

Employability and Labor Inequalities: Industrial and Systems Engineering Professionals

Empleabilidad y desigualdades laborales: profesionales de Ingeniería Industrial y Sistemas

Received:
January 30th, 2026

Karla Margarita Juvera Quijada¹
and Blanca Esthela Lara Enríquez²

Accepted:
March 11th, 2026

1 Corresponding Author: Doctoral Candidate in Social Sciences at El Colegio de Sonora, specializing in the research line of Development, Sustainability, and Gender.

E mail: kjuvera@colson.edu.mx ORCID: <https://orcid.org/0009-0006-0375-4512>

2 Ph.D. in Social Sciences from El Colegio de la Frontera Norte.

Full Professor and Researcher (Rank C), El Colegio de Sonora

Email: blara@colson.edu.mx ORCID: <https://orcid.org/0000-0002-9127-3498>

Abstract

The objective of this research is to analyze the employability of Industrial and Systems Engineering graduates from a public university in northwestern Mexico. This analysis was conducted based on three key moments: entry into the workforce, job retention, and career advancement. A multidimensional analytical model with a gender focus was used, articulating personal, contextual, and temporal dimensions. The methodology employed was qualitative; semi-structured interviews were used to identify experiences of entry into, retention in, and advancement within the workforce. The findings reveal differentiated trajectories: men tend to advance linearly, while women face structural barriers, such as the double burden of work and family responsibilities, and greater difficulties in career advancement. The study's limitations are related to the disciplinary field analyzed, the specific regional context, and the limited number of participants. It is concluded that employability is a social construct mediated and conditioned by power relations and inequalities.

Keywords: employability, career paths, gender inequalities

JEL Codes: J16, J24, I24, O15

Resumen

El objetivo de la investigación es analizar la empleabilidad de profesionistas de Ingeniería Industrial y de Sistemas de una universidad pública del noroeste de México. Este análisis se realizó a partir de tres momentos clave: inserción, permanencia y ascenso laboral. Se empleó un modelo analítico multidimensional con enfoque de género que articula las dimensiones personales, contextuales y temporales. La metodología utilizada fue cualitativa; mediante entrevistas semiestructuradas se identifican experiencias de inserción, permanencia y ascenso en los puestos de trabajo. Los hallazgos muestran trayectorias diferenciadas: los hombres tienden a avanzar de forma lineal, mientras que las mujeres enfrentan barreras estructurales, como la doble jornada, y mayores dificultades para el ascenso. Las limitaciones del estudio se relacionan con el campo disciplinar analizado, el contexto regional específico y el número acotado de participantes. Se concluye que la empleabilidad es una construcción social mediada y condicionada por relaciones de poder y desigualdades.

Palabras clave: empleabilidad, trayectorias laborales, desigualdades de género

Códigos JEL: J16, J24, I24, O15

Introduction

Since the late twentieth century, the transition of young professionals into the labor market has become increasingly complex. Transformations derived from globalization, the expansion of higher education, technological advances, and labor flexibility have redefined the processes of labor market entry, employment retention, and career advancement. These transformations have given rise to a new socioeconomic context characterized by emerging forms of learning, the reorganization of work, and increasingly demanding expectations for professionals. The International Labour Organization (International Labour Organization [ILO], 2019) has noted that these changes in the labor market generate problems of unemployment, underemployment, and informality that particularly affect young people, who face growing difficulties in accessing stable and decent working conditions.

Higher education plays a key role in the formation of human capital and the accreditation of knowledge for the labor market; however, a gap persists between academic training and real employment opportunities. As noted by Scheele et al. (2009) and Siivonen et al. (2023), the expansion of higher education has not guaranteed access to quality employment but has instead generated new tensions between what graduates learn and the demands of the labor market. In this context, employability has gained prominence in educational policies and in the agendas of Higher Education Institutions (HEIs), although its meritocratic orientation has been questioned by perspectives that understand it as a social construct shaped by structural, institutional, and cultural elements (Tomlinson, 2007; Aguilar-Barceló & Mungaray-Moctezuma, 2019). From this critical perspective, employability is configured at the intersection of multiple dimensions—individual characteristics, access to social networks, labor market structures, socioeconomic conditions, and relations of power and gender—rather than solely through the accumulation of human capital.

In Mexico, despite the growing academic production on higher education and employment, many studies maintain a quantitative focus centered on labor market entry, which limits the analysis of employability to the first job. This approach overlooks critical dimensions such as employment retention and career advancement, long-term professional trajectories, and the conditions that enable or restrict upward mobility.

This article adopts a multidimensional approach to employability that considers three key moments: labor market entry, employment retention, and career advancement, understood as continuous and interrelated processes. It also demonstrates that employability is deeply conditioned by gender inequalities. Despite the sustained increase in women's enrollment in higher education and their growing participation in the labor market, women continue to face barriers to accessing quality employment, remaining in their positions, and advancing toward positions with greater responsibility and income. As noted by Rentería-Pérez et al. (2022), gender-based barriers persist both in hiring mechanisms and in professional trajectories; patterns of exclusion continue to reproduce inequalities that limit women's labor opportunities.

Industrial and Systems Engineering has historically been a masculinized field. The objective of this article is to analyze the construction of employability among male and female graduates of this discipline at three moments of their professional trajectories: entry into the labor market, employment retention, and opportunities for career advancement. The study adopts a critical approach with a gender perspective, which makes it possible to reveal the structural inequalities shaping professional trajectories by considering not only the competencies and academic achievements of professionals but also the role of social networks, working conditions, and institutional contexts. The central hypothesis proposes that employability is conditioned by contextual, structural, and relational factors rather than solely by individual characteristics. This situation generates disadvantages for women in their labor market entry, employment retention, and career advancement, producing professional trajectories that are dynamic but unequal.

