

Competency certification in the medical industry organizations of Mexicali, B.C., Mexico

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Abstract

Organizations turn to private certifying institutions instead of public certifying agencies. The CONOCER Survey was applied to 304 organizations, out of which 43% do not implement Competency Certification Programs: 36% are unaware of the benefits, 31% are unaware of the institutions and procedures, 26% have a lack of budget and 7% have high turnover. More communication and promotion of government programs are needed [7]. The Chile Valora Program [5,6] confirmed a need of knowledge and trust in the competency certification program. The OECD [18] sustains that in Mexico, a collaboration between the government and the productive sector must be promoted. A public financing program should be developed since only .01% of GDP, among the lowest in the OECD, to activate labor competencies. The methodology applied is the fixed mixed method and parallel convergent typology. A concurrent design for the collection and analysis is necessary.

Keywords: training; job skills; certification; motivation; job satisfaction; project management.

Certificación de competencias en organización de la industria médica de Mexicali, B.C., México

Resumen

Las organizaciones recurren a instituciones certificadoras privadas en lugar de certificadores públicos. La Encuesta CONOCER se aplicó a 304 organizaciones, de las cuales, 43% no implementa Certificación de Competencias: 36% desconocen beneficios y 31% desconoce instituciones y procedimientos, 26% sin presupuesto y 7% tiene alta rotación. Se requiere mayor comunicación y promoción de los programas gubernamentales [7]. El Programa Chile Valora [5,6] confirmó que existía desconocimiento y desconfianza sobre el programa de certificación de competencias. La OCDE [18] sostiene que en México se debe promover la colaboración entre el gobierno y el sector productivo. Se debe desarrollar un programa de financiamiento público ya que se destina .01% del PIB, más bajos de la OCDE, para la activación de competencias laborales. La metodología aplicada es el método mixto fijo y la tipología convergente paralela. Es necesario el diseño concurrente en la recolección y el análisis.

Palabras clave: capacitación; habilidades laborales; certificación, motivación; satisfacción laboral; administración de proyectos.

1. Introduction

There is a conception in the business environment known as the set of knowledge, skills, attitudes, values, and experiences that workers must possess to ensure competitive

individual and organizational performance, and their project management. This concept is Labor Competencies, and since all organizations aim to be competitive, organizations must focus on developing their workforce with a level of competence that allows them to achieve their standards and

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goals and consequently allows their workers to perform in an environment that promotes organizational growth and development. That leads them to improve their working conditions and the desired quality of life. This chain reaction has its social benefits and positive community impact. When the abilities require a competent performance, the job description or process manual applies terms such as knowledge, abilities, and attitudes, that is to say, personal attributes or characteristics that are unique, and that allow them to improve their performance, be more competent and productive in an organization [14]. Robbins and Coulter [18] confirm that the skills that create value in an organization are known as core competencies; those competencies and the resources determine an organization's competitive advantage. Dessler and Varela [11] establish that competencies are characteristics that employees demonstrate through their performance, knowledge, skills, and personal behaviors. Undoubtedly, this idea confirms the existence of soft skills, individual and hard skills, and the techniques specific to each function manifested through performance.

When skills or abilities require competent performance in a function, the description or manual of processes uses terms such as knowledge, skills, and attitudes, that is, attributes or personal characteristics of professionals, which are unique, which allow them to improve performance, be even more competent and productive in an organization [9].

Chiavenato [4] establishes a relationship between motivation and competencies. Employee behavior is fundamental in the tactical planning of human resources; therefore, employees must change their attitudes and behaviors to learn and create new skills and competencies. Galleani [12] affirms the behavioral relationship, stating that the characteristics of competencies are motivation, character traits, individual capabilities, theoretical and practical knowledge, and physical and mental abilities. In this case, it is essential to focus on motivations, which establish the behavior of employees towards certain types of work, such as achievement, affiliation, and power.

Given the above, it is concluded that achievement is reached through training and developing competencies necessary for performing a function or promotion within the organization.

