mitigate associated risks, and invest in the acquisition of sophisticated technologies (Calof and Smith, 2010). The CI process comprises the following steps: monitoring the business environment (data, information, and external knowledge); collecting, analyzing, filtering, and disseminating intelligence to improve decision-making and competitiveness; and

strengthening the organization's position (Nasri, 2012). This cycle establishes a framework for competitive intelligence research projects, facilitating the development of strategic and operational initiatives, improving effectiveness, and providing continuous ad hoc intelligence (Tena-Millán and Comai, 2001). It forms the essential basis of the strategic decision-making process. The literature contains redundant information on the activities of the competitive intelligence cycle: planning and management, information gathering, information analysis, dissemination, and feedback (Miller, 2001; Rodríguez, 2005; Bose, 2008; Dishman and Calof, 2008). In Mexico, competitive intelligence practices are constantly evolving. A systematic literature review was conducted to investigate practices in this area and establish the Critical Success Factor (CSF).

**BACKGROUND**

In Mexico, the adoption and evolution of competitive intelligence (CI) has become increasingly important as organizations seek to strengthen their strategic position in an increasingly dynamic and globalized environment. This environment offers a crucial opportunity to conduct comprehensive research on the contexts, methodology, and trajectories of CI activities through an extensive literature review covering the period 2000-2024. This analysis not only defines the current state of the field, but also contributes to identifying the theoretical foundations, methodological frameworks, and empirical applications that define CI in the Mexican context. Mexico represents a particularly interesting subject of study for the analysis of CI. Mexico, the second-largest economy in Latin America and a participant in trade agreements such as the United States-Mexico-Canada Agreement (USMCA), operates in a context of intense regional and global rivalry. The constantly evolving industrial sector, growing digital transformation initiatives, and its strategic geographic location at the crossroads of North America and Latin America increase the need for companies and organizations to implement comprehensive intelligence processes to maintain their competitiveness. In addition, the Mexican economy is characterized by the presence of both established multinational corporations and small and medium-sized enterprises (SMEs), creating a diverse environment for examining the adoption, adaptation, and scaling of IC methods in different organizational contexts. Likewise, the country's growing emphasis on innovation-centered growth, knowledge-based sectors, and sustainable development strategies highlights the importance of understanding how IC can serve as a catalyst for informed decision-making and lasting strategic resilience. This research seeks to identify and establish the determinants and facilitating elements that positively influence the successful implementation of IC practices in

Mexico. The objective is to identify the critical success criteria that support the effective implementation of KM as a management tool and knowledge management approach. The review uses systematic processes to ensure rigor, transparency, and reproducibility in the identification, selection, and synthesis of relevant studies. In accordance with the guidelines established by Page et al. (2021), this study employs organized and methodical approaches to synthesize information and address a clearly defined research problem. The PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement provides a framework to ensure methodological consistency and facilitate the extraction of specific characteristics that positively influence KM practices in Mexico. The information flow of the phases (identification, selection, eligibility, and inclusion) of a systematic review/meta-analysis (SR/MA) proposed by the PRISMA statement (Mohoer et al., 2020) is shown in Figure 1 (Appendix A). To facilitate the literature review, it was decided to group the articles into four groups:

1) Uses in industry, services, and the environment.
2) Uses in academia.
3) Articles for dissemination.
4) Articles evaluating the relationship between competitive intelligence (CI) and other areas of knowledge.

**METHODS**

The systematic literature review (SLR) in this study strictly adheres to the PRISMA 2020 statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), including its flow diagram and checklist for reporting (Page et al., 2021; PRISMA, 2024). The PRISMA framework provides a methodological foundation designed to provide transparency, replicability, and comprehensiveness in the review process, thereby improving the reliability and validity of the evidence synthesis. The PRISMA information flow comprises three interdependent steps: identification, selection, and inclusion. These steps are briefly described below:

1.1 In the identification phase, all potentially relevant studies are systematically retrieved from established databases and electronic registries, using carefully designed search strings that include relevant keywords, Boolean operators, and subject-specific indexing terms. First, the problem is defined clearly and precisely. The objective of this step is to list the sources of the literature. This stage is crucial for maximizing coverage and minimizing bias, ensuring that the research question covers as much

amount of material possible.

1.2 The next step involves selecting or classifying the information. It is classified according to its degree of credibility, reliability, and scientific rigor. The evaluation consists of determining, based on established criteria, whether an article or study should be included in the qualitative summary. Selection involves a methodical and reproducible process that eliminates duplicate records, followed by an evaluation of the remaining research according to well-defined inclusion and exclusion criteria. These criteria are derived from the research objectives and methodological requirements of the review, ensuring that only relevant, high-quality studies proceed to the next phase. This phase comprises multiple levels of evaluation, beginning with a review of the title and abstract and culminating in a comprehensive study of the entire content. This makes the internal procedure more rigorous.