The article is organized into four sections, in addition to this introduction. The first addresses theoretical debates on employability and gender and presents an analytical model composed of three dimensions: personal, contextual, and temporal. The second explains the qualitative methodology and the study population. The third reconstructs employability trajectories through the analysis of labor market entry, employment retention, and career advancement, considering gender inequalities and the tensions between stability, uncertainty, and professional life projects. The final

section presents the conclusions, summarizing the contributions of the study, its limitations, and future lines of research.

Theoretical framework

2.1 Employability: Theoretical Approaches and Debates

Employability has traditionally been approached from an individualistic perspective, centered on the skills and competencies that graduates acquire during their university education. Traditional perspectives have developed competency-based models, particularly those proposed by Yorke (2005), Dacre Pool and Sewell (2007), and Van der Heijde (2006), in which employability is defined as the capacity to obtain, maintain, and perform a job satisfactorily. These approaches tend to emphasize individual responsibility for professional success, without fully addressing the structural inequalities that shape access to, retention in, and mobility within employment.

In contrast, more recent perspectives argue that employability should be understood as a socially mediated phenomenon. Brown et al. (2003) and Hall (2020) contend that its construction goes beyond individual attributes and incorporates institutional contexts, labor market dynamics, and power relations that influence professional opportunities. Along these lines, recent studies highlight the need to incorporate critical approaches that consider the interaction between different forms of capital—particularly human and social capital—and broader socio-labor structures (Siivonen et al., 2023). Similarly, Peeters et al. (2019) and Clarke (2018) point out that employability emerges from the interaction between personal attributes and external factors, such as economic structures, the type of employment available, territorial conditions, and labor market segmentation.

In this study, a distinction is made between labor market entry and employability. Labor market entry refers to the initial process of accessing employment after graduation, whereas employability is understood as a broader process that includes the capacity to access, remain in, and progress within the labor market over time. This distinction makes it possible to analyze not only the moment of entry into employment but also the subsequent

professional trajectories that develop throughout individuals' careers.

In Latin America, studies on employability remain relatively limited and have mostly privileged quantitative approaches aimed at measuring variables such as labor market entry, income, and employment duration. However, more recent research has proposed broader perspectives. Orellana (2018) and Jiménez-Ulate (2022) suggest understanding employability as a complex and multidimensional social construct that involves educational processes, professional trajectories, and the structural conditions of the labor market.

Research by Jacinto and Millenaar (2010) and Tenjo et al. (2017) shows that women face greater difficulties in accessing, remaining in, and advancing within the labor market, even when they possess similar levels of education as men. Incorporating a gender perspective makes it possible to reveal the symbolic, structural, and organizational barriers that affect men and women differently, particularly in fields such as engineering and the exact sciences. Lamas (2016) argues that knowledge is not neutral and that research must recognize the power relations and inequalities between genders. Integrating this perspective helps explain how employability processes are mediated by the sexual division of labor, wage inequality, and the reproduction of gender stereotypes in professional environments.

Several studies have documented that, despite the expansion of women's participation in higher education, labor opportunities continue to be unequal. Camarena and Saavedra (2018) and Castillo et al. (2020) note that although women have increased their participation in higher education, their access to higher-ranking positions in the labor market remains limited. Likewise, Salas et al. (2023) argue that analyzing women's employability constitutes an important avenue for examining gender inequalities in employment, as it makes it possible to observe both their incorporation into the labor market and their trajectories of professional advancement. In this sense, the feminization of employment has also generated new forms of labor precariousness, often associated with the concentration of women in service sectors or in roles linked to care work (Pérez Sáinz, 2016).

Although employability is often explained in terms of individual skills, critical approaches emphasize that it is deeply conditioned by structural factors,

particularly gender. Labor contexts are not neutral; they reproduce dynamics that segment and hierarchize employment, generating differentiated obstacles for women and men in their labor market entry, retention, and advancement. A gender perspective makes it possible to reveal these inequalities, as the sexual division of labor and internal, external, and reproductive barriers limit women's opportunities, shaping unequal labor trajectories mediated by power relations (Ramos et al., 2003).

Based on these theoretical debates, employability in this study is analyzed through a multidimensional model composed of three interrelated dimensions: personal, contextual, and temporal (Table 1). This model allows us to recognize that men and women develop their professional trajectories within unequal contexts, influenced by the sexual division of labor and by differentiated labor market dynamics. From this perspective, a multidimensional analysis makes it possible to identify both the opportunities and the constraints that individuals experience in their processes of labor market entry, employment retention, and career advancement.

Table 1. Analytical model for analyzing employability

Employability and Gender Multidimensional Analysis	
Personal Dimension	Contextual Dimension
Human Capital Social Capital	Microsystem and Mesosystem Exosystem and Macrosystem
Temporal Dimension	
Microtime Mesotime Macrotime	

Source: Own elaboration.

The personal dimension is structured around two categories: human capital and social capital. According to Peeters et al. (2019), both constitute employability capital, understood as the set of resources that enable individuals to access, maintain, and progress in employment. Human capital theory (Becker, 1984) highlights the importance of education as a key investment for labor market entry; however, recent studies warn that mismatches between educational systems and labor market needs have weakened this relationship, although training remains a decisive factor (Vázquez et al., 2021). Complementarily, social capital becomes relevant as it refers to resources accessible through

networks of relationships that may facilitate access to other forms of capital, such as economic, cultural, or symbolic capital (Bourdieu, 2018). Woolcock and Narayan (2000) note that these networks operate through norms of trust and reciprocity that allow individuals to mobilize collective resources in pursuit of economic benefits.