This research is based on the premise that some organizations certify their employees through private certifying institutions; this is supported by the response of employers in the CONOCER Survey [7], which allows the identification of a problem in the field of human resources related to the lack of communication and promotion of the existing programs offered by the Government for the benefit of workers.

On the other hand, it mentions that employers must be aware of the benefits of certifying competencies, such as motivation and satisfaction through formal certification programs. This leads us to consider as an element of the problem to find out if organizations use processes for training and certification by competencies and to justify why they do so.

For Werther et al. [25], the fact that organizations are concerned about keeping their employees trained and with a current life and career plan represents the leadership capacity of the employee, translated into their ability to materialize

personal and professional plans in the medium and long term.

Without a doubt, this promotes motivation and job satisfaction.

1.1 General and Specific Objectives

The general objective is to analyze the organization's process for Competency Certification in Production and generate a model to understand how Competency Certification influences Motivation and Satisfaction. The specific objectives are to identify the results of the CONOCER Survey [7] about the need for knowledge of public institutions and procedures to implement competency certification programs and generate interest in providing development plans through the government. Review theories of Motivation and Job Satisfaction to know their correlation. Design an instrument to be applied to Production and HR employees and analyze the relationship between Competency Certification, motivation, and job satisfaction. Integrate a model to understand how Competency Certification influences Motivation and Job Satisfaction.

2. Theoretical Framework

Therefore, it is confirmed through the CONOCER Survey [7], applied in 2017 to 304 organizations, where 43% of the organizations, that is, 131, need to implement a Training and Development Program based on the Certification by Labor Competencies in their Human Resources management processes.

The main obstacles to implementing the Competency Certification in these 131 organizations are that 36% of employees are unaware of the benefits, 31% are unaware of the Institutions and Procedures, 26% lack a budget, and 7% say they have high turnover among employees. It's also relevant to mention that 56% of employers agree that their competency model promotes employee engagement and motivation, and 50% of companies say they strongly agree that competencies play a vital role in supporting the achievement of their vision and goals [7].

The Chile Valora Program [6] mentions that the certification program allowed 96% of the employees some promotion in their career and professional development, 92% of their employees perceived that they could be promoted, 89% of the employees felt more committed to the company, and 84% had lower job turnover.

OECD [18] mentions that certification programs give employees better job opportunities and better wages, job satisfaction, productivity, and improved innovation practices, all contributing to an increased competitive and innovative population.

All of the above is relevant to the development of organizations and their employees; however, the role played by the employee as a human being, a member of an organization, or a community, should not be left aside; for this reason, there is a similarity with Castillo [3] when he talks about the core value of the human person in organizations and mentions that the person has an infinite value over things, Simply being the one who makes the decisions, executes the processes, and brings the organizational culture to life is more

important than any other asset within the organization. He also mentions that people are directed, and things are administered or managed. Still, part of that management concept must also be related to the interest in seeking development, the common good of its employees, thinking about itself, the employees being well, our customers being satisfied, and the organization obtaining good results. This is also related to Castillo's idea [3], which mentions that leadership's push toward the future will be an action focused on the man rather than the task. On the other hand, he mentions that management allows employees to feel respected and valued; for this reason, entrepreneurs must ensure the growth of their employees so that they feel recognized, valued, and committed to their source of employment.

Jones and George [15] mention that training fosters learning as an essential element, as new knowledge and skills are acquired in all positions and organizations. At the same time, when talking about training, there is no possibility of making a distinction between industries or ranks; everyone has the same need to learn and develop.

Regarding job satisfaction, it is part of man's nature to feel accepted and to belong to an organization. According to Maslow's Hierarchy of Needs, Münch [16] mentions that motivation arises from the needs of human beings, which influence their behavior. At the organizational level, satisfying these needs through work is extremely necessary. The need for love or belonging "are emotional needs such as association, participation, and acceptance in the team; among these are friendship, affection, and love. They are satisfied through sports, cultural and recreational activities, the building of work groups, and a good organizational climate" Münch [17].