1.3 The inclusion stage consolidates research that meets all methodological and substantive criteria. The results obtained are interpreted and conclusions are drawn for the defined problem. The research results serve as evidence that facilitates the integration of findings from multiple studies. The selected studies undergo data extraction and synthesis, emphasizing the similarity of methodologies and the relevance of the topics to the object of study. The PRISMA 2020 flow diagram used in this review is essential, as it clearly illustrates the number of records identified, evaluated, excluded (with justifications), and finally included. This facilitates understanding of how decisions were made at each stage of the evaluation.

This article adheres to the PRISMA 2020 checklist for abstracting, providing explicit guidelines for summarizing the review objectives, eligibility criteria, information sources, risk of bias assessment, synthesis methods, and main findings. Compliance with this checklist ensures that the systematic review report meets international standards, facilitates comparison with other systematic reviews, and supports the broader goals of evidence-based research. This study illustrates the methodological rigor of PRISMA by integrating both the flow diagram and the checklist elements, thereby increasing the credibility and academic relevance of its findings in competitive intelligence research.

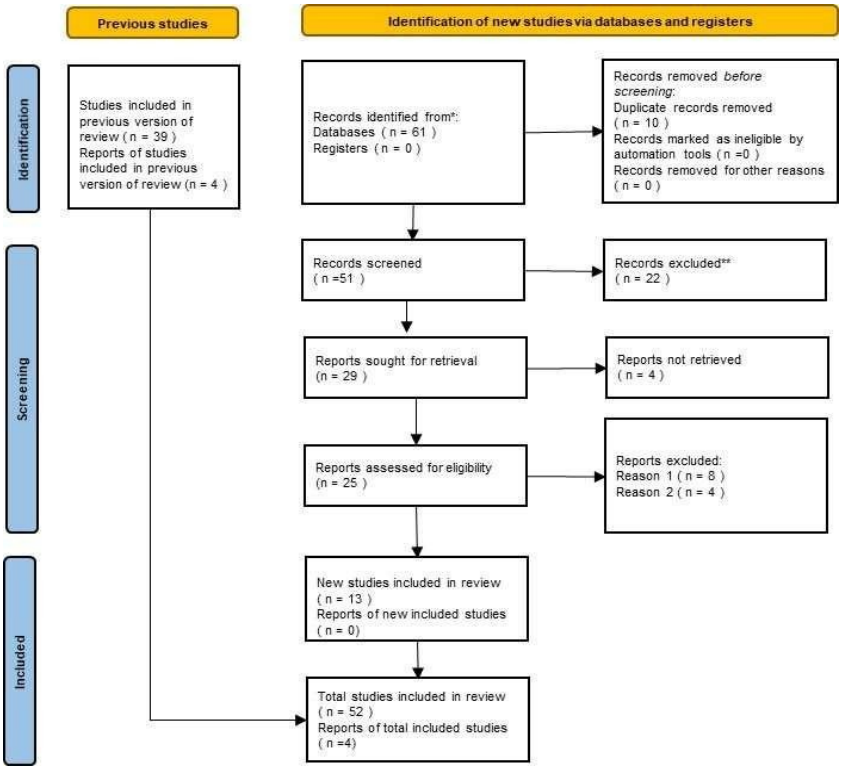


**Figure 1.** *Diagram of the steps involved in a systematic review*.

The flow of information from the phases (identification, selection, eligibility, and inclusion) of a systematic review/meta-analysis (SR/MA) proposed by the PRISMA statement (Mohoer et al., 2020) is shown in Figure 1. To facilitate the literature review, it was decided to group the articles into four types:

1) Use in industry, services, and the environment.
2) Use in academia.
3) Articles for dissemination.
4) Evaluation of the relationship between competitive intelligence and other areas of knowledge.

## SUMMARY OF QUALITY BY GENERAL TOPIC

### Applications in industry, services, and the environment.

Alcántar (2001) describes the development of competitive intelligence (CI) practices in the Mexican oil industry. Lozano (2003) proposes a pragmatic view of the advantages and disadvantages of patent analysis. Rodríguez (2003) presents a patent analysis in a case involving advanced materials. Lechuga et al. (2007) apply competitive and technological intelligence (CTI) in the search for information on various seawater desalination processes. Esquivel et al. (2008) propose

