SABAL University

SABAL RESEARCH CENTER
INSTITUTIONAL REPOSITORY

MASTER'S THESIS

CORPORATE E-LEARNING: MODELING THE SYSTEMIC IMPACT OF VIRTUAL TRAINING IN LEARNING ORGANIZATIONS. A CASE STUDY.

E-learning corporativo. Modelaje del impacto sistémico que produce la formación virtual en las organizaciones que aprenden. Estudio de caso.

AUTHOR
Rafael Ignacio Suárez Velázquez

ADVISOR
Ovelio José Hernández Novoa

PROGRAM
Master of Business Administration — Entrepreneurship and Innovation

SCHOOL
Business

REPOSITORY NUMBER
SBU-RP-0003

UNESCO CLASSIFICATION
5802.07 Vocational education and training
1203.10 Computer-assisted instruction

SUGGESTED CITATION (APA 7)	Suárez Velázquez, R. I. (n.d.). *Corporate E-learning: Modeling the Systemic Impact of Virtual Training in Learning Organizations. A Case Study* [Master's thesis, SABAL University]. SABAL Research Center Repository. https://research.sabal.university/repository/sbu-rp-0003
PERMANENT URL	https://research.sabal.university/repository/sbu-rp-0003
LICENSE	**CC BY-NC-ND 4.0** This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. creativecommons.org/licenses/by-nc-nd/4.0/

SABAL UNIVERSITY

Final Project

Master of Business Administration (MBA)

Entrepreneurship and Innovation

Rafael Ignacio Suárez Velázquez

Corporate E-learning

Modeling the Systemic Impact of Virtual Training in Learning Organizations: A Case Study

 CC BY-NC-ND 4.0

ACCEPTANCE PAGE

 CC BY-NC-ND 4.0

DEDICATION

To my children, whose unconditional love and presence inspire me every day to grow, to improve, and to strive for more.

 CC BY-NC-ND 4.0

ACKNOWLEDGMENTS

I am grateful to this generous country, to the academic community, SABAL University and its authorities, my professors, and my academic advisor for the opportunity they have all given me.

I also thank God, my family, my partners, and my friends for providing the support and confidence that allowed me to make the most of it.

 CC BY-NC-ND 4.0

ABSTRACT

This study analyzes the impact of educational technologies (EdTech), specifically in corporate training processes (HRTech), within a global context characterized by transformation, continuous connectivity, and the growing necessity for lifelong learning in predominantly digital environments. The main challenge lies in designing increasingly effective and personalized learning experiences as a strategic pillar for the development of learning organizations that become more competitive, productive, and cohesive.

This proposal is particularly challenging in the context of small and medium business in Latin America and the United States, which support a significant portion of regional economies. The study aims to propose an innovative training approach that integrates both soft skills (such as leadership, communication, and empathy) and hard skills, more technical skills required for operational processes.

Grounded in the complexity paradigm - which is highly useful for understanding complex, interconnected, and constantly evolving systems - this research posits gamification and simulation strategies as the foundation for creating adaptable, practical, and sustainable training environments and processes. These not only develop personnel skills but also generate data through user interaction that can be leveraged to provide feedback at the individual, group, and organizational levels.

The study is based on a real case from a mass consumer goods company in the United States and examines how the organization approached the problem in terms of design and investment. Key lessons were drawn from this case, as the implementation neglected important methodological aspects inherent to any innovation project. Consequently, the new proposal is grounded in the Design Thinking approach to enable prototyping, testing, iteration, and new proposals consistently aligned with end-users (employees) and the organization’s strategic objectives.

 CC BY-NC-ND 4.0

TABLE OF CONTENTS

Acceptance page	1
Dedication	2
Acknowledgments	3
Abstract	4
Table of contents	5
List of Figures and Tables	6
Introduction	7
Methodology	12
Objectives	15
Theorical framework	17
Educational modeling	19
Conclusions	22

 CC BY-NC-ND 4.0

LIST OF FIGURES AND TABLES

Figure 1: Classic Model 10

Figure 2: Integrated Model 11

 CC BY-NC-ND 4.0

Chapter I: Introduction

Corporate e-learning has been a growing industry for decades and gained significantly greater momentum following the 2019 pandemic. The unforeseen circumstances brought about a sudden demand for online education, for which many companies and institutions were not fully prepared. Consequently, e-learning emerged as an accessible solution that underwent rapid transformation. After five years, it can be asserted that corporate e-learning is among the fastest-growing sectors worldwide, as indicated by the 2024 E-learning Market Size study[1], which projects a sustained annual growth rate of approximately 12% over the next four years.