In the organizational field, team building and the environment generated by it are vital to achieving adequate employee performance while observing quality and productivity standards. They also generate job satisfaction that promotes a sense of belonging within the team and the organization.

De la Rosa [10] states that motivation and job satisfaction are relevant in every organization since they are the tools to accomplish their objectives. If these elements are not achieved, performance within the team will not be ideal and, on the other hand, absenteeism and turnover will increase.

According to Vásquez-Torres [22], to achieve competitiveness, employees must be trained, and provided with the necessary skills and knowledge to meet market demands, allowing organizations to guide them toward organizational objectives.

On the other hand, Ames [1] mentions that there are factors related to the attraction of candidates and their retention, such as salary, job security, life and career plan, institutional reputation, training, and development. These last two elements, training, and development, represent a valuable factor to be evaluated by employees since they consider them an important tool to maintain and increase commitment and job satisfaction. If the employee perceives that the organization cares about improving their skills and responsibilities, their sense of belonging will increase. Of course, this must be accompanied by a salary improvement that allows them to satisfy their personal needs and achieve life quality.

Bohlander, Snell & Morris [2] have also contributed to employee development. They emphasize that the evaluation of competencies is the analysis of the set of skills and knowledge for positions whose responsibility is based on decision-making and demands high levels of knowledge due to the complexity of the function. However, it should be mentioned that the evaluation of competencies must be directed at any position to ensure high levels of productivity and development at all levels of the organization.

Werther et al. [23] ensure that the employees are responsible for defining their careers within the organization. This decision is affected by what the employee perceives in the environment, its compatibility with the organizational culture, leadership style, and growth opportunities. and development. If employees perceive these elements positively, a high sense of pride and belonging towards the organization will be reinforced.

2.1 Hypothesis of the investigation

H1. The Medical Industry Competency Certification is related to the Training processes of Organizations. H10. The Medical Industry Competency Certification is not related to the Training processes of Organizations. H2. The lack of knowledge on the part of employers about the Institutions that offer Competency Certification programs influences the planning of training programs. H20. The lack of knowledge on the part of employers about the Institutions that offer Competency Certification programs does not influence the planning of training programs. H3. The implementation of Competency-Based Certification Programs has a significant impact on job satisfaction. H30. The implementation of Competency-Based Certification Programs has a minimal impact on job satisfaction. H4. The implementation of Competency Certification Programs has a significant impact on employee motivation. H40. The implementation of Competency Certification Programs has a minimal impact on employee motivation.

3. Methodological Framework

The present research is developed using a fixed mixed method since the use of quantitative and qualitative methods was previously established during the study's planning and execution.

According to Creswell and Plano [9], the mixed-method typology that corresponds to this research is the Parallel Convergent through comparisons or relationships with a social intention in the workplace within their analysis. It is essential to mention that the research corresponds to a transversal study because it occurs at a specific moment.

The design implemented is Convergent, and the quantitative and qualitative research results are analyzed and compared to understand the problem. This describes the study with a QUAN+QUAL notation, indicating that a process is developed in which the results of both databases are compared. It involves collecting and analyzing the information obtained under the quantitative and qualitative methods; these results are mixed and compared, which allows interpreting, in this research, the situation in a medical company regarding the training of employees through

a program of labor competencies.

Regarding the convergent design variant, the parallel database variant is addressed since two sources of information are considered to analyze the same problem, and both results, although independent, are synthesized and compared during their analysis.

According to Creswell and Creswell [8], in the mixed convergent method, the researcher uses quantitative and qualitative information to provide an analysis of the problem posed; this is carried out simultaneously, and the data of the final results is integrated for the search methods they propose the use of open and closed questions.

3.1 Research Variables

The independent variables to be analyzed in this research are the actors' perceptions of the training and competencies certification processes developed by their organization, their knowledge about certification programs, and the strategies organizations use to certify.