Perform information extraction tasks from corporate news published on the web to generate intelligence. Saad (2009) uses IC to determine technological trends in biotechnology and phytoremediation. Chávez et al. (2010) use IC in hotels and restaurants. Vera (2011) proposes an intelligence strategy for Mexican wine companies to increase their competitiveness. López and Alcántara (2011) describe the implementation of an IC system to support strategic decisions in wastewater treatment. Rodríguez and Tello (2012) present a methodology that integrates patent analysis into an IC study applied to the plastics industry. Rodríguez and Salinas (2012) apply IC to investigate and identify the factors that influence decision-making in a plastics company. Rodríguez-Borbón et al. (2013) present the design of a KI model for horticulturists in southern Sonora. Rodríguez et al. (2014) apply patent analysis as part of a KI methodology in open die forging and develop a patent analysis on additive manufacturing. Ahumada and Perusquia (2016) propose a set of factors for developing the capacity to manage applied knowledge for the expansion of business intelligence. Labra Salgado et al. (2017) evaluate the conditions of SMEs for implementing KI processes, specifically in the textile industry, due to the high competitiveness of its market. This is complemented by a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) to evaluate the conditions of the companies studied for the implementation of a continuous improvement process. Regarding the integration of continuous improvement with other approaches, work has been done on the application of the quality function in quality deployment (Rodríguez-Salvador et al., 2006), the application of total quality management with continuous improvement (Rodríguez et al., 2007), Kansei engineering in stove design (Rodríguez and Moreno, 2011), and the blue ocean strategy (Rodríguez and Bautista, 2011). Labra Salgado et al. (2017) presented a SWOT analysis that could be used to evaluate the current conditions of the companies studied for the implementation of a continuous improvement process. Moroyoqui (2018). Bollás and Valencia (2021) showed the results of applying the CI model as a strategy to improve the competitiveness of the Bachoco Hermosillo company, which allowed it to obtain competitive advantages. They also demonstrated the advantages of conducting technology watch and competitive intelligence with specialized tools in R&D&I projects. Ávila (2024) applied an analysis to improve decision-making and be better prepared in the agro-industrial sector studied.

**Applications in the academic field**

Rodríguez and Gaitán (2002) present a holistic model for teaching IIC that integrates collaborative learning. They also address IIC learning for future strategic improvements.

(Rodríguez and Mora, 2000) and to improve the identification of opportunities (Rodríguez and Gaitán, 2004). For research and development centers, López and Alcántara (2010) present the first results of a proposed methodology for implementing a CI system. López-Martínez (2011) proposes the application of competitive intelligence and data mining to identify patterns that reveal the structure of scientific and applied research, as well as its consistency in the context of a country. Luna and Solleiro (2007) explain intellectual property management in Mexican research centers, particularly in the case of the Mexican Petroleum Institute. Moreno et al. García-García and Rodríguez (2018) describe the organizational culture of a higher education institution (HEI) and its vision of CI in information management, concluding that there is a lack of knowledge about CI in that institution. García-García and Rodríguez (2018) present the use of IP to identify the most influential authors and inter-institutional collaborations in the additive manufacturing of hand orthoses. Esquinca Moreno et al. (2018) described the organizational culture (OC) of managers, administrators, and teachers at an HEI in northern Mexico and their vision of IC in gathering information to achieve institutional objectives.

**Dissemination/Publication of articles on collective intelligence**

Rodríguez and Valdez (2003) present a review focused on the importance of collective intelligence systems for identifying opportunities and threats to innovation. Mier (2003) highlights the importance of collective intelligence as a factor in building a technological tradition in organizations. Rincón-A and Ortiz (2005) present an overview of technological intelligence analysis. Bertacchini et al. (2007) present a case study in Mexico and the University of Gafsa, which addresses territorial intelligence, collective intelligence, and the sustainable system. Solliero et al. (2009) identify the state of the art and trends in collective intelligence through literature analysis. González (2012) proposes an electronic cluster for the competitive development of small and medium-sized enterprises based on collective intelligence actions. Vizcarra et al. (2012) offer information that highlights the usefulness of collective intelligence by analyzing concepts that describe the application of this development and entrepreneurship. Cantú et al. (2011) delve into the analysis of previous work on the construction of the National Technological Intelligence System (SNIT) and suggest a systemic theoretical framework for its development. Sánchez-López (2012) presents the implementation of a CI portal and technology watch. Pérez-Villarreal and Valdez-Zepeda (2015) present a model based on CI as a critical factor in increasing the chances of success in political campaigns. Ahumada and Perusquia (2016) conclude that innovation, systems of

Information and decision-making processes are part of companies' needs, and innovation develops competitiveness in knowledge management. Ojinaga (2018), through a literature review and meta-analysis, identifies the three main critical factors (information analysis, decision-making, and identification of opportunities and threats) in CI practices in Mexico. Pinto-López and Malcón-Cervera (2018) highlight a significant increase in publications worldwide between 2015 and 2017. López-Robles et al. (2020) analyze the documents available in Scopus from 1959 to 2017 on business intelligence and competitive intelligence models, identifying the most representative thematic areas, relationships, and evolution, and establishing the basis for the integration of these models under a single organizational framework. Ojinaga et al. (2023) present a systematic review of the literature on the practice of intelligence.