The second dimension corresponds to context, which is analyzed across four interrelated levels: microsystem, mesosystem, exosystem, and macrosystem. The microsystem refers to the immediate environment, particularly the workplace, where paid activities, roles, and interpersonal relationships develop. The mesosystem encompasses interactions with extended family members, friends, and educational and work environments, where support networks can be consolidated. The exosystem includes structural factors that indirectly affect individuals, such as business dynamics and political-economic decisions that influence labor markets. Finally, the macrosystem encompasses the broader context, including public policies, educational and labor models, as well as cultural and technological transformations that shape the organization of work.

The third dimension corresponds to temporality, understood as a processual conception of employability. This dimension comprises three levels: microtime, mesotime, and macrotime. Microtime refers to everyday events related to work experience, such as daily activities at work or adaptation to new responsibilities. Mesotime refers to longer periods within a professional trajectory, such as transitions between jobs or processes of professional consolidation. Macrotime refers to long-term professional expectations and significant events that mark the evolution of an occupational trajectory.

Analyzing these dimensions makes it possible to understand employability as a complex phenomenon that emerges from the interaction between individual, contextual, and temporal factors. From this perspective, employability does not depend solely on individual characteristics but is shaped by social relations, institutional structures, and the contextual conditions in which professional trajectories unfold. In line with the bioecological approach proposed by Bronfenbrenner and Morris (2007), this model recognizes that experiences are crosscut by structural inequalities—particularly

Table 1. Previous studies validating/invalidating the EKC Hypothesis for America

those related to gender and social class—which influence opportunities for labor market entry, employment retention, and career advancement.

Methodology

The methodological design is based on a qualitative approach. A total of 16 semi-structured interviews were conducted with Industrial and Systems Engineering professionals who graduated from a public university in the state of Sonora. Through the reconstruction of their academic and professional experiences, the study explored processes of labor market entry, employment retention, and career advancement from a multidimensional perspective with a gender approach.

The selection of the disciplinary field was supported by a prior analysis of statistical information at the national, state, and institutional levels, which made it possible to identify areas with greater dynamism in terms of labor market insertion. Two main criteria were considered: (a) employment rates and occupational demand reported for each discipline, and (b) the analytical relevance of the field for examining gender inequalities within a traditionally masculinized professional context. Regarding participant selection, a non-probabilistic snowball sampling strategy was employed. This procedure involved initially identifying graduates who met the established criteria and who subsequently referred other professionals with similar characteristics. The selection process concluded once theoretical saturation was reached, that is, when additional interviews no longer contributed substantially new analytical categories to the study.

The semi-structured interviews facilitated the collection of detailed and meaningful accounts of participants' academic, professional, and personal trajectories, revealing both structural and subjective factors influencing their employability. As noted in qualitative research literature, this technique encourages open dialogue that captures personal meanings and allows the emergence of new themes during the interview process. The interview guide was organized around four analytical dimensions: (1) sociodemographic and family characteristics, (2) human capital and the development of skills and competencies, (3) labor trajectories and social

capital, and (4) the relationship between personal and professional life.

The qualitative data analysis followed the stages proposed by Creswell (2009): data collection, full transcription, coding, description of analytical categories, and the presentation of results using MAXQDA software. The coding process combined deductive and inductive approaches. In the first stage, categories derived from the proposed theoretical model (personal, contextual, and temporal dimensions) were used to organize the data according to the processes of labor market entry, employment retention, and career advancement. Subsequently, through an inductive analysis, emergent categories related to gender inequalities, individual agency, and professional strategies were identified. Four coding cycles were conducted, allowing for the refinement, grouping, and synthesis of analytical categories and subcategories.

The criterion of theoretical saturation was reached when additional interviews did not produce substantially new analytical categories but rather variations or nuances of those already identified. To strengthen methodological rigor, theoretical triangulation strategies were implemented by contrasting empirical findings with different conceptual frameworks on employability and gender. This strategy made it possible to deepen the understanding of the phenomenon and enhance the interpretative validity of the study (Creswell, 2009). Regarding transferability, the findings do not aim at statistical generalization but rather at providing a situated understanding of employability within a specific disciplinary field. The detailed description of the context, participants, and analytical process allows other researchers to assess the potential applicability of these findings in similar contexts.

3.1 Characterization of Participants

The group of participants consisted of nine men and seven women, aged between 23 and 37 years (Table 2). Most of them are currently in a stage of professional consolidation, in which career decisions begin to be structured around stability, professional development, and long-term career projection. The majority of participants are single; two are married (one woman and one man), and one is in a cohabiting relationship. This composition reflects

professional trajectories characterized by greater availability for geographic mobility and territorial flexibility—elements considered strategic in the early stages of career development, particularly in industrial sectors.

In terms of human capital, it was identified that most participants have strengthened their professional profiles through the acquisition of certifications, diplomas, and specialized training courses. According to Becker (1984), these credentials constitute a direct reinforcement of human capital by increasing professionals' competitiveness and technical validation in the labor market. In sectors such as industrial engineering, certifications are highly valued because they validate technical competencies under international standards and facilitate access to specialized positions and roles with greater responsibility.

In addition, several participants reported proficiency in one or more foreign languages, primarily English, but also French and German. This aspect expands opportunities for insertion into globalized labor markets, as well as access to specialized technical knowledge and professional development in multinational environments.

Results and discussion

The analysis of professional trajectories made it possible to identify the set of factors influencing the construction of employability among Industrial and Systems Engineering professionals. In particular, the study examined the motivations for choosing this degree program, labor expectations upon graduation, as well as the knowledge, skills, and social resources mobilized throughout their professional trajectories.