The dependent variables are motivation and job satisfaction because the objective is to evaluate the impact that competency-based certification programs have on the employee's perception of the programs that keep them motivated and with a high level of satisfaction towards their source of employment, without a doubt, these elements benefit the organization since they allow to reduce personnel turnover.

3.2 Unit of Analysis and Study Subjects

By provision of the Human Resources and Production area, 11 employees were allowed to be interviewed: 1 HR Director, 2 Production Managers, 4 Production Supervisors, and 4 Direct Employees.

The company belongs to the medical industry and is located in Mexicali, B.C.

The analysis unit has 1,512 employees, 1,089 direct labor, 2 Production Managers, 16 Production Supervisors, and 1 Director of Human Resources.

There is a particular interest in interviewing employees related to the production process and the Human Resources area, exploring their knowledge about the internal processes of certification of competencies, as well as their understanding of the offer of the public sector regarding accreditation and the perception of the impact on motivation and job satisfaction.

A panel of experts evaluated the survey to analyze the congruence and relevance of its content and the information required.

3.3 Research Stages

Identify authors and findings related to certification programs and their benefits.

Identify a unit of analysis and their methodology of certification.

Design a survey to be applied to the employees with the authorization of the company.

Participation of a panel of experts to evaluate the survey.

Analysis of the results of the survey.

Analysis of the relation between the problem established in the investigation and the company's reality.

Analysis of the relation between the certification program, motivation, and satisfaction.

4. Results

As mentioned above, a survey and interview were conducted with 11 employees of a Medical Industry organization in Mexicali, B.C. The analysis presented below corresponds to the study, but the interview results are still being analyzed. The survey had 17 questions with a rating of 1 through 5 on a Likert scale, where one strongly disagrees, two disagree, three neither agree nor disagree, four agree, and five strongly agree. The questions are classified into five sections regarding the employee's knowledge of the certification of competencies: what labor competencies are, benefits provided by labor competencies, institutions, and certification processes offered by the government, internal procedures of the certification programs offered by your company, and if there is a positive impact on motivation and job satisfaction. This research aims to conclude that the Competency Certification of the Medical Industry has a direct relationship with the Training processes of Organizations; on the other hand, the employers' lack of knowledge about the institutions that offer Competency Certification programs influences the planning of their training programs. Verifying that implementing the Competency Certification Programs significantly impacts employees' motivation and job satisfaction is also relevant.

Robbins and Judge [19] point out that employee motivation should be associated with what they can achieve due to their performance, such as the possibility of promotion, employee development, recognition, responsibility, and achievement. They agree with Trost [21] since training processes must be present to achieve the development of employees. Both propose a model of the characteristics of the job, which establishes work dimensions that include skills, tasks, autonomy, and feedback. After analyzing the results of the surveys, it is observed that there is indeed a lack of knowledge on the part of the respondents about the institutions and processes offered by the government on the certification of competencies; this factor is rated on average with 1, that is, they are totally in disagreement because they do not know the government's offer.

They need to understand what the CONOCER is, the National System of Competencies, the National Registry of Standards of Competence, or the above as a consequence of their ignorance of the communication and promotion plan of the Certification by Competencies programs.

It is confirmed that companies in the medical industry have a direct relationship with competency certification processes because, if they are unaware of the programs offered by public institutions and do not receive economic support from the government to certify personnel, they are forced to develop their certification programs. The surveyed company is no exception.

Regarding their knowledge of the programs and procedures offered by their company for certifying competencies, they state that they have a rating of 3; that is, they say they do not agree or disagree.

This is because an internal competency certification program in critical production processes applies only to employees who perform manual assembly, extrusion, and molding operations.

The Operations, Quality, and Engineering departments determine the need to validate training effectiveness through certification in critical operations based on the results of these departments' Process Failure Mode Analyses.

The employee will be accredited for the necessary operation detected, i.e., the assembly or task carried out in the general production line or process will not be certified. As it only applies to some production employees, knowledge about the process must be generalized or clear to all interviewees.