Assessment of the relationship between intellectual capital (IC) and other areas of knowledge Güemes and Güemes, as well as Rodríguez (2007), analyze the situation of the innovation structure used by Mexican companies and its relationship with IC practices. González (2011) describes the link between two technology management tools, competitive intelligence and knowledge management, to achieve business competitiveness through technological innovations. Poblano-Ojinaga et al. (2019) conclude that CI has a significant indirect effect on the innovative capacity of companies located in Ciudad Juárez, Mexico. Sánchez (2019) shows the advantages of conducting technology watch and competitive intelligence in R&D projects and highlights the importance and competitive advantages for organizations, which allow them to undertake innovative projects at the right time and with the available resources, anticipating opportunities and risks. Poblano-Ojinaga (2021), using a structural equation modeling approach, concludes that knowledge management (KM) and intellectual capital have a positive effect on innovative capacity and raises the possibility that competitive intelligence is a mediating variable between KM and IC. Bravo Silva and García Aguas (2020) conclude that corporate governance has a positive effect on the competitive intelligence process of companies in the tourism sector in Puerto Vallarta, Mexico, with a positive linear relationship between the two variables. Irarragorri et al. (2020) presented a procedure for designing a Competitive Intelligence System, which contributes to making systematic and organized efforts viable in order to provide managers with market information, based on analytical-synthetic and structural-systemic methods to understand the stages and steps of the procedure. Morales-Martínez (2022) explains the influence between digital transformation and business intelligence in meetings tourism in Mexico.

**Table 1.** *Generic topics and their description.*

| Generic topic | Description | Authors |
|---|---|---|
| Applications in industry, services, and the environment. | Articles related to competitive intelligence practices in the public or private sector that have an impact on their performance, operation, strategy, environment or business strategy. | 23 |
| Articles for dissemination or outreach. | Articles related to the state of the art of competitive intelligence, proposals for application in different sectors. | 15 |
| Applications in the academic sphere. | Articles related to competitive intelligence practices in higher education institutions related to the teaching-learning process, research and development areas, laboratory design, or links to the productive sector. | 9 |
| Articles evaluating the IC relationship with other areas of the | Articles related to competitive intelligence and its relationship with other areas of knowledge (innovation capacity, human capital, knowledge management). | 8 |

*Note: Corporate intelligence, business intelligence, market intelligence, and other similar terms are often used interchangeably, and the difference between them is often more semantic than substantial (SCIP, 2016).*

As the results show, the application of competitive intelligence for decision-making in Mexico is not yet widespread, confirming the importance of disseminating and promoting the use and development of competitive intelligence theory in companies located in Mexico.

## META-ANALYSIS

Meta-analysis of effect estimates is a statistical technique used to synthesize results when estimates of study effects and their variances are available, providing a quantitative summary of the results.

In this study, the eight steps of the methodology (Noriega et al., 2010) were applied to generate statistical support and obtain a high degree of confidence in the articles studied. The steps of the meta-analysis methodology are described below:

**Definition of the problem.**

In this step, the problem must be defined precisely and clearly: the main critical factors that contribute to successful IC practices must be identified.

**Identification of information sources and studies to be analyzed.**

Once the limits of the meta-analysis were determined, studies that met those limits and selection criteria were identified. In this research, a total of 104 studies were considered, including research articles and conference proceedings.

**Classification of information.**

The articles and studies identified are classified according to their degree of scientific rigor, credibility, and reliability. To this end, a set of inclusion and exclusion criteria is developed, discarding articles that do not meet them. This is one of the two quality filters. At this stage, the number of articles was reduced from 104 to 55.

**Publication database.**

The objective of this stage is to obtain a database of studies and articles to facilitate the management, location, and processing of the information obtained.

**Evaluation of articles.**

When evaluating articles and studies, a decision is made based on established criteria as to whether or not they should be included. A rating is assigned on a Likert scale from 1 (not important) to 4 (very important). At this stage, the items for the FCE frequency analysis are reduced from 56 to 36. The frequency with which critical success factors appear is identified as follows: Information source 2, Information analysis 25, Information search 4, Information/intelligence generation 10, Threats and opportunities 22, Decision making 23, Information organization 2, Knowledge management 8, and Innovation 21.

**Classification and coding of information.**

In this part of the meta-analysis, data extraction from each study is based on a coding sheet that specifies which data should be extracted and a key that interprets the different aspects analyzed. The coded information is summarized to identify the main variables, which will be used to group the articles and studies and perform the meta-analysis.

**Statistical analysis.**

In this research project, statistical analysis consisted of a normality test using the Anderson-Darling statistic (for samples of size n < 30). If the data are normally distributed, a test of difference of means will be performed. This test was carried out to determine the contribution of the factors and identify the most important ones.