Vocational decisions were mainly shaped by two factors: the perception of high labor demand for this engineering field and the influence of close family members—parents or siblings—who had previously pursued the same degree. From a rational choice perspective, this decision can be interpreted as a strategy aimed at maximizing opportunities for labor market entry in a competitive environment, where the versatility of industrial engineering is perceived as a strategic resource for occupational mobility. However, beyond an individual decision, these findings show that educational choices are socially mediated. According to Bourdieu's theory of social reproduction (1996), family trajectories influence educational and professional aspirations,

Table 2. Sociodemographic characteristics of the interviewees

Participants	Gender	Age	Marital Status	Household Members	Certifications	Languages
Lesli	Woman	35	Single	Living independently	No	No
Abraham	Man	30	Single	Living independently	Sí	English
Isaac	Man	27	Single	Sister	No	No
Daniel	Man	28	Single	Parents	Sí	German and French
Santiago	Man	28	Single	Living independently	Sí	German and English
Ernesto	Man	29	Single	Living independently	No	No
Ashley	Woman	37	Married	Husband	Sí	No
Camila	Woman	35	Single	Mother	No	English and French
Armando	Man	32	Single	Living independently	Sí	English
Inés	Woman	36	Single	Living independently	No	English
Nicole	Woman	30	Single	Father	No	English
Carolina	Woman	27	Single	Mother, brother and grandmother	Sí	English
Diego	Man	36	Married	Wife	Sí	English
Alejandra	Woman	23	Single	Parents	Sí	English
Ricardo	Man	29	Single	Partner	Sí	No
José	Man	26	Single	Sister and mother	Sí	English

Source: Own elaboration.

reproducing cultural capital and labor expectations that shape vocational decisions.

“I was always good at mathematics, and when I saw that three of my uncles—although they had studied different engineering fields—worked as industrial engineers, I decided to study the same profession.”

(Interview with Santiago, 18-09-2024)

In the case of women, the choice of this degree was influenced by family role models who legitimized their entry into a traditionally masculinized field. This finding is consistent with research on women's participation in STEM areas, where the presence of close role models and family support act as mechanisms that counteract gender stereotypes associated with these disciplines. In this way, personal motivations are combined with an instrumental logic oriented toward economic autonomy and labor stability.

“I decided to study industrial engineering because of the versatility I saw in the program, inspired by the trajectory of my father and mother, both engineers who graduated from the same university. My father worked in the maquiladora sector and my mother in administrative areas, which showed me how the degree allows one to adapt to different work environments.”
(Interview with Nicole, 03-10-2024)

These findings suggest that employability begins to take shape during the educational stage, where personal aspirations, family resources, and perceptions of labor market opportunities converge. In this sense, choosing a degree considered “employable” can be interpreted as a form of anticipatory agency in the face of uncertain labor contexts. Nevertheless, as McQuaid and Lindsay (2005) argue, employability depends not only on individual decisions but also on structural conditions that influence actual labor market opportunities.

Labor expectations were mainly oriented toward joining companies in the industrial or administrative sectors and, in some cases, toward entrepreneurship. These aspirations align with a conception of employability understood as the ability to mobilize resources, knowledge, and networks in order to access professional opportunities (Fugate et al., 2004). However, the results show that professional trajectories do not always correspond to the expectations formed during university education.

“When I graduated, I thought I would work in the automotive industry, since the degree was strongly oriented toward that sector; however, I chose entrepreneurship and have been running my own business for eight years.”

(Interview with Lesli, 27-08-2024)

These types of trajectories suggest that entrepreneurship can function as an adaptation strategy in response to the limitations of the regional labor market. Recent research has pointed out that in contexts where labor opportunities are limited, entrepreneurship emerges as a viable alternative for professional insertion and income generation (García & Ramírez, 2019). In this sense, employability is not limited solely to access to formal employment but also includes the capacity to generate one's own alternatives for professional development.

From a multidimensional employability perspective, personal and technical skills (soft and hard skills) constitute a key component in the configuration of professional trajectories. The results show gender differences in the types of competencies emphasized by men and women. Women highlighted interpersonal skills such as empathy, adaptability, resilience, and cooperative work, whereas men emphasized competencies related to technical problem-solving, systematic thinking, and the use of specialized software. These differences do not necessarily reflect inherent abilities but rather processes of professional socialization and gender expectations that influence the way men and women construct and communicate their professional profiles (Connell & Messerschmidt, 2005).

Language proficiency was also identified as a differentiating competence, particularly among those who had participated in international mobility experiences. Some participants reported knowledge of English, French, or German, which strengthens their employability profile in globalized industries. These differences suggest that employability is not neutral: gender, educational trajectories, and sociocultural conditions generate differentiated profiles for men and women (Bárcena & Lomelí, 2021). Understanding these dynamics makes it possible to reveal how structural inequalities operate in access to and professional development.

Another relevant aspect in the construction of employability was the role of professional

internships. Among the interviewed group, five professionals (three women and two men) currently remain in the companies where they completed their internships, some with trajectories of up to six years, which demonstrates their role as a mechanism of transition between university education and the labor market. As Knight and Yorke (2003) and Jackson (2015) point out, professional internships allow the development of specific human capital, the acquisition of early work experience, and the expansion of contact networks, factors that increase the probability of labor market entry and employability development.

However, the analysis also suggests that the value of professional internships is not limited to immediate hiring. In at least nine cases, although the participants did not remain in the same company, the internships served as a means to continue their labor trajectory in other companies or to make strategic decisions. This supports the idea that the value of internships does not lie exclusively in immediate hiring but rather in their potential to build progressive trajectories (Zepke & Leach, 2005). In this sense, internships function as a mechanism in the education-to-work transition, enabling professionals to develop competencies, expand their networks, and strengthen their employability profiles.

4.1 Social Capital and Employability: Networks, Agency, and Inequalities

Social capital constitutes a key element in the configuration of employability trajectories. It is understood as the set of resources accessible through personal, institutional, and community networks that facilitate access to information, recommendations, professional collaboration, and employment opportunities (Bourdieu, 1996; Coleman, 1988). In this study, the analysis of social capital was based on the classification proposed by Woolcock and Narayan (2000), who distinguish four dimensions—community, network-based, institutional, and synergistic—according to the types of ties and resources mobilized.