As shown in Figure 1, the frequency in the answers to the four questions that evaluate their understanding of their company's processes is 14 answers with a value of 1-totally disagree, 10 with a value of 4-agree, and 14 with a value of 5-totally agree.

Regarding the perception of the impact on motivation and job satisfaction, the result is favorable, obtaining a value of 4, which shows that they agree with the fact that certification programs provide a positive value towards the motivation and satisfaction of employees, since they would feel more recognized and valued by their organization.

These results confirm the orientation of the CONOCER Survey [7], which establishes that 31% of its respondents are unaware of government institutions and procedures, and 56% agree that its competency model promotes employee commitment and motivation.

The result of the Chile Valora Program [5, 6] is confirmed; it states that since the beginning of this program, there has been a lack of knowledge and mistrust on this subject. By using Competency Certification programs, there is an improvement in the motivation and perception of workers since within the organization, development is promoted. Employees are recognized and motivated.

On the other hand, it confirms what the OECD [17] sustains, that, according to the reality in Mexico, collaboration between the government and the productive sector should be promoted to achieve efficiency in the implementation of public policies for the benefit of labor skills and, on the other hand, public and private financing of skills program should be improved since only .01% of GDP, of the lowest in the OECD, are intended for the activation of work skills, as shown in Table 1. In this way, the process of communication and promotion of the programs offered by the government would be improved.

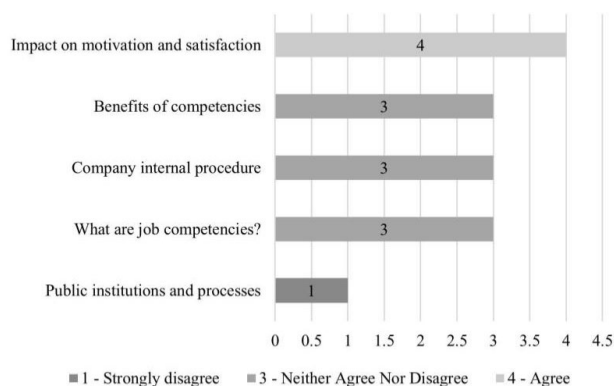


Figure 1. Competency Certification Survey Result
Source: Own elaboration.

Table 1.

Results Conocer Survey, Chile Valora, and OECD coincide with the survey results.

Source	Public Programs and Processes	Motivation and Job Satisfaction
Conocer	31%: unaware of government institutions and procedures	56%: engagement and motivation are promoted.
Chile valora	Employees and entrepreneurs had lack of knowledge and distrust of certification programs.	96%: Promote development. 92%: perceive being promoted. 89%: feel more committed to the company.
OECD	Collaboration between government and private sector should be promoted. Only .01% of GDP is allocated to competency-based certification.	Better job opportunities and better wages. Increased job satisfaction.
Present research	100%: value of 1, strongly disagrees. Unaware of the programs, institutions, and procedures offered by public institutions.	100%: value of 4, agrees competency certification has a positive impact on motivation and job satisfaction.

Source: Own elaboration.

Table 2.

Results Conocer Survey, Chile Valora, and OECD coincide with the survey results.

Source	Company and its relationship with competency certification processes (Internal Programs)
Conocer	50%: Competencies allow the achievement of business objectives and vision.
Chile valora	84% believe that certification programs have helped them decrease job turnover. 94% have allowed it to validate safety and quality standards.
OECD	Increased productivity, improved innovation. A more competitive and innovative population.
Present research	100%: value of 3, neither agree nor disagree about the internal program of CRITICAL OPERATIONS TRAINING EFFECTIVENESS, only on critical processes.

Source: Own elaboration.

Regarding the employees' perception of their internal certification program, the study subjects neither agree nor disagree about their internal program because it only applies to critical production processes, as expressed in Table 2.