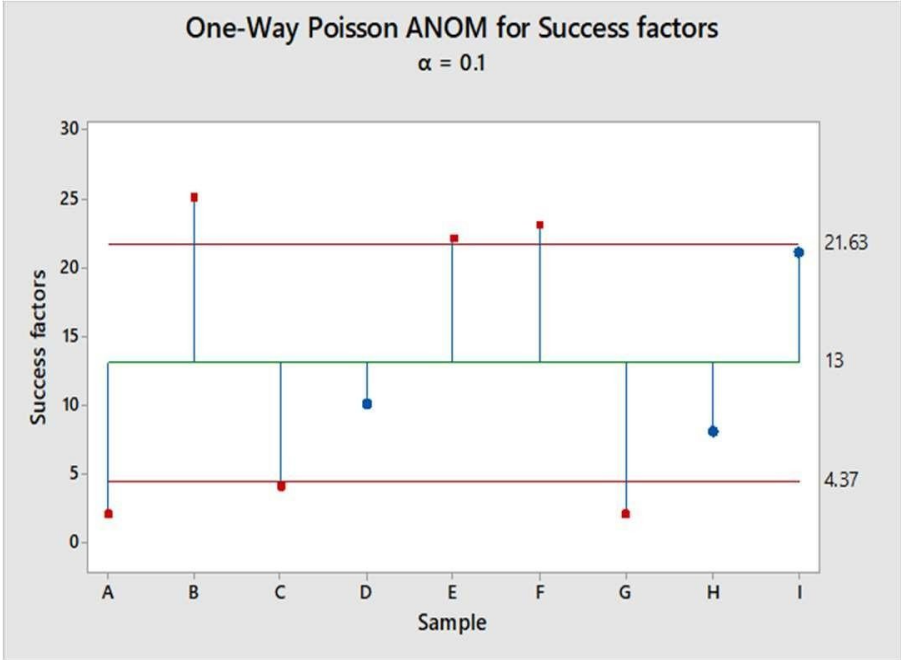


**Figure 3.** *Analysis of means for the identified success factors*.

**Generation of conclusions.**

Finally, the results obtained are interpreted and conclusions are drawn for the defined problem. The results of the analysis of means constitute evidence that can be used to integrate the results of multiple studies. The assumptions necessary for AM must also be evaluated to determine the suitability of the study. The four main critical success factors (CSF) are: Information Analysis, Decision Making, Opportunities and Threats, and Innovation.

**RESULTS**

A total of 104 studies were considered. In the identification phase, an initial quality filter (selection phase) excluded 49 records, after which each document was evaluated and assigned a rating on a Likert scale (second quality filter). At this stage, the records were reduced from 55 to 36 articles (eligibility phase). Next, the critical success factors for competitive intelligence practices were determined (Table 3). For this stage, the frequency of each factor was summarized. The following were found

A total of nine critical factors were identified in the reviewed documents. The critical factors, in descending order of importance, are: information analysis, decision-making, opportunities and threats, innovation, information generation, and knowledge management. Once the total frequency was calculated, a normality test was performed. The approximate p-value was 0.087 and the significance was greater than 0.05, so it can be safely assumed that the data follow a normal distribution and are suitable for a parametric test. The next step was to apply a Poisson mean analysis (ANOM), where the test determined that 4 of the 9 factors can be considered critical (with the exception of factor 9). These four critical factors were number 2 (information analysis), 6 (decision-making), and 5 (identification of opportunities and threats). Likewise, factor 9 (innovation) was observed to occur with a frequency similar to that of factors 5 and 6.

## CONCLUSIONS

This study, as an initial assessment, outlines the critical success factors (CSFs) recognized for competitive intelligence (CI) practices in Mexico, reviving interest in the identification of competitive intelligence variables (Güemes & Rodríguez, 2007; Ojinaga, 2018), with the aim of offering a novel perspective for CI professionals and researchers in Mexico. The results indicate that at least 36 of the 55 selected publications refer to critical success factors in various scenarios or methodologies. This identification of critical success factors in the practice of competitive intelligence constitutes a significant contribution to the profession. The study can be considered successful in terms of the implementation of Operations Management in engineering and administration, as well as in the adaptation of Operations Management processes to the context of Continuous Improvement research techniques. The findings corroborate the assertion that CI is an evolving practice in Mexico, which, despite its implementation in both the public and private sectors, still has a considerable way to go. This analysis indicates that several Mexican companies are adopting continuous improvement strategies to anticipate significant changes and developments in the industry, enabling them to penetrate new market niches and create products.

### Limitations and future lines of research

The main limitation of the study is the sample size (n = 55). Although various aspects that may support the validity of this study have been considered, Hunter and Schmidt (2000) point out that, for sample sizes between 25 and 1600, the type I error for random effects is 5% and, for fixed effects with homogeneous cases, the search was exhaustive. Both knowledge management and intelligence

Competitive intelligence is a relatively new concept in Mexican industry and academia. It should be noted that around 95% of companies in Mexico have 20 employees or fewer, so the sample is considered representative of the population. These results show the critical success factors in the use of CI in Mexico and can guide further research in this field.