Based on the collected testimonies, two main forms of social capital were identified as shaping labor trajectories: institutional social capital and social capital based on personal networks. Institutional social capital refers to the role played by educational institutions, linkage programs, and public policies as mediators between graduates and

the labor market. Several participants highlighted that their entry into the labor market was facilitated by the relationship established between the university and the productive sector, particularly through professional internships or institutional agreements. This finding confirms that educational institutions not only transmit technical knowledge but also function as nodes of labor intermediation that expand opportunities for professional insertion.

Social capital based on personal networks, in turn, was manifested through family, academic, or friendship ties that facilitated access to professional internships, employment opportunities, or promotions within organizations. These networks operate as mechanisms of trust and reciprocity that allow individuals to access labor opportunities that, in many cases, are not available through formal channels.

“Thanks to a recommendation from my father, who knew the director of environmental affairs, I learned about an internship vacancy. In addition, I had prior experience in human resources.”
(Interview with Ashley, 20-09-2024)

These findings are consistent with research suggesting that social capital can function as a strategic resource for labor market entry by facilitating access to privileged information and professional opportunities (Bourdieu, 1986). However, the study also reveals that access to social capital is not distributed homogeneously. As Fine (2010) notes, social networks are not equally available to all individuals, which generates differences in employment opportunities.

In this regard, the study also identified a group of professionals who accessed employment on their own initiative without directly relying on personal or institutional networks, but rather through autonomous searches on digital platforms or direct applications.

“I found the job offer in the advertisements of an online newspaper, sent my résumé, and they contacted me.”

(Interview with Ricardo, 12-02-2025)

In these cases, labor market entry was associated with processes of self-management and persistence in the search for opportunities. This dimension relates to the concept of individual agency, understood as the capacity of individuals to make strategic

decisions and actively construct their professional trajectories (Archer, 2003). However, the analysis suggests that individual agency does not operate in isolation but is conditioned by available resources, social networks, and structural contexts.

“I was looking for a job while working in the construction business of a cousin. Eventually, a company hired me as a continuous improvement technician, and over time I was promoted until I became a manager.”

(Interview with Diego, 24-01-2025)

Consequently, both social capital and individual agency should be understood as interrelated dimensions in the construction of employability. The possibilities of mobilizing networks or exercising agency are not uniform for all individuals, as they are mediated by structural factors such as gender, social origin, or territorial location. As Fine (2010) argues, not all individuals have access to active or effective networks. Therefore, it is essential to incorporate diverse trajectories and recognize that, in digital environments, individual agency may partially compensate for structural limitations. From this perspective, the analysis of employability requires integrating approaches that make visible the interaction between social, institutional, and personal resources in the configuration of professional trajectories.

4.2 Employability from a Contextual Perspective

Analyzing employability from a comprehensive perspective allows us to understand that career trajectories do not develop in isolation but rather in interaction with multiple social, institutional, and economic environments. This study draws on Bronfenbrenner's bioecological model (2005), which proposes analyzing social processes through different contextual levels: microsystem, mesosystem, exosystem, and macrosystem. From this perspective, employability is configured as a process that emerges from the interaction between individual factors and structural conditions of the environment (McQuaid & Lindsay, 2005).

Within the microsystem, where direct interactions between individuals and their immediate environment occur, early work experiences—such as internships and first jobs—play a particularly significant role. These experiences represent a key space for the development of technical and

interpersonal skills, as well as for the construction of professional identity. However, the analysis revealed gender differences in the way these experiences are lived. Women reported that, unlike their male counterparts, their insertion into highly masculinized work environments involved facing questions about their professional capabilities. As a result, they developed strategies of self-affirmation and over-preparation to legitimize their presence in these contexts.

“It is possible to work in a masculinized environment, but you need to be strong and confident. I learned not to take everything personally and to focus on proving that women are capable. It is necessary to be well prepared to avoid being questioned.”
(Interview with Ashley, 20-09-2025)

This finding is consistent with studies showing that women in male-dominated professional fields face more demanding processes of professional legitimation, where they must continuously demonstrate their competencies in order to be recognized as legitimate professionals (Gálvez, 2018). In contrast, men described their early work experiences as a natural confirmation of their technical abilities, without mentioning questions regarding their presence in these spaces. This difference reveals how work environments can reproduce gender-differentiated dynamics of professional recognition.

In the mesosystem, which connects different immediate environments such as family, friends, university, and professional networks, the importance of social capital emerged as a strategic resource for accessing employment opportunities and making career decisions. Several testimonies indicated that family members, professors, or acquaintances played an important role by informing participants about job vacancies, facilitating recommendations, or promoting links with employers (Borrego, 2011). This finding confirms that social networks can function as mechanisms that facilitate access to other forms of capital—such as economic, cultural, or symbolic capital—as proposed by Bourdieu (1986).

“I have obtained jobs through platforms like Indeed, where I found a vacancy in a company. Later, it was through personal networks that I accessed a job in the government.”
(Interview with Alejandra, 30-02-2025)

The exosystem, which includes structural factors that indirectly affect career trajectories—such as corporate decisions, public policies, or regional economic changes—also produced differentiated effects. Some cases reflected trajectories interrupted by the COVID-19 pandemic, staff layoffs, or hiring limitations derived from the economic context. While both men and women faced these external conditions, women reported greater obstacles to being hired or promoted due to gender biases that required them to demonstrate higher levels of preparation or certification to access the same positions as their male colleagues. This requirement reveals a form of structural inequality that imposes an additional burden of professional legitimization on women.

Finally, the macrosystem, which encompasses broader cultural, technological, and normative conditions, also influences employability trajectories. Several professionals emphasized the increasing importance of continuous training, foreign language proficiency, and professional certifications as strategies to remain competitive in a globalized labor market. Although this requirement affects all professionals, women reported feeling greater pressure to meet these standards in order to compensate for structural barriers in their professional paths, which is consistent with analyses of employability from gender and social justice perspectives.