Following the analysis of the results, it is important to highlight that several companies within the medical sector, particularly those involved in the manufacturing of ventilators, biomedical equipment, hospital supplies, among others, are concerned about complying with regulatory standards that guarantee the quality of their products, as well as meeting certification requirements that they are unable to fulfill through a government program. In this context, the industry has established partnerships with the education sector to develop certification programs to train their workforce and ensure compliance with required quality standards. One example is the collaboration agreement signed between the Universidad Autónoma de Baja California and the Baja California Medical Device Cluster to promote the training and ongoing development of human resources and encourage research and scientific dissemination in the field of interest.

Similarly, there is a regulatory framework that enables organizations to become a Certification and Evaluation Entity (ECE) officially registered with CONOCER. This designation authorizes them to assess and certify their employees' competencies and actively participate in developing competency standards aligned with their specific industry sector. There are 496 ECEs, including CEMEX, Bimbo, Telmex, and Tecnológico de Monterrey [7]. However, there are no registered companies in the medical products sector. This absence is corroborated by the Registro Nacional de Estándares de Competencia (RENEC) by Productive Sector [7], as no standard related to the industry of interest appears on the list of 1,119 Competency Standards by Productive Sector.

This is precisely where an opportunity arises for this industry to collaborate in designing competency standards that enable the certification of skills relevant to its operational processes. Developing a competency standard entails the establishment of a Competency Management Committee, with the collaboration of technical groups of experts, who are tasked with standardizing operational procedures under the methodology prescribed by CONOCER [7].

The ABC of Competency Standard Development [7] establishes that when a sector expresses interest in developing a Competency Standard to certify their employees, the following steps must be followed:

1. Form the Sector Technical Expert Group (GTES) and the Individual Function Technical Expert Group (GTEFI).
2. Develop the Functional Map (FM).
3. Develop the Competency Standard (CS).
4. Develop the Competency Assessment Instrument (CAI).
5. Compile the supporting documentation for the Competency Standard.

5. Conclusions

By showing evidence of these findings and coincidences with this research, it is possible to develop a model that demonstrates and explains these similarities and upholds what happens in the medical industry organization of Mexicali regarding the implementation of competency-based training programs and how they are associated with business and project management.

Regarding the knowledge entrepreneurs and employees have about the institutions and initiatives offered by the public sector, an average value of 1 is given to this indicator; they disagree because they do not know about the plans and certification processes implemented by the federal government.

This coincides with the CONOCER Survey [7], Chile Valora [5,6], and the OECD in this study, the need for knowledge and a lack of government approach towards private initiatives are evident since there are no open channels of communication and promotion of these programs.

Employers and employees agree that competency-based certification processes directly affect their organization. The company's Critical Operations Training Effectiveness program ensures quality and safety in critical production processes.

This coincides with the CONOCER Survey [7], Chile Valora [5,6], and the OECD, which state that these processes

are relevant in the industry because they allow achieving objectives, validating quality and safety standards, and increasing productivity.

In this case, respondents give an average value of 3 points, they do not agree or disagree about the knowledge that employees have about their internal certification process since, as mentioned above, it only applies to specific employees who perform critical processes.

The response was overwhelming regarding the impact of certification processes on motivation and satisfaction. The respondents gave a value of 4; they agree that certification programs impact motivation and satisfaction.

This coincides with the CONOCER Survey [7], Chile Valora, [5,6], and the OECD, these studies mention that these processes impact commitment by promoting employee development and improving salary conditions.

Given the above, Human Resources Management professionals would be provided with a study validating Competency Certification Programs' positive impact on motivation and job satisfaction. This would allow organizations to improve their turnover and absenteeism rates by having more committed employees.

On the other hand, it will enable entrepreneurs to share information about the government's programs. Suppose a certification course is not part of the government's offer. In that case, the company's specialists can work with the government institution to design the program for the following certification course.

González [13] mentions that labor competencies represent today a means to achieve human development within organizations, so it is also relevant to generate a work environment and the ideal working conditions for the desired human development. This confirms that through labor skills, organizations achieve the development of their employees and the organization.