***Special thanks to the Secretariat of Science, Humanities, Technology, and Innovation (SECHITI) for its support in the 2025 Call for Postdoctoral Fellowships for Mexico.***

## REFERENCES

Ahumada Tello, E., & Perusquia Velasco, J. M. A. (2016). Business intelligence: strategy for the development of competitiveness in technology-based companies. *Accounting and Administration, 61*(1), 127-158.

Alcántar, J. (2001). *Intelligence Practices Competitiveness in the Oil Industry*. Expansión Magazine.

Ávila Moedano, R. I. (2024). *Competitive intelligence applied to agribusiness: A case study* [Thesis, Autonomous University of the State of Hidalgo]. Repository of the Autonomous University of the State of Hidalgo.

Bertacchini, Y., Rodríguez-Salvador, M., & Souari, W. (2007). *From territorial intelligence to competitive & sustainable system. Case studies in Mexico & in Gafsa University*. In International Conference of Territorial Intelligence (pp. p- 106). Huelva.

Bollás Sánchez, R. L., & Valencia Pérez, L. R. (2021). *Analysis of technology watch and competitive intelligence models in R&D&I projects*. In XVII Latin American Congress on Technology Management, UAM, Mexico City.

Bose R. (2008). Competitive Intelligence Process and Tools for Intelligence Analysis. *Industrial Management & Data Systems, 108*(4), 510-528.

Bravo Silva, J. L., & García Aguas, C. A. (2020). Corporate governance as a strategic factor for competitive intelligence development in the tourism industry: The case of Puerto Vallarta, Jalisco, Mexico. *University Journal*, (30), e2530.

Calof, J., & Smith, J. (2010). The integrative domain of foresight and competitive intelligence and its impact on R&D management. *R and D Management, 40*(1), 31–39.

Cantú, A., López, R., Rodríguez, M., & Güemes, D. (2011). Representation of the elements of a National Innovation System through the Sustainable System Model. *Journal of Science and Technology*, (16), 49-57.

Casillas, M., & González, M. V. (2020). Validation of a measurement instrument to evaluate the effect of Competitive Intelligence in companies in the Lagunera Region of Coahuila. *Journal CIM 8*(1), 75-83.

Chávez, J., Guerrero, J., and Olguín, J. (2010). Business intelligence and competitiveness in hotels and restaurants in southern Tamaulipas, 1–25. SINNCO 2010. *Competitive Intelligence Magazine, 1*(11). 1–14.

Dishman, P.L., & Calof, J.L. (2008). Competitive intelligence: a multiphasic precedent to marketing strategy. *European Journal of Marketing, 42*(7/8), 766-785.

Dou, H., & Manullang, S.D. (2004). Competitive intelligence and regional development within the framework of Indonesian provincial autonomy. *Education for Information*, (19), 1-25.

Esquinca Moreno, A., Jiménez Terrazas, C. P., & Gaggiotti, H. (2018). Organizational culture and competitive intelligence in a higher education institution in northern Mexico. *Nóesis. Social sciences journal, 27*(53-2), 34-60.

Esquivel I., Tórres C., López, M., & Juárez, G. (2008). *Business news on the Web as a source of competitive intelligence*. International Symposium on Telematic Systems and Intelligent Organizations. Veracruzana University.

Fuentes, L., Rodríguez, M., Vega, J., & Frion, P. (N.Aa). *Design and development of didactic equipment based on competitive and technical intelligence*. ITESM, Monterrey Campus & Cerege Laboratory, University of Poitiers France.

Garcia-Garcia, LA, & Rodríguez, M. (2018). Competitive and technology intelligence to reveal the most influential authors and inter-institutional collaborations on additive manufacturing for hand orthoses. *Journal of Intelligence Studies in Business, 8*(3), 32.

González H. (2011). *Technological Intelligence (TI) in convergence with Knowledge Management (KM) for technological innovation*. González, H. (2012). Electronic cluster for the competitive development of SMEs based on competitive intelligence actions. FAEDPYME International Review.

Güemes, D., & Rodríguez, M. (2007). The relationship between competitive intelligence and the innovative capacity of Mexican companies. *Puzzle Revista Hispana de la Inteligencia Competitiva, 6*(26), 15-20.

Gutiérrez, L., Zuñiga, J., and González J. (NA). *Business intelligence and development as a competitiveness strategy in higher education institutions*. Popular Autonomous University of the State of Puebla.

Huerta, H., Lozano, I., and Ortiz, G. (2003). *The Creation of Competitive Intelligence Units in Research and Development Organizations*. X Latin-Ibero-American Seminar on Technological Management ALTEC 2003 Knowledge, Innovation and Competitiveness: The Challenges of Globalization.

Irarragorri R. A., Salazar R., & Díaz Rodríguez, E. M. (2020). Procedure for the design of the competitive intelligence system, *Latin American Economic Observatory Journal*.