4.3 Temporal Analysis of Employability: Between Stability and Challenge

The temporal analysis allows employability to be understood as a dynamic process that unfolds across different stages of professional trajectories. Following Brown and Williams (2003) and Velásquez et al. (2016), this study examines three key moments: labor market entry, job retention, and career advancement (Table 3).

The first stage, labor market entry, typically occurs within the first year or year and a half after graduation and allows for the analysis of placement time, the type of job obtained, and the relationship between employment and the field of study. The second stage, job retention, is examined over a medium-term period of approximately two to three years and considers employment stability, mobility within the professional field, and participation in continuing education processes. Finally, career advancement, which may occur between four and seven years

after graduation, makes it possible to analyze professional progression, income improvement, access to positions of greater responsibility, and the expansion of professional networks.

Within this temporal framework, the phases of employability are examined from an integrated perspective that recognizes its development as a relational and situated construction. This process depends not only on the accumulation of human and social capital but also on labor market conditions and on the decisions and strategies deployed by individuals themselves. Consequently, the construction of employability in this study is analyzed through these three stages in order to recognize the formative processes associated with the temporal dimension of professional trajectories.

Table 3. Stages of Employability According to the Temporal Dimension

Stage	Timeframe	Key Indicators
Labor market entry	0.5 to 1.5 years	Type of employment, contract
Job retention	2 to 3 years	Stability, professional continuity, satisfaction
Career advancement	4 to 7 years	Promotions, leadership, professional networks

Source: Author's own Brown A. & Williams S. (2003), Velásquez et al. (2016)

Labor market entry refers to the initial transition period between university education and the first job. In most of the cases analyzed, entry into the labor market occurred relatively early and was mediated by professional internships or institutional networks linked to the university. Seven of the interviewees were able to access formal employment immediately after graduation, suggesting that university–industry linkages can play an important role in facilitating the transition into the labor market.

However, labor market entry was not homogeneous. Some participants experienced longer periods of job searching or initially entered sectors that were not closely aligned with their professional training. These cases illustrate that access to the labor market is conditioned by structural factors and by the availability of opportunities within the regional context.

Job retention reflects the capacity of professionals to remain within the labor market and consolidate their professional experience. Among the group

analyzed, relatively stable trajectories were observed, although with significant differences between cases. While some participants maintained long-term employment relationships within the same organization, others experienced job changes resulting from layoffs, corporate restructuring, or personal decisions to reorient their professional careers.

The literature on contemporary labor markets has highlighted that job stability has declined in contexts characterized by globalization processes and labor flexibilization. Nevertheless, recent studies indicate that men continue to access stable employment positions to a greater extent than women (OECD, 2019).

Finally, career advancement makes it possible to analyze processes of vertical mobility within organizations. Among the interviewees, several professionals were able to reach higher hierarchical positions, such as supervisory or managerial roles. However, gender differences were identified in the speed and frequency of these promotions. Four men accessed positions of greater responsibility within a relatively short period of time, whereas women reported greater difficulties in reaching leadership roles. These differences reflect the persistence of structural barriers associated with the so-called *glass ceiling*, which limits women's opportunities for advancement even when they possess professional credentials similar to those of their male colleagues (Enríquez & Rentería, 2007).

The temporal dimension of employability reveals diverse professional trajectories shaped by multiple contextual factors. Although men were able to enter, remain in, and advance within the labor market, their trajectories were also influenced by external factors such as the COVID-19 pandemic, the dynamics of the industrial sector, the availability of promotion opportunities, and possibilities for international mobility. In several cases, professional advancement was closely linked to the willingness to change companies or even relocate to another country. By contrast, those who chose to remain in the same workplace without mobility experienced situations of professional stagnation. Labor market entry, in turn, was often facilitated by professional internships or participation in government programs, although these strategies did not always guarantee long-term stability or sustained professional growth.

Overall, the temporal analysis demonstrates that employability cannot be understood solely as obtaining a first job, but rather as a continuous process involving the interaction between individual strategies, social networks, institutional opportunities, and structural labor market conditions.

The analysis of female trajectories shows that, although women were able to enter the labor market and sustain their participation, their professional development was conditioned by persistent gender structures that limited their opportunities for retention and advancement. These structural inequalities reveal that employability is not distributed equitably and that women face additional obstacles that affect the progression of their professional trajectories.

Conclusions

The analysis of employability based on the dimensions of labor market entry, job retention, and career advancement revealed that professional trajectories are not configured in a homogeneous manner but are shaped by differentiated structural conditions, particularly those related to gender. Although both men and women were able to enter the labor market, their professional pathways display different rhythms, strategies, and opportunities.

While male trajectories tend to be characterized by greater continuity, stability, and upward mobility in technical and industrial areas, female trajectories appear more heterogeneous, combining periods of stability with job rotations, interruptions, or strategies of labor diversification, including entrepreneurship (Table 4).

In this regard, one of the main contributions of this study lies in understanding employability as a multidimensional social construction, moving beyond traditional approaches that primarily explain it through individual competencies or human capital. Unlike these perspectives, the proposed analytical model articulates three interrelated dimensions—personal, contextual, and temporal—which make it possible to understand employability as a dynamic process that develops throughout professional trajectories. The incorporation of gender as a transversal axis also makes it possible to reveal how employment opportunities are shaped

Table 4. Comparative synthesis of employability trajectories between men and women

Dimension	Male trajectories	Female trajectories
Labor market entry	Immediate entry through internships and professional networks	Early entry combining study and work
Job retention	Long trajectories, some with structural stability	Mixed: some stable trajectories, others with frequent job rotation
Career advancement	Frequent promotions, even at the international level	Less frequent promotions; entrepreneurship as an alternative
Obstacles	Pandemic-related layoffs; career stagnation without promotion	Glass ceiling, double workload, barriers to upward mobility
Strategies	Geographic mobility; continuity within the sector	Diversification (employment and entrepreneurship); flexible permanence

Source: Own elaboration.

within contexts marked by power relations and structural inequalities. In this way, the model offers a relational perspective that integrates elements such as individual agency, available social capital, and the institutional conditions of the labor market.