Suárez [20] confirms that work skills are essential to ensure market sustainability, continuity, and leadership.

This research provided the interviewed employees with useful information that allowed them to fill the information gap regarding the benefits of the Labor Skills Certification Program, and the institutions to request guidance and government support to implement these programs among their employees.

Based on the general objective and the expected results, it is concluded that the organization uses an internal competency-based certification program only in critical processes, leaving out other methods for which external certification processes are used through suppliers.

Employees perceive a relationship between the certification program, motivation, and job satisfaction; these programs allow them to achieve professional development in their area of expertise and improve their working conditions.

On the other hand, the interviewees are not familiar with the institutions and processes of the programs offered by the government; they consider that it would be a good practice to explore the alternative of certification in some processes or, as mentioned before, to work together with the government in the development of certifications.

As previously mentioned, various organizations have developed their strategies, such as establishing partnerships

with the education sector and registering as Certification and Evaluation Entities, however, the medical industry has not taken advantage of these opportunities, nor has it directly collaborated in developing Competency Standards.

Undoubtedly, these actions would benefit not only the organization but the entire Medical Devices Industry in the Mexican Republic; they allow the sharing of knowledge and the effectiveness of good practices, which raises the possibility of conducting future studies on programs to be developed jointly, government/private sector, for the benefit of employees and competitiveness within the industry.

It is important to mention that these actions also contribute to the scientific community, as previously mentioned, there is evidence of certification cases involving collaboration between industry and universities.

However, there is no public evidence that CONOCER has directly participated in the development of labor competency certification programs in collaboration with the medical industry. This is where the scientific community would have a role and contribution, as research projects should be promoted to highlight the need for this collaboration in the development and promotion of targeted programs for this sector. Additionally, it is important to develop research projects focused on the benefits of certification, specifically examining how certified personnel are more likely to receive higher compensation and benefit from shorter working hours. This is relevant considering that companies in Mexico that manufacture medical device products are in a key position, where competency certification through CONOCER becomes strategic to ensure regulatory standards, quality, and safety of their products.