Labra Salgado, O. S., Rivera, G., & Reyes García, J. I. (2017). SWOT analysis on the use of competitive intelligence in small businesses in the clothing industry. *Vision of the Future, 21*(1), 1-10.

Lechuga, J., Rodríguez, M., & Lloveras, J. (2007). Analysis of seawater desalination processes applying competitive and technological intelligence. *Engineering: Academic Journal of the FI-UADY, 11*(1665–529 X), 5–14.

López, E., & Alcántara, T. (2010). Technological intelligence system as a support for the strategic planning process in a technological research and development center. *International Network of Competitiveness Researchers*, 4(1).

López-Martínez, R. (2011). *Using data mining and technological intelligence tools to identify publication and patenting patterns in national environments, as well as their concordances*. National Autonomous University of Mexico.

López-Robles, J. R., Otegi-Olaso, J. R., Porto-Gómez, I., Gamboa-Rosales, H., & Gamboa-Rosales, N. K. (2020). The relationship between Business Intelligence and Competitive Intelligence: a retrospective and bibliometric analysis of the literature from 1959 to 2017. *Spanish Journal of Scientific Documentation, 43*(1), e256-e256.

Lozano, I. (2003). Patent analysis in the world of competitive technological intelligence. *Hispanic Journal of Competitive Intelligence, 2*(8), 10–13.

Luna, K., & Solleiro, J. (2007). Intellectual property management in Mexican research centers: the case of the Mexican Petroleum Institute. *Journal of Technology Management & Innovation, 2*(2), 157-169.

Mier, M. (2003). *Competitive intelligence: an important factor in building a technological tradition*. ALTEC Proceedings, Mexico.

Miller, B.S.H. (2001). Competitive intelligence -- An overview.

Montiel, H., Magos, A., & Ruiseñor, M. (2014). A Competitive Intelligence Model Where Strategic Planning is Not Usual: Surety Sector in Mexico. *International Business Research, 7*(1), 1–13.

Morales-Martínez, R. I. (2022). Digital transformation and the influence of business intelligence on companies in the meeting tourism sector in Mexico. *Revista Politécnica, 18*(35), 40-51.

Moroyoqui Ortiz, L. S. (2018). *Strategies to Increase the Competitiveness of a Poultry Company in the State of Sonora Using Competitive Intelligence*. National Technological Institute of Mexico.

Nasri, W. (2012). Conceptual model of strategic benefits of competitive intelligence process. *International Journal of Business and Commerce, 1*(6), 25-35.

Ojinaga, E.R.P. (2018) Exploratory study of competitive intelligence in Mexico. Journal of Intelligence Studies in Business. 8 (3) 22-31.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., & Moher, Pellissier, R., & Nenzhelele, T. E. (2013). Towards a universal competitive intelligence process model. *South African Journal of Information Management, 15*(2), 1-7.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). Updating guidance for reporting systematic reviews: development of the PRISMA 2020 statement. *Journal of clinical epidemiology*, (134), 103-112.

Pérez-Villarreal, H., & Valdez-Zepeda, A. (2015). *Strategic Model based on Competitive Intelligence for Electoral Contests*. Society and History Volume I The research and innovative work in Mexico. Jorge Orozco Robles (Eds.).

Pinto-López, I. N., & Malcón-Cervera, C. (2018). Business intelligence and competitive intelligence as triggers for informed decision making: A bibliometric analysis. RIIIT. *International Journal of Research and Technological Innovation, 6*(31), 1-10.

Poblano-Ojinaga, E.R., López, R.R., Gómez, J.A.H. and Torres-Arguelles, V. (2019) Effect of competitive intelligence on innovation capability: An exploratory study in Mexican companies. Journal of Intelligence Studies in Business. 9 (3) 62-67.

Poblano-Ojinaga, E.R. (2021) Competitive intelligence as a factor of innovation capability in Mexican companies: A structural equations modeling approach. Journal of Intelligence Studies in Business. 11 (2) 69-79.

Poblano-Ojinaga, E. R., Chávez, A. V., Santos, J. A. P., Figuero, B. P., & Ríos, E. B. H. (2023). Competitive intelligence practices in Mexico: a literature review. *IPSUMTEC Journal, 6*(1), 78-85.

Prescott, J. F., & Miller, S. H. (2002). *Proven strategies in competitive intelligence: lessons from the trenches*. John Wiley & Sons.

Rincon-A., L. and Ortiz, V. (2005). *Analysis in technological intelligence. What is it and what is it for?* MultiCiencia.

Rodríguez, M., & Mora Roldán, V. (2000). Learning Competitive and Technological Intelligence for Strategic Innovation. *Monterrey Institute of Technology and Higher Education (ITESM), 64849*(52), 1–9.