All evidence suggests that the sector's expansion will be unstoppable. By 2029, this industry is projected to reach an estimated market size of nearly 500 billion dollars[2]. This accelerated growth represents merely the beginning of a broader process, as all human knowledge is progressively being digitized, while digital technology development continues to evolve. Innovations in Artificial Intelligence (AI), Machine Learning, and other emerging tools have led to a reinvention of online education, with implications affecting both learners and instructors. These data gain particular relevance when considering that training—as a central dimension in the development of Human Capital and a consolidator of organizational culture—is a fundamental pillar for the growth of any company, regardless of its size or sector. Training can help strengthen both the "hard" processes inherent to industries, commerce, and franchises, as well as enhance employees' soft skills, which are essential for human relations, a positive work environment, and customer service (both internal and external). In other words, corporate training is simply a constant that is impossible to avoid.[3] (Gallup reports, 2020).

---

[1] *E-Learning Market Size, Share, & Growth Analysis Report by Learning Mode (Self-Faced and Instructor-Led), by Content (Text-Based Content, Multimedia Content, and Interactive Content), by Technology Type, by Delivery Mode, by Geography, 2024–2029* (Arizton Advisory & Intelligence), accessed June 27, 2025, https://www.arizton.com/market-reports/e-learning-market-size-2025.

[2] Research and Markets. (2024, December 10). *E-learning market – Global outlook & forecast 2024–2029: Gamification, microlearning and massive open online courses drive market growth – A USD 490.20 billion market by 2029*. Business Wire. https://www.businesswire.com/news/home/20241210005241/en/

[3] Gallup. 2020. *What Is Employee Engagement, and How Do You Improve It?* https://www.gallup.com/workplace/285674/improve-employee-engagement-workplace.aspx.

 CC BY-NC-ND 4.0

Moreover, chambers of commerce and other institutions have established that the driving force of both Latin American and U.S. economies lies in entrepreneurship and in small and medium-sized enterprises (SMEs). The contribution of these segments to economic growth and development is critical. In the case of the United States, more than 40% of the Gross Domestic Product (GDP) comes from small businesses, which employ up to 60% of the workforce.[4] (U.S. Chamber of Commerce, 2023).

In this regard, investing in skills development within this sector not only strengthens its competitiveness and sustainability, but also directly contributes to job stability and the region's economic growth. Based on all of the above, this proposal focused on addressing the business sector through a systemic approach and continuous learning, and was structured into two main components:

- Soft skills, which will be addressed through games or gamification.
- Hard skills, which will be addressed through asynchronous and real-time simulators

The significance of this research lies in the fact that, until now, the systemic approach and the reciprocal use of data have been scarcely recognized in processes such as induction or onboarding. Their potential to anticipate optimal decisions and to facilitate the early adaptation of the most suitable profiles for organizations has not yet been fully appreciated. Hence, it is essential to demonstrate how recent advances in data science could significantly expand their application and impact—not only on online teaching and learning processes, but also on knowledge generation and management, the improvement of internal processes, and, by extension, on organizational climate and the consolidation of corporate culture.[5].

[4] U.S. Chamber of Commerce, 2023. Small Business Data Center
https://www.uschamber.com/small-business/small-business-data-center

[5] Davenport, Thomas H., Abhijit Guha, Dhruv Grewal, y Tim Bressgott. 2020. "How Artificial Intelligence Will Change the Future of Marketing." *Journal of the Academy of Marketing Science* 48 (1): 24–42. https://doi.org/10.1007/s11747-019-00696-0

 CC BY-NC-ND 4.0

The Systemic Vision and Learning Organizations

It is also important to emphasize that within companies and society at large, educational technologies (EdTech/HRTech) have undergone rapid development in recent years, driven by technological advancements, globalization, and widespread connectivity. In this context, platforms such as Coursera, Udemy, edX, Udacity, and Chegg have scaled exponentially, reaching millions of users and recording significant revenue growth. For instance, Coursera surpassed 150 million enrollments and generated approximately 740 million dollars in revenue by 2024. Similarly, Chegg reached 716 million dollars in 2023, due in part to its integrations with artificial intelligence.[6].