References

- [1] Ames Guerrero, R.J., Factores de atracción y retención del talento humano y su influencia en el compromiso organizacional. *Económicas CUC*, 43(1), pp. 139-152, 2021. DOI: <https://doi.org/10.17981/econuc.43.1.2022.Org.1>
- [2] Bohlander, G., Snell, S., y Morris S., *Administración de recursos humanos* 17^{ra} Ed., Mexico, Cengage Learning, art. 86639-0, [online]. 2018. [Date of reference November 15th of 2023]. Available at: <https://repositorio.uide.edu.ec/handle/37000/4186>
- [3] Castillo, G., El valor central de la persona humana en las organizaciones, *Claves del pensamiento de Carlos Llano, Mercurio Peruano*, [en línea]. (523), art. 8135, 2010. [consulta, 3 de noviembre de 2023]. ISSN-e 0254-8135. Disponible en: <https://dialnet.unirioja.es/servlet/articulo?codigo=3691168>
- [4] Chiavenato, I., *Gestión del talento humano: el nuevo papel de los recursos humanos en las organizaciones*, 5^a Edición, México, McGraw Hill, Art. 6984-5, 2020, 78 P. ISBN: 978-1-4562-6984-5
- [5] Chile-Valora, *La experiencia de Chile Valora: certificación de Competencias Laborales y Diálogo Social* [en línea]. art. 328428-2, 2014. [consulta, 1 de noviembre de 2023]. ISBN 978-92-2-328428-2. Disponible en: https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40americas/%40ro-lima/%40sro-santiago/documents/publication/wcms_241070.pdf
- [6] Chile-Valora, *Estudio de la percepción del valor de la certificación de competencias laborales en empleadores*, [en línea]. Chile, Pragmac, 2022. [consulta, 1 de noviembre de 2023]. Disponible en: <https://www.chilevalora.cl/wp-content/uploads/2022/03/ESTUDIO-VALOR-CERTIFICACION-EMPRESAS-2021CHV.pdf>
- [7] CONOCER., *Encuesta Anual sobre Competencias en México: informe de resultados*, México, [en línea]. 2017. Disponible en: https://conocer.gob.mx/wp-content/uploads/2018/06/informe_de_resultados_encuesta_anual_de_competencias_2017.pdf
- [8] Creswell, J., and Creswell, J., *Research design qualitative, quantitative, and mixed methods approach*. [online], Art. 8670-6, 5th Ed., Sage Publications Inc., USA, 2018. ISBN 978-1-5063-8670-6
- [9] Creswell, J., and Plano, V., *Designing and conducting mixed methods research*. [online], Art. 4437-9, 3rd Ed., Sage Publications Inc., USA, 2018. ISBN: 978-1-4833-4437-9
- [10] De la Rosa, M., *Paradigmas emergentes en la educación*, art. 315-2, 1^{ra} Ed., Pearson, Mexico, 2019. ISBN: 978-607-518-315-2
- [11] Dessler, G., and Varela, R., *Administración de recursos humanos: enfoque latinoamericano*, art. 41014, 6^{ta} Ed., Pearson, Mexico, 2017. ISBN 9786073241014
- [12] Galleani, R., *Coaching para competencias laborales: gestión en talento humano, métodos y estrategias*, art. 7334-7, 1^{ra} Ed., Olejnik Editions, Chile, 2023. ISBN: 978-956-40-7334-7.
- [13] González, Y., *Competencias laborales y clima organizacional como predictores del desempeño organizacional en una institución de educación superior privada*. *Ciencia Administrativa* (2), [en línea]. art. 201902, 2019. Disponible en: <https://www.uv.mx/iesca/files/2020/02/02CA201902.pdf>
- [14] Hager, P., *Competence-based vocational and professional education*. [online]. (23), art. 41713-4, Switzerland, Springer, 2017. ISBN 978-3-319-41713-4
- [15] Jones, G., and George, J., *Contemporary Management*, 10th Ed., Mexico, McGraw Hill, art. 6957-9, 2019, 438 P. ISBN: 978-1-45-6957-9
- [16] Münch, L., *Administración: gestión organizacional, enfoques y procesos administrativos*, 3^{ra} Ed., Pearson, Mexico, art. 4444-2, 2018 ISBN: 978-607-32-4444-2
- [17] OECD, *OECD Skills Strategy Diagnostic Report: Mexico 2017*, OECD Skills Studies, OECD Publishing, Paris, 2017. DOI: <https://doi.org/10.1787/9789264287679-en>
- [18] Robbins, S., and Coulter, M., *Administration*, [online]. 1st Ed., Pearson Education, Mexico, 2023. [date of reference November 11th 2023]. ISBN: 978-607-32-5932-3.
- [19] Robbins, S., and Judge, T., *Comportamiento Organizacional* [online], 18th Ed., Pearson Education, Mexico, 2023. [date of reference November 14th, 2023]. ISBN: 978-607-32-3985-1.
- [20] Suarez, S.L., *Evaluación del capital humano como contribución competitiva en una empresa periodística en Xalapa, Veracruz* 2019, *Ciencia Administrativa* [en línea], (1), pp. 70-78, 2019. Disponible en: <https://www.uv.mx/iesca/files/2019/10/11CA201901.pdf>
- [21] Trost, A., *Human resources strategies, balancing stability and agility in times of digitization*, Springer, Switzerland, 2020. ISBN 978-3-030-30592-5
- [22] Vázquez, M., *Factorial analysis of the elements that compose the training in the small and medium enterprises of the Industrial sector*, *Management*, 22(2), art. 9321, 2018. DOI: <https://10.2478/manment-2018-0022>, ISSN 1429-9321,
- [23] Werther, W., Davis, K., and Guzmán, P., *Administración del Capital Humano*, 8^{va} Ed., McGraw Hill, Mexico, 2019.

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