These findings are consistent with the arguments advanced by the International Labour Organization (ILO, 2022), which highlights that employability is not constructed under homogeneous conditions but rather within scenarios shaped by power relations and structural inequality. Therefore, understanding employability as a purely individual phenomenon is insufficient; instead, a relational approach is required that recognizes the interaction between personal agency, social networks, institutional structures, and macroeconomic contexts.

From this perspective, gender emerges as a transversal dimension that conditions access to opportunities, shapes individual strategies, and highlights the need for more inclusive policies. Incorporating a gender perspective into the study of employability makes it possible to question the apparent neutrality of the labor market and to reveal how women face specific barriers throughout their professional trajectories. As noted by Velásquez et al. (2016) and the ILO (2020), these inequalities manifest not only through explicit barriers but also through more subtle mechanisms of exclusion, such as unequal access to strategic projects, difficulties in accessing networks of influence, or penalties associated with gender roles, such as motherhood. In traditionally

male-dominated fields such as engineering, these dynamics limit women's opportunities for career advancement and professional consolidation, even when they possess qualifications comparable to those of their male colleagues.

Furthermore, the results suggest the relevance of incorporating an intersectional perspective into the analysis of employability. Although this study primarily focused on gender, the trajectories examined are also shaped by other structural conditions, such as socioeconomic background, family capital, and available territorial opportunities. These dimensions influence access to professional networks, opportunities for mobility, and the resources available to sustain processes of professional development. This highlights that inequalities in employability do not respond to a single axis of differentiation but rather to the interaction of multiple social factors.

Based on these findings, several implications can be identified at different levels of intervention. In the educational sphere, it is essential to strengthen the links between higher education institutions and the productive sector through professional internship programs, career guidance, and support strategies for the transition to the labor market. In the labor sphere, the results highlight the need to promote more inclusive organizational environments through policies of pay equity, transparent promotion mechanisms, and performance evaluation systems based on objective criteria. These actions are particularly relevant in technical and industrial sectors where gender gaps persist in access to leadership positions. At the governmental level, the study underscores the importance of strengthening public policies aimed at the employability of young professionals, especially those that facilitate access to first employment opportunities, promote sustainable career trajectories, and reduce structural inequalities in the labor market.

Nevertheless, the study acknowledges several limitations. First, the analysis focused on a single academic discipline. In addition, the number of participants reflects the scope of the qualitative methodology, prioritizing analytical depth rather than statistical generalization. Although a gender perspective was incorporated as a central analytical axis, other intersectional dimensions were not fully integrated, which could further enrich the analysis of inequalities. Based on these limitations, future

research should consider developing comparative studies across different disciplines, deepening the intersectional analysis of professional trajectories, examining the role of higher education institutions in labor market linkage, and incorporating the perspective of employers in order to contrast educational expectations with labor market demands.

In summary, understanding employability from a critical perspective implies recognizing that it does not solely depend on the possession of individual competencies but rather constitutes a relational construction situated within contexts shaped by inequalities, social networks, structural conditions, and personal decisions. Only through comprehensive approaches that articulate concrete actions to address these inequalities will it be possible to advance toward a more just, inclusive, and sustainable model of professional development.

Bibliography

- Aguilar-Barceló, J. G., & Mungaray-Moctezuma, A. B. (2019). La empleabilidad de los egresados de las universidades tecnológicas en México: Un análisis de eficiencia. *Revista Iberoamericana de Educación Superior*, 10(29), 3–24. <https://doi.org/10.22201/iisue.20072872e.2019.29.520>
- Archer, M. S. (2003). *Structure, agency and the internal conversation*. Cambridge University Press.
- Barbieri, T. de. (1993). Sobre la categoría género: Una introducción teórico-metodológica. *Debates en Sociología*, 18. <https://doi.org/10.18800/debatesensociologia.199301.006>
- Bárcena, C., & Lomelí, L. (2021). *La empleabilidad desde una perspectiva crítica: Trayectorias, desigualdades y agencia*. Universidad de Guadalajara.
- Becker, G. S. (1984). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- Borrego, A. (2011). *Género y elección profesional: Mujeres en carreras masculinizadas*. UNAM-CIEG.
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education*. Greenwood Press.
- Bourdieu, P. (1996). *Razones prácticas: Sobre la teoría de la acción*. Anagrama.
- Bourdieu, P. (2018). The forms of capital. In *The sociology of economic life* (3rd ed.). <https://doi.org/10.4324/9780429494338>
- Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*. Sage.
- Bronfenbrenner, U., & Morris, P. A. (2007). The bioecological model of human development. In *Handbook of child psychology*. <https://doi.org/10.1002/9780470147658.chpsy0114>
- Brown, A., & Williams, S. (2003). Employability in a knowledge-driven economy. *Journal of Education and Work*, 16(2), 107–126. <https://doi.org/10.1080/1363908032000070648>
- Camarena Adame, M. E., & Saavedra García, M. L. (2018). El techo de cristal en México. *Revista de Estudios de Género: La Ventana*, 5(47). <https://doi.org/10.32870/lv.v5i47.6680>
- Castillo, C., Ordoñez Espinoza, C., Guadalupe, C., Laso, O., Guaraca, A., & Priscila, M. (2020). Género y empleabilidad: Estudio de caso de los graduados de la Universidad Católica de Cuenca. *Journal of Business and Entrepreneurial Studies*, 4(1).
- Clarke, M. (2018). Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education*, 43(11). <https://doi.org/10.1080/03075079.2017.1294152>
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, 95–120.
- Connell, R. W., & Messerschmidt, J. W. (2005). Hegemonic masculinity: Rethinking the concept. *Gender & Society*, 19(6). <https://doi.org/10.1177/0891243205278639>
- Enríquez, L. J., & Rentería, N. (2007). Trayectorias laborales y desigualdades de género. In L. J. Enríquez (Ed.), *Procesos sociales y trayectorias laborales en México* (pp. 151–184). El Colegio de México / IIS-UNAM.
- Fine, B. (2010). *Theories of social capital: Researchers behaving badly*. Pluto Press.
- Fugate, M., Kinicki, A. J., & Ashforth, B. E. (2004). Employability: A psychosocial construct, its dimensions, and applications. *Journal of Vocational Behavior*, 65(1). <https://doi.org/10.1016/j.jvb.2003.10.005>
- Gálvez, A. (2018). *Mujeres ingenieras: Experiencias y trayectorias en un campo profesional masculinizado*. UNAM.
- García, M., & Ramírez, R. (2019). *Emprendimiento juvenil y estrategias de inserción laboral en contextos de precariedad*. Editorial Universidad Nacional.
- Hall, M. (2020). Towards a parrhesiastic engagement with graduate employability. *Power and Education*, 12(1). <https://doi.org/10.1177/1757743819890356>
- Jacinto, C., & Millenaar, V. (2010). *La incidencia de los dispositivos en la trayectoria laboral de los jóvenes: Entre la reproducción social y la creación de oportunidades*. Teseo / IDES.

- Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in Higher Education*, 40(2). <https://doi.org/10.1080/03075079.2013.842221>
- Jiménez-Ulate, J. (2022). Hacia una visión sistémica de la empleabilidad. *Revista ABRA*, 42(65). <https://doi.org/10.15359/abra.42-65.2>
- Knight, P., & Yorke, M. (2003). *Learning, curriculum and employability in higher education*. Routledge.
- Lamas, M. (2016). *El género: La construcción cultural de la diferencia sexual*. PUEG / Grupo Editorial Miguel Ángel Porrúa.
- McQuaid, R. W., & Lindsay, C. (2005). The concept of employability.
- OECD. (2019). *Higher education in Mexico: Labour market relevance and outcomes*. OECD Publishing.
- International Labour Organization. (2019). *World employment and social outlook: Trends 2019*. International Labour Organization.
- International Labour Organization. (2020). *Las mujeres en el trabajo: Tendencias 2020*. ILO.
- International Labour Organization. (2022). *Panorama laboral 2022 América Latina y el Caribe*. ILO.
- Orellana, N. (2018). Consideraciones sobre empleabilidad en educación superior. *Calidad en la Educación*, 48. <https://doi.org/10.31619/caledu.n48.477>
- Peeters, E., Nelissen, J., De Cuyper, N., Forrier, A., Verbruggen, M., & De Witte, H. (2019). Employability capital: A conceptual framework tested through expert analysis. *Journal of Career Development*, 46(2). <https://doi.org/10.1177/0894845317731865>
- Pérez Sáinz, J. P. (2016). Globalización y relaciones asalariadas en América Latina: Entre la generalización de la precariedad y la utopía de la empleabilidad.
- Pool, L. D., & Sewell, P. (2007). The key to employability: Developing a practical model of graduate employability. *Education and Training*, 49(4). <https://doi.org/10.1108/00400910710754435>
- Ramos, M. E., Arriagada, I., & García, B. (2003). *Mujeres latinoamericanas en cifras: Trabajo*. CEPAL.
- Rentería Pérez, E., García Sánchez, E., Malvezzi, S., & Botero Sarassa, J. (2022). Employability: Inserción y movilidad en mercados de trabajo de egresados de la Universidad del Valle. <https://doi.org/10.25100/peu.634>
- Ríos, R. (2010). *Género y educación: Una mirada desde la perspectiva crítica*. Universidad Pedagógica Nacional.
- Salas, I. A., Bátiz, G., & Luisa, M. (2023). Incorporación laboral de egresadas(os) de posgrado desde la segregación de género. *Revista Mexicana de Investigación Educativa*, 28.
- Scheele, J., & Brunner, J. (2009). Educación terciaria y mercado laboral: Formación profesional, empleo y empleabilidad.
- Siivonen, P., Isopahkala-Bouret, U., Tomlinson, M., Korhonen, M., & Haltia, N. (2023). Introduction: Rethinking graduate employability in context. In *Rethinking graduate employability in context*. https://doi.org/10.1007/978-3-031-20653-5_1
- Tenjo, F., Bernat, L. F., & Lozano, I. (2017). Desigualdad laboral por género en América Latina. Banco de la República.
- Tomlinson, M. (2007). Graduate employability and student attitudes and orientations to the labour market. *Journal of Education and Work*, 20(4). <https://doi.org/10.1080/13639080701650164>
- Van der Heijde, C. M., & Van der Heijden, B. I. J. M. (2006). A competence-based and multidimensional operationalization of employability. *Human Resource Management*, 45(3). <https://doi.org/10.1002/hrm.20119>
- Vázquez Rodríguez, A., García-Álvarez, J., & Rego, M. A. (2021). Movilidad internacional y empleabilidad: El impacto en el capital humano y social de la juventud. *Educar*, 57(1).
- Velásquez, M., Muñoz-Boudet, A. M., & Ramírez, S. (2016). *Mujeres en el trabajo: Retos para la igualdad de género en América Latina y el Caribe*. World Bank.
- Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research and policy. *World Bank Research Observer*, 15, 225–249.
- Zepke, N., & Leach, L. (2005). Integration and adaptation: Approaches to student retention and achievement. *Active Learning in Higher Education*, 6(1). <https://doi.org/10.1177/1469787405049946>