All of this indicates that education is undergoing a series of transformations, and future generations will experience a matrix-based education, even in its most formal components. It is not an overstatement to predict that, in the near future, continuing education will become far more relevant than traditional degree programs as they are currently known. This shift is a result of the speed and flexibility with which the world demands specialization and, above all, due to the permanent and accelerated changes occurring in society. Within this context, continuing education will increasingly capture the interest not only of students beginning their academic journeys but also of professionals who already possess a foundational education. Constant change implies continuous learning—and, above all, the recognition that nothing, except change itself, is here to stay.

At the same time, within companies, Human Capital (or Talent Management) departments are making significant efforts to systematically assess employee performance, including their skills, traits, and leadership capacities, in order to address broader organizational dimensions such as workplace climate and corporate culture.

[6] Scoop Market. 2024. *EdTech Market Size to Grow USD 810.3 Million by 2033*. Updated September 6, 2024. https://scoop.market.us/edtech-market-news/.

 CC BY-NC-ND 4.0

This proposal represents an attempt to reconcile these efforts and, in doing so, to measure outcomes while teaching. It is worth noting that numerous psychometric tests and other assessment tools are commonly used in companies for purposes such as employee evaluation, development, and promotion. However, many of these efforts are carried out through isolated and specialized activities which, once completed, often fail to capitalize on the data collected. As a result, the impact of training within companies tends to be indirect, with the expectation that it will influence outcomes through a reflective process in which employees enhance their understanding, skills, or even motivation at work. As illustrated below, the training process is not directly connected to the organization itself, but rather through improvements in employee performance, which will eventually be measured retrospectively.

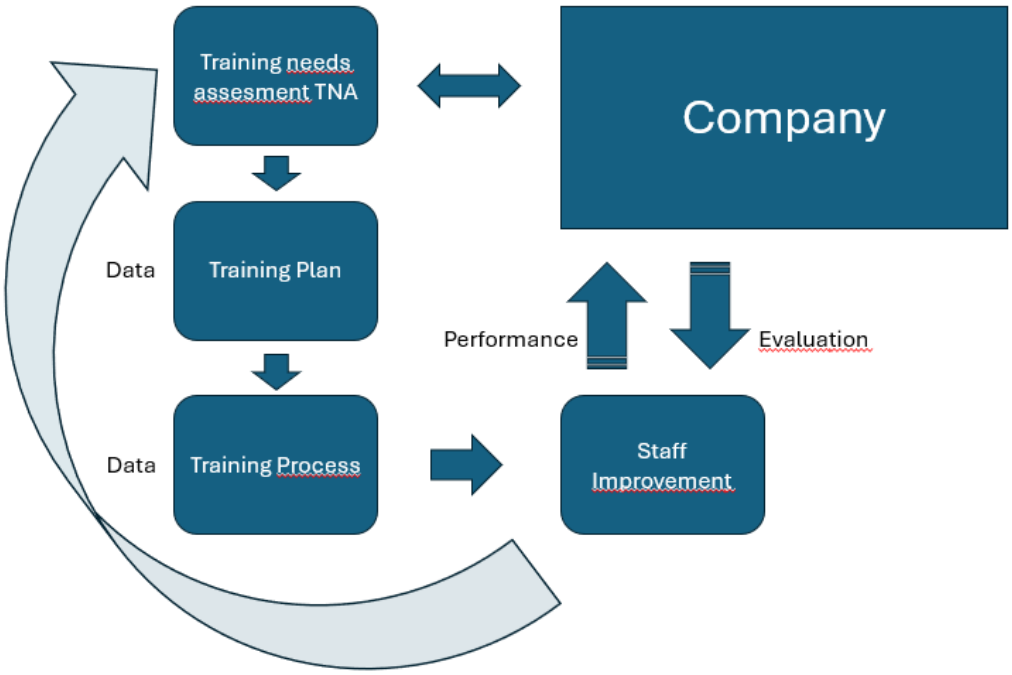


Figura 1. Classic Model of the Training / Evaluation cycle in the company

Today, it is possible to manage data in a more intelligent, integrated, and ambitious way, enabling a much more direct and dynamic impact. At the same time, this approach fosters interaction and feedback within a systemic vision, in which both the organization and its employees engage in continuous, adaptive learning.