Rodríguez, M. (2003). Patent Analysis in Competitive and Technological Intelligence: The Case of Advanced Materials. Rodríguez, M. (2005). National System of Competitive and Technological Intelligence: Education for innovative development. *Puzzle Hispanic Journal of Competitive Intelligence*, 4(16), 12-19.

Rodríguez, M., Valdez, A., & Valdez, E. (2003). *Competitive and technological intelligence in universities: Opportunities for innovation in the productive sector*. X Latin-Ibero-American Seminar on Technological Management-ALTEC, Mexico.

Rodríguez, M., & Gaitán, Y. (2004). Holistic model for teaching competitive and technological intelligence: integration of collaborative learning. *PUZZLE: Revista Hispana de La Inteligencia Competitiva, 3*(13), 4-9.

Rodríguez, M., & Bautista, M. (2011). Methodology of integration for Competitive Technical Intelligence with Blue Ocean Strategy: Application to an exotic fruit. *Journal of Intelligence Studies in Business, 1*(1), 29–39.

Rodríguez, M., & Moreno, S. (2011). *Proposal for the integration of Competitive and Technological Intelligence with Kansei Engineering in the design of induction stoves*, 6(73), 831–846.

Rodríguez Salvador, M, & Tello Bañuelos, M. A. (2012). Applying patent analysis with Competitive technical intelligence: the case of Plastics. *Journal of Intelligence Studies in Business*, (2), 51-58.

Rodriguez. M., & Salinas, L. (2012). Applying Competitive Intelligence: The Case of Thermoplastics Elastomers. *Journal of Intelligence Studies in Business, 2*(3), 41–47.

Rodríguez-Borbón, M., Corral, Z., and López, M. (2013). Design of a competitive intelligence system for the pumpkin market for producers in southern Sonora, Mexico. *El Buzón Del Pacioli*, (83), 16-29.

Rodríguez, M., Palacios, A., & Cortez, D. (2014). Technical Intelligence Approach: Determining Patent Trends in Open Die Forging. *Journal of Intelligence Studies in Business, 4*(1).

Saad, I. (2009). *Phytoremediation: a study of competitive technological intelligence*. SinnCo.

Sanchez, R. L. B. (2019). *Technological surveillance and competitive intelligence in R&D projects1*.

Sánchez-López, R. (2012). *Implementation of a competitive intelligence and technological surveillance portal* (Master's thesis, ITESO). ITESO Repository.

Solleiro, J., Castaño R., and Castillo, J. (2009). The state of the art of competitive technological intelligence: trends and perspectives. *National Autonomous University of Mexico*, (5), 69.

Tena-Millán, J., & Comai, A. (2001). The purposes of intelligence in the company: competitive, cooperative, neutral and individual, *The information professional, 10*(5), 4-10.

Vera, A. (2011). *Competitive business intelligence strategy for Mexican wine companies*. XVI International Congress on Accounting, Administration, and Information Technology. National Autonomous University of Mexico.

Vizcarra, N., López, V., and Guerrero, D. (2012). Competitive intelligence in companies in the city of Tijuana BC. *RIAF, 5*(5), 121–129.

Valenzuela Salazar N. L., Buentello Martínez C. P., & Ramos Gallardo, G. A. (2015). *International Network of Researchers on Competitiveness*. Proceedings of the IX Congress.

Vargas Téllez, J. A. (2012). Work organization and job satisfaction: a case study in the footwear industry. *Nova scientia, 4*(7), 172-204.

## COLLABORATIVE WORK TABLE

| Role | Author(s) |
|---|---|
| Conceptualization | Alvarado Tarango Lizette, Poblano Ojinaga Eduardo Rafael |
| Method | Poblano Ojinaga Eduardo Rafael, Rodríguez Medina Manuel Arnoldo |
| Software | Medina Molina Yearim, Mendoza Montero Fatima Yaraset |
| Validation | Alvarado Tarango Lizette, Poblano Ojinaga Eduardo Rafael, Rodríguez Medina Manuel Arnoldo |
| Formal Analysis | Alvarado Tarango Lizette, Poblano Ojinaga Eduardo Rafael, Rodríguez Medina Manuel Arnoldo |
| Research | Alvarado Tarango Lizette, Poblano Ojinaga Eduardo Rafael, Rodríguez Medina Manuel Arnoldo |
| Resources | Medina Molina Yearim, Mendoza Montero Fatima Yaraset |
| Data curation | Alvarado Tarango Lizette, Poblano Ojinaga Eduardo Rafael, Rodríguez Medina Manuel Arnoldo |
| Writing - Preparation of the original draft | Poblano Ojinaga Eduardo Rafael, Medina Molina Yearim, Mendoza Montero Fátima Yaraset |
| Writing - Revision and editing | Alvarado Tarango Lizette, Poblano Ojinaga Eduardo Rafael, Rodríguez Medina Manuel Arnoldo |