 CC BY-NC-ND 4.0

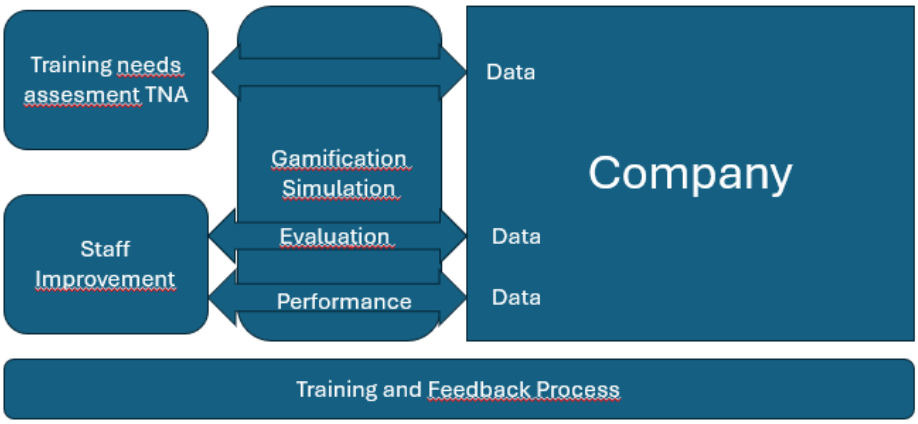


Figura 2. Integrated Training Model for Learning Organizations

The proposal, however, aimed to address this topic without repeating costly mistakes, as illustrated by the selected case study. It is worth noting that this research focused on a U.S. -based fast-moving consumer goods (FMCG) company, founded in 1987, which decided in 2021 to experiment with psychometric profiling and the reusability of certain data through games. This company had an innovative Human Capital Department with a strong track record of success, enjoyed the support of its executive leadership, and partnered with an external web and IT solutions provider to design a groundbreaking game based on Greek gods and legends. The project envisioned collecting valuable data through employee participation—profiles, insights, traits, competencies, among others—which would then be transformed into actionable information.

The concept was sound; however, the initiative was not implemented gradually. Instead, it was structured as a single, large-scale project requiring significant investment, as it involved the development of a fully customized, ad hoc program created specifically for the company. In other words, the initiative lacked a phased approach with testing, prototyping, co-creation, and diversification. Moreover, the execution timeline was extended due to the dedicated product strategy, which was fully built prior to its launch.

 CC BY-NC-ND 4.0

The initial outcome was quite positive due to high employee participation, and everything seemed to be progressing well; however, within a few months, the educational product fell into disuse, and demotivation became apparent. Currently, the General Manager of the department acknowledges that a new investment would be necessary to redesign a more integrative, empathetic, and long-term strategy to ensure sustained participation. Additionally, shortcomings were identified in the data generated by the game regarding hard skills and competencies, as the simulation of real-life scenarios was not incorporated; instead, the focus was primarily on projective exercises that elicit responses in situations different from reality.

For all these reasons, and based on the results of this experience, this research decided to model a methodologically sound systemic training design capable of producing a more enduring and comprehensive response to the issues described.

Chapter II: Methodology: Theoretical and Practical Aspects

Epistemic Framework: Complexity Paradigm

Field of Knowledge: Business and Administrative Sciences

Line of Research: Business and Organizational Management

Predominant Methodology: Case Study

Specific Methodology: Design Thinking

This research explores how gamification and simulation generate complex behaviors that, in turn, are reflected in usable data contributing to the co-evolution of training processes, provided that the organization adopts a systemic vision in which all stakeholders engage in continuous learning. In other words, the study begins by acknowledging the existence of adaptive, dynamic, and nonlinear systems that allow for managing the full complexity of patterns emerging from intelligent feedback.

Therefore, this research is framed within the complexity paradigm, commonly “applied in interdisciplinary studies addressing complex systems and emergent phenomena, especially in Project Management and Sustainable Development” (Morin, 2020). Likewise, it is important to

 CC BY-NC-ND 4.0

highlight that organizational processes are, by nature, understood as nonlinear and unpredictable—that is, dynamic and multidimensional. Consequently, data generated by training processes developed within this context—particularly when gamification and simulation strategies are present—can be analyzed integrally within a "learning ecosystem" that builds and transforms itself, provided it is continuously recreated and improved.

Thus, predefined hypotheses to be tested are avoided in favor of identifying, exploring, and systematizing new emergent dynamics in the training experience, aimed at understanding the interrelation between training and decision-making facilitated by digital environments. Within this framework, organizational management and practice can coevolve with training thanks to cutting-edge educational technology.

Therefore, it is necessary to reaffirm the overarching vision of this research which—although it employs certain tools characteristic of the positivist paradigm, particularly those related to data analysis, pattern development, and effectiveness measurement, among others—is fundamentally based on the complexity paradigm. In this research, data analysis does not end as a mere technical tool but functions as a window into cognitive, technological, and psychosocial processes that are permanently interrelated.

This is particularly useful considering that the research is situated within Business and Administrative Sciences, as "this field is grounded in contemporary organizational theory, behavioral economics, and management sciences. It adopts a systemic approach that recognizes organizations as complex adaptive systems influenced by internal and external variables in constant interaction" (Robbins & Judge, 2019). Accordingly, the study focused on analyzing organizational and administrative phenomena related to business decision-making processes in the realm of training and education. In other words, the proposed analysis seeks to promote a holistic and integrative vision that enables learning from the system, rather than merely about it. This implies acknowledging a significant degree of uncertainty and adaptation inherent to corporate digital training processes.

Similarly, this work corresponds to the line of business and organizational management, as it "is grounded in contemporary organizational theories, including resource-based theory, institutional theory, and evidence-based management approaches" (Barney & Arikan, 2001), recognizing

 CC BY-NC-ND 4.0

organizations as complex entities that require multidisciplinary approaches for effective understanding and management.

As a specific methodology, Design Thinking will be employed for business management, encompassing five phases:

Empathize: Analyze game data and conduct interviews with current and former users to understand the shortcomings of the case study.

Define: Based on the results, identify the main issues such as motivation, autonomy, expectations, and learning utilization.

Ideate: Adjust the preliminary proposal according to these findings and adapt it to the expectations of the end users, in this case the employees, as well as the Human Capital department.

Prototype: Develop several sets of games and simulators in a simple but functional manner to be used as models.

Test: Use the sets of simulators and games with controlled (similar) groups of employees in successive stages to promote feedback and learning in each iteration. By comparing the data obtained in each play session with previous ones, improvements in both system and employee performance can be evidenced, and the most efficient designs can be identified.

 CC BY-NC-ND 4.0

General Objective

Design a methodological proposal based on Design Thinking that allows for prototyping and validating digital training experiences, adapted to the needs of human talent and the company's objectives.

Specific Objectives

Characterize the dynamics and outcomes of the original case study, identifying the factors that limited the sustainability of the applied educational innovation.

Demonstrate the potential of gamification and simulation as tools for developing soft and hard skills in organizational settings.

Evaluate the potential of data generated in training processes as input for continuous improvement, decision-making, and the development of organizational culture.

Design an alternative methodological proposal for training based on Design Thinking, enabling the measurement, adaptation, and feedback of organizational training processes.

Delimitations and Limitations of the Study

Delimitations:

Geographical Scope: Access to information from a multinational company headquartered in the United States, operating in the fast-moving consumer goods sector.

Thematic Scope: Corporate digital training, use of educational technologies (EdTech), gamification, simulation, and data analysis for organizational decision-making.

Temporal Scope: Data and experiences from the case study covering the period 2020–2024 were considered, as well as prospective design proposals.

Target Population: Personnel responsible for the Human Capital area involved in digital training processes.

 CC BY-NC-ND 4.0

Limitations

As this is a case study, not all results are generalizable to other sectors or regions, although transferable learnings will be provided.

Data Access: The availability of historical information from the original case and the willingness of responsible personnel to participate in interviews and tests may affect the depth of the analysis.

Technological Dependence: The future development of functional prototypes will depend on the available financial and technological resources, as well as the feasibility of implementation in real-world contexts.

Longitudinal Evaluation: Due to time constraints, the study may not capture the long-term effects of the methodological proposal's implementation.

 CC BY-NC-ND 4.0

Chapter III: Theorical framework

The Fifth Discipline (1990) by MIT Professor Peter Senge

Senge, Peter (1992). The Fifth Discipline: The Art and Practice of the Learning Organization. Ediciones Juna Granica, S.A., Barcelona, Spain.

Definition:

Peter Senge defines a “Learning Organization” as an organization that continually expands its capacity to create its future through continuous improvement and learning by its members.

The Five Disciplines:

Senge proposes that learning organizations are based on five fundamental disciplines:

Personal Mastery: Developing individual capacity to achieve personal goals and engage in continuous learning.

Mental Models: Recognizing and understanding one’s own and others’ mental models to improve communication and understanding.

Shared Vision: Creating a common vision that inspires organizational members and provides shared purpose.

Team Learning: Fostering collective learning where members unite to achieve common goals and learn together.

Systems Thinking: Understanding interconnections within an organization and how systems mutually influence each other.

Benefits of Learning Organizations:

Adaptability and Flexibility: Learning organizations are better equipped to adapt to environmental changes and respond to new opportunities and challenges.

 CC BY-NC-ND 4.0

Innovation: Continuous learning and collaboration among members foster innovation and creativity.

Workforce Development: Learning organizations invest in employee development, enabling them to acquire new skills and knowledge.

Improved Decision-Making: Systems thinking and team learning enable organizations to make more informed and strategic decisions.

A systemic approach recognizing organizations as complex adaptive systems influenced by internal and external variables in constant interaction (Robbins & Judge, 2019).

According to Morin (2001) and Maturana (1984), learning systems in organizational contexts should be understood as meaning networks that self-organize, learn, and transform.

Design Thinking is a user-centered methodology aimed at solving complex problems through a creative, collaborative, and iterative approach. It evolved conceptually from the 1960s, when Herbert Simon (The Sciences of the Artificial, 1969) introduced the idea of design as a specific form of rational thinking applicable to problem-solving, primarily in industrial contexts. David Kelley transformed design thinking into a user-centered methodology applicable in any environment. Tim Brown (Change by Design, 2009) popularized the term by making it technologically feasible and business viable, and it is now academically institutionalized with support from Stanford University, incorporating empathy, co-creation, and experimentation as core principles.

 CC BY-NC-ND 4.0

Chapter IV: Educational Modeling

A fully digital design is proposed, oriented towards guided or self-directed study in which individuals learn through gaming or simulation. It will be divided into projective-type games for the measurement and development of soft skills on one hand, and simulated environments for both study and the actual execution of formal and precise work processes on the other. In any case, a suite of games with reusable resources is proposed to generate multiple different scenarios using programmed assets, with adjustable parameters and appearance to offer variability without requiring a complete redevelopment each time.

The processes will be developed through pilot tests conducted in specific production, distribution, and administration areas, using microprocess simulators for "learning by doing." The data derived from these exercises will enable feedback via expert systems that model reinforcement in areas of frequent errors, accounting for both general distributions from the practice of the entire population and individualized modeling for each specific employee. In both cases, the use of Artificial Intelligence (AI), as a natural language interface that feeds back its knowledge base with experiential learning, will constitute the core of the continuous learning design.

Soft Skills

It is proposed to transfer the classical experience of projective techniques from educational sciences and psychology to the corporate digital experience. To this end, metaphorical scenarios are sought, as they allow for spontaneous and uninhibited expression of behaviors, attitudes, and expectations related to the employee's role. Additionally, co-creation is highly important to promote content generated by the audience. Initially, a set of general themes is driven, which will later be expanded and developed by the users themselves according to their own interests.

For the study and data generation through the development of soft skills, the application of games and projections in a classical manner—as commonly used in psychology and even child psychology—is recommended. This approach allows presenting scenarios in which employees feel comfortable choosing and responding to stimuli without compromising their self-perception and self-esteem.

 CC BY-NC-ND 4.0

Today, users can not only express their preferences but also actively generate new games using basic and reusable elements, thus contributing valuable insights about their personality traits. On the other hand, the set of mandatory evaluations imposed by organizations often leads to fatigue and boredom, which reduces both effectiveness and validity as measurements. The advantage offered by this approach is the spontaneity, enjoyment, and ease with which responses and participation can be achieved.

Hard Skills

The environment developed within the games can also support the systemic training of more precise skills and competencies by creating scenarios that resemble real-life situations but include ongoing challenges that induce errors and, consequently, promote repeated practice and skill refinement.

These resources, commonly understood as simulations, can now be highly dynamic by integrating theoretical learning, practical simulation, and continuous learning under real working conditions. Such real conditions can be supported by highly specific tools within a more comprehensive view provided through dashboards. In this regard, it is recommended to execute very concrete processes and subprocesses as a way to refine the types of necessary resources and best practices.

Recommended Pedagogical Resources

Predominant Audiovisual Content (Video Learning): Dynamic, high-quality videos presenting key concepts with well-crafted storytelling, which is crucial for maintaining attention.

Interactive Infographics: Visual representations of mind maps and fictional scenarios.

Simulations and Practical Cases: Activities based on real-life situations that allow employees to make decisions and receive immediate feedback. The experience encourages errors as a source of learning and system feedback.

Interactive Assessments: Mini quizzes and lightly gamified challenges with automatic feedback to reinforce learning and promote self-assessment.

Multimedia Glossaries: Accessible resources to deepen understanding of key concepts and familiarize users with work processes.

 CC BY-NC-ND 4.0

Accessible Resources: Locally downloadable content that enriches the learning experience in text or audio formats, designed to be used as supplementary material that can be read or listened to during non-exclusive dedication times, thereby extending the learning and reflection process.

Suggested Technological Resources

Open Web Space for Game and Simulator Development: A platform for simple programming based on a flexible, albeit pre-designed, framework.

Robust and Flexible LMS Platform: For knowledge management during classes or content delivery, featuring a user-friendly and engaging experience.

Informative Module: Containing a repository of important information.

Knowledge Management: Implementation of a knowledge management system that centralizes data and information, as well as articles, guides, and key resources, with a self-generative architecture and efficient, accessible search functionality for employees. This system will allow resolving specific queries within the natural workflow, enhancing autonomy and productivity.

Multilingual Support: Infrastructure and instructional design prepared for multiple languages.

Tracking and Analytics Dashboard: Tools to monitor individual and group progress, identify critical points, and improve content based on real data. This component is key for iterating on the development process based on Design Thinking.

Platform with Advanced Search Capabilities: Enabling quick and intuitive retrieval of specific information with multilingual support.

 CC BY-NC-ND 4.0

Chapter V: Conclusions

According to the findings presented in this study, it can be concluded that training within organizations is inevitably intertwined with the ongoing digitalization and consequent transformation of society. Far from being a complementary and indirect effect, training now assumes a strategic, active, and formative role, while also generating data, information, and knowledge for companies. With a systemic and integrated vision, organizational training contributes measurements of both individual and group traits, supports informed decision-making, and even reinforces cultural elements within the organization.

Gamification and simulation have been selected as cutting-edge tools to achieve this integration with soft skills and technical or hard skills, respectively.

By basing the proposal on a case study of a fast-moving consumer goods company whose initiative failed due to uncontrolled errors during implementation in a single, comprehensive launch, this research also emphasizes the systemic conception of the organization and recommends specific methodologies, notably Design Thinking. This user-centered, adaptive, and flexible methodology enables prototyping and iterative co-creative solutions, allowing increasing adaptation to the real needs of end users. With the implementation of machine learning and AI, the possibilities for bidirectional learning and feedback become a powerful and promising opportunity for medium and small enterprises, enabling them to leverage these technologies to consolidate their culture and grow rapidly and solidly—advantages that, until now, were mostly available only to large corporations.

The development of these new capabilities will, in turn, impact regional economies given the importance of medium and small business sectors, including entrepreneurship, as they become better prepared to face training challenges and benefit from this new approach and its real implementation.

 CC BY-NC-ND 